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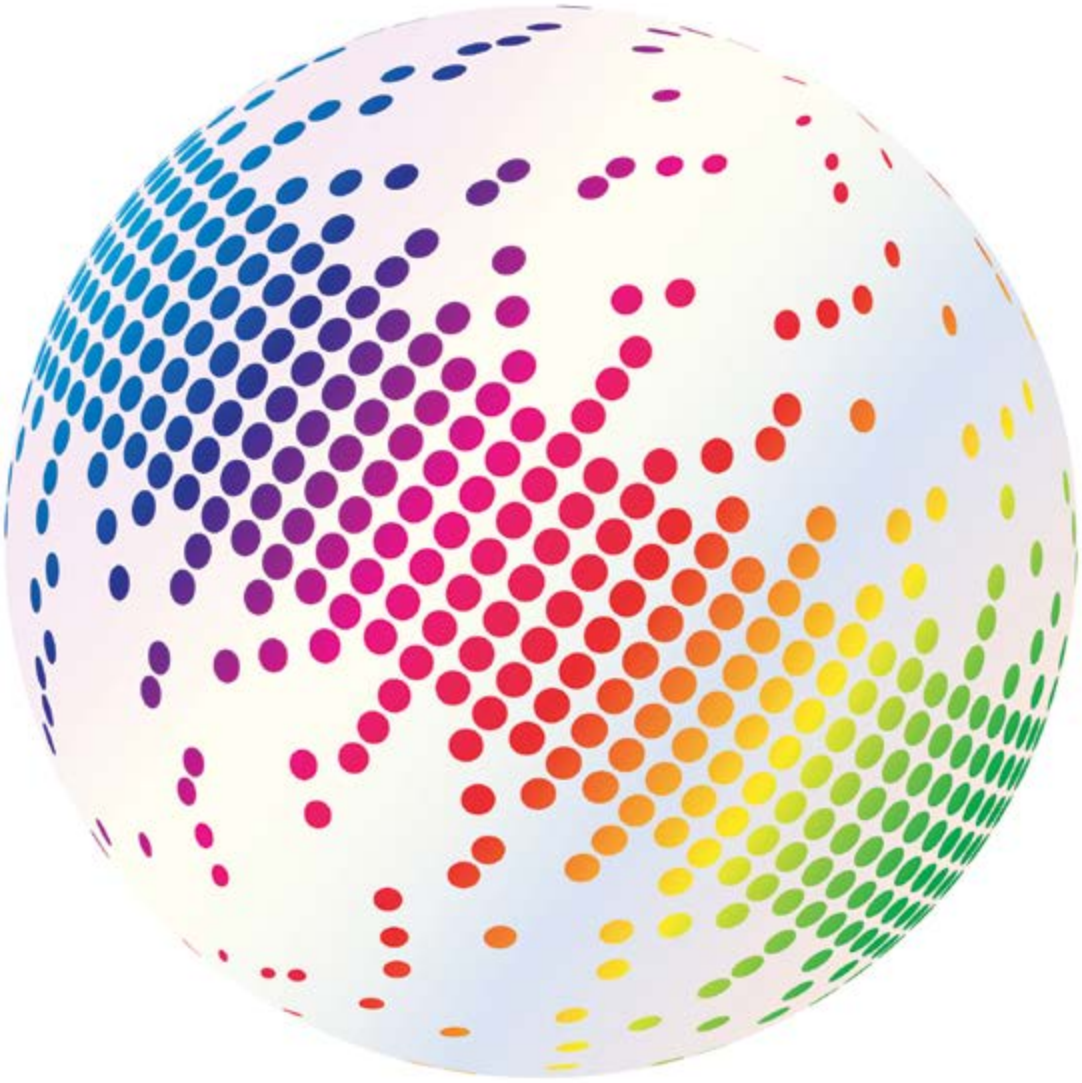

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HOW TO DRY A SCREEN

Mick Orr shares his perfect 'recipe' for drying a screen

Ikonics' Training Specialist, Mick Orr

Have you ever baked a cake? It's easy! Just rip open a box of cake mix, dump it into a bowl, add some water, an egg, and some oil, then stir it around a bit, pour it into a cake pan, and bake it for 40 mins at 325°F [160°C]. A piece of cake, so to speak.

As long as you follow directions, the cake is likely to turn out fine – not too dry and not too moist. Say you're in a hurry, though, so you try to speed up the process. Instead of following the directions, you decide to spread the batter out over a cookie sheet and bake it at 650°F [340°C!] for only 20 mins. You don't have to be a pastry chef to know what will happen. In no time, you will have the fire department visiting you, and not for cake and coffee.

Drying a screen is not unlike baking a cake. Screen drying is a basic pre press step that seems like a no-brainer on the surface. But because it appears so simple, many printers tend to gloss over the factors that lead to a correctly dried screen.

THREE SCENARIOS TO CONSIDER:

1. A screen-printing business operates in a small crowded shop. Screens are made in a bathroom converted for the purpose. Coating occurs with the bathroom's fluorescent lights turned off, because everyone knows that light will expose the emulsion. Still, the screen maker needs to see what he's doing, so the bathroom door is left slightly ajar to allow a small amount of light into the room. When the room is used for other purposes, coated screens are stored in the bathtub (which also serves as the developing and screen washout/reclaiming area). The shower curtain has been replaced with a piece of black plastic to protect the screens from light exposure when they are in the tub.

For coating, a coating trough with a smooth, nick-free edge is used to apply freshly mixed dual-cure emulsion onto properly stretched screens. After coating, screens are leaned against the side of the tub with a fan blowing on them. The trusty old fan has been used for years, and a thick layer of dust coats the blades. If time is short, a hair dryer is typically used to speed up the drying process. Screens are usually made to requirement and are rarely stored after coating.

2. Another screen shop also operates in cramped quarters, but features a room built specifically for the purpose of screen-making and includes filtered fluorescent lights (yellow lights) to reduce the chance of inadvertent exposure. There, properly tensioned screens are coated with a quality coating trough. After coating, the screens are dried in a cabinet that provides further protection against light exposure. The screen maker keeps the cabinet temperature set on 'hot' (it features additional settings of 'low' and 'medium' that have never been used). Since the shop is relatively busy, the screen maker has an inventory of screens ready to use at all times, and some may sit idle for long periods before use.

3. A sophisticated print shop busily churns out screens to meet a demanding production schedule. The company has been careful to lay out and plan each area of its operation to provide the highest levels of efficiency and quality. It has a light-safe coating room where properly stretched, clean screens are coated on an automatic coater. The screens are dried and stored in a separate temperature- and light-controlled room. Inventories of coated screens are always on hand for emergencies and rush jobs.

These examples demonstrate the varying degrees of importance that screen printers assign to proper screen making, and more specifically, proper screen drying. What separates these companies isn't the level of automation, the size of the operation, or the volume of work they produce. The real difference is the degree to which they've standardised their procedures to be correct and consistent.

Screen drying involves more than just making sure emulsion is dry to the touch. It requires attention to the coating process, understanding of common drying procedures, and knowledge of the conditions that must be present in order to achieve reliable coated screens on a consistent basis. In this article, we'll explore these procedures and conditions and how to implement them correctly in your operation.

COATING THICKNESS

Before you can consider drying procedures, you must first understand how the emulsion coating itself impacts the screen making process. Virtually all mesh and emulsion manufacturers recommend that the emulsion thickness on the print side of a screen be approximately 10–20% of the mesh thickness to achieve a good stencil.

This percentage is called the emulsion-over-mesh ratio, or simply EOM. When a stencil is too thick, it may not dry all the way through and will yield a weak stencil that is prone to premature breakdown. Another problem with emulsion that has been coated too thick is that it has a tendency to drip, usually onto the coated screens drying below it.

SCREEN ORIENTATION DURING DRYING

I have seen many screen shops over the years that do a good job at coating, only to fail miserably at drying the screen. All emulsion manufacturers recommend that the coated screen be dried horizontally, squeegee side up, so that the emulsion will level out on the print side of the screen and be thicker than on the squeegee side. This is a result of gravity pulling the emulsion to the print side of the screen. Since the emulsion will be in front of the mesh during exposure, you will have less mesh interference and less chance of mesh marks, sawtoothing, and other defects in your prints.

A few screen-printing shops use screens so large that they are impossible to dry in a flat or horizontal orientation. Instead, they must be dried vertically. Since gravity can't help produce a thicker stencil on the print side of the screen, that side usually must be re-coated one or more times. This will produce the desired EOM.

For drying, such large-format screens are typically leaned against a wall in a light-safe room, and a fan is used to move dry air toward the screen and accelerate the drying process. Some shops take this a step further and build separate rooms that are heated and climate controlled to dry the screens even more quickly.

DRYING COATED SCREENS

When is a coated screen dry? Is it dry after 10min, 1hr, 1 day, a week? The answer is simple: a screen is dry when the emulsion has turned completely from a liquid into a solid. The rate at which this transformation takes place depends on environmental conditions (temperature and humidity), as well as the coating thickness.

The key to drying is that all the water contained in the emulsion must be completely evacuated from the coating. This is generally

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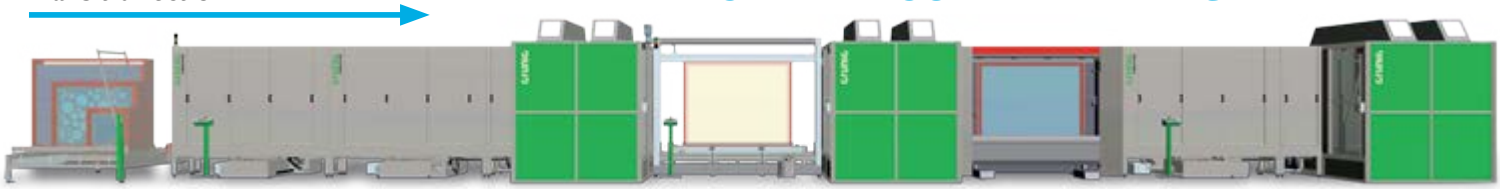

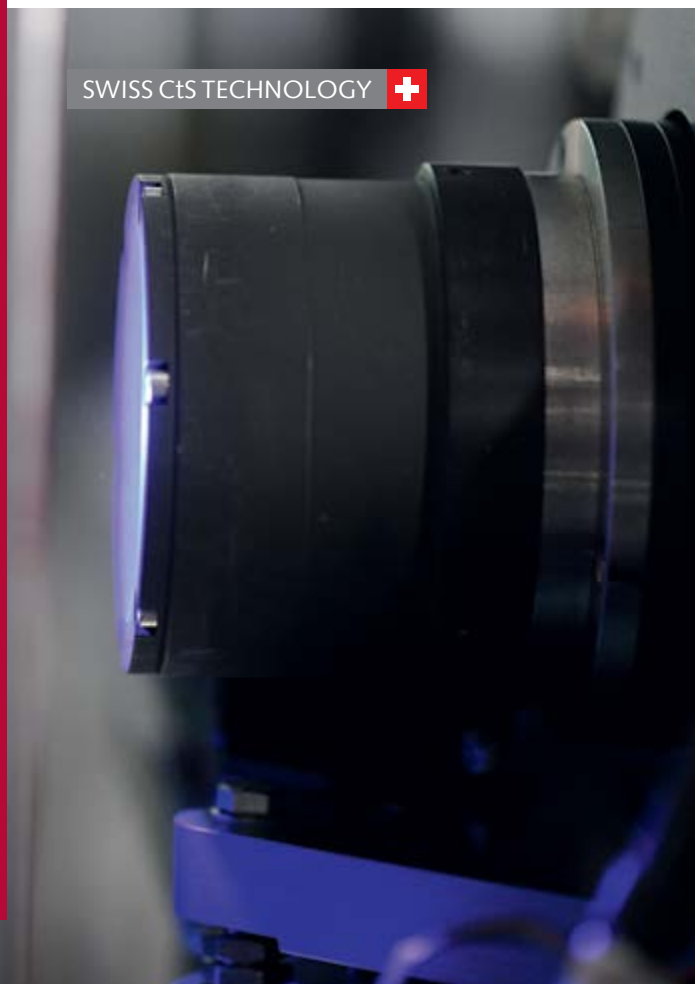

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accomplished by using heat, a dehumidifier, or both. A typical coated screen generally will be dry to the touch after one hour at 70°F (21°C) and relative humidity of 50%. When the drying environment is 100°F with 20% humidity, however, a coated screen can be completely dry in as little as 15–20 min.

To take the guesswork out of drying screens, you can use an instrument – such as Saati's TQM-Aqua-Check–to measure the moisture content of the emulsion coating. But what an instrument like this can't tell is what sort of stencil quality you can expect from the coating. The quality of the final stencil is largely determined by both the drying environment and the methods you employ in screen drying.

PROPER CONDITIONS FOR DRYING

Maintaining the proper drying environment means paying attention to several factors, including temperature, airflow, and lighting.

Temperature: Emulsion manufacturers typically recommend drying coated screens at a temperature around 110°F (40°C) because higher temperatures can have an adverse effect on stencil performance. All diazo- [light-reactive benzene diazonium] based emulsions are sensitive to heat. In fact, any temperature above freezing will start the decay of the diazo sensitiser in the emulsion (this sensitiser allows the coating to cure properly during exposure). The higher the temperature, the faster the diazo sensitiser decays and the greater the likelihood of exposure problems later.

When using either direct or indirect stencil systems, it's best to work in cool or ambient conditions to minimise this decay. It's also important to keep the temperature consistent, since abrupt temperature changes can alter the dimensions of the coating and lead to such problems as edge lifting and reduced adhesion in the final stencil.

The safest strategy is to always dry screens as quickly as possible after coating and avoid high temperatures.

Airflow: A few years back I talked to a screen maker who was having a great deal of trouble because his screens were taking more than three days to dry. After coating, he stacked the screens, squeegee side up, in a 'drying box.' This protective box was absolutely light safe and free of dust. The problem was that it was also airtight. Very little dry air could get in and very little wet air could escape, which caused the drying process to drag on for days.

Many types of drying cabinets can be used, from heated, thermostatically-controlled factory units to simple homemade ones. If you use such a device, just make sure that it provides good airflow, with an intake to draw in dry air and an exhaust for the wet air. When a drying cabinet is constructed correctly, it accelerates the drying process while saving space and preventing damage and contamination of coated screens.

Speaking of contamination, this is an especially important airflow issue for shops that dry screens in an open environment, such as companies that use large-format screens. As mentioned earlier, large-format printers frequently employ climate-controlled rooms in which they dry their large screens. They frequently accelerate the drying process by moving air around the room with one or more fans. The big problem with fans is that they not only push air around, but they push dirt, dust, and other debris along with it. A big wet screen is a giant target just waiting to be covered by this debris as it flies around the drying room. Therefore, if the drying room itself can't be made completely dust free, it's not a bad idea to at least put an air filter on the intake side of the fan(s). The filter will help capture these particles before they land on screens and become pinholes and other stencil defects during exposure or on press.

Lighting: When drying a coated screen, the drying area or cabinet must be completely dark, because any light – specifically UV wavelengths – that strikes the coated screens can cause the emulsion to begin crosslinking and pre-expose the stencil. If this happens, you'll be left with an unusable screen. Even filtered fluorescent bulbs will lead to premature crosslinking if the coated screen is exposed to the light for too long.

It usually takes hours before yellow lights create any serious pre-exposure. Still, it's not uncommon for coated screens to remain in drying areas with such lighting conditions for a day or more, which can lead to some significant problems.

Not only do yellow lights give off UV light, but over time, the yellow filtering material begins to fade. You'll notice the problem as a whitening of the bulb toward the ends, which is a sign that the bulbs should be changed. Testing devices are also available to check the light-quality of bulbs and determine whether they are emitting too much UV light.

Some screen printers ask if red safe lights are okay to use. Sure they are. But have you ever been in a darkroom with a red light on? It's almost impossible to see anything! These lights are designed for working with camera film, which is very sensitive to white light. For screen making, use yellow lights, which are easier on the eyes and allow you to see what you're doing. Just keep your screens away from them when you're drying emulsion.

CHECKING FOR HOT SPOTS

For those thinking about adding a factory-made screen-drying cabinet or making their own, heating is a consideration that deserves some attention. While most heated factory models have been tested to ensure that they will provide uniform temperatures throughout, homemade cabinets often incorporate a small space heater to facilitate the drying process. If the heater is poorly placed inside the cabinet, you will experience hot spots and wide temperature swings throughout the cabinet.

Screens directly in the path of a heater's output may get exposed to higher temperatures on one side than the other and end up with non-uniform drying across the coating. Also, if the circulation within the unit is poor, the screens on the lower levels are likely to be subjected to a lower temperature, while the screens placed higher up get damaged from excessive heat that rises to the top. Make sure that the cabinet you use has both adequate airflow and heat displacement to prevent these conditions.

To ensure your heated drying cabinet works properly, get a thermometer and measure just how hot the cabinet gets. Check for hot spots by taking multiple readings in several locations throughout the cabinet.

ONE MORE PIECE OF EQUIPMENT

In most screen-making rooms, including those with automated drying cabinets, one important piece of equipment that will greatly improve the longevity of coated screens is usually missing. That piece of equipment is a second cabinet for holding the dry screens. This cabinet protects the screens from premature exposure and guards them from excessive heat while freeing the drying cabinet for processing additional screens.

Another function served by such a storage cabinet is that it allows screens to adjust to the shop's climate prior to exposure. Screen frames often expand and contract in response to temperature changes, and humidity can affect the stencil by causing it to swell. If screens aren't allowed to acclimate prior to exposure, distortion of the stencil image and registration problems become much more likely. Giving screens time to adjust in a protective cabinet is an easy way to avoid these problems.

SWEET REWARDS

In order to make a high-quality stencil, it is important to maintain proper drying conditions in your shop. Be sure to dry your coated screens in an environment that is dust-free; protect them from UV light, and dry at low temperatures to prevent premature crosslinking of the emulsion. Also ensure your drying area or cabinet has adequate airflow and that you control temperature and humidity throughout your operation. Finally, use dried screens as soon as possible or store them in a light-safe storage area or holding cabinet. By following these suggestions, you can eat your cake and dry a screen, too. ■

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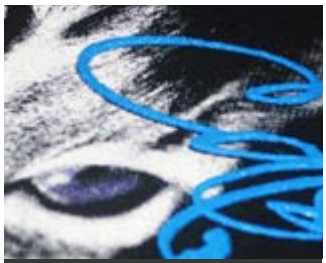

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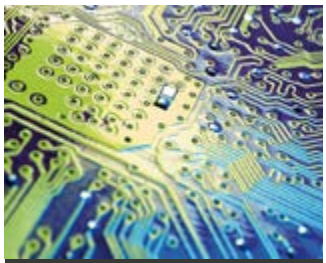

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MESH MATTERS

Patrick Brunner discusses screen printing mesh geometry and selection

Screen printing mesh is usually not specifically in the focus of the screen printer. It is assumed that the screen printing mesh does the job without hesitation. However, in order to achieve the greatest possible process reliability in printing practice, it is advisable to take a closer look at the parameters around the mesh for screen printing.

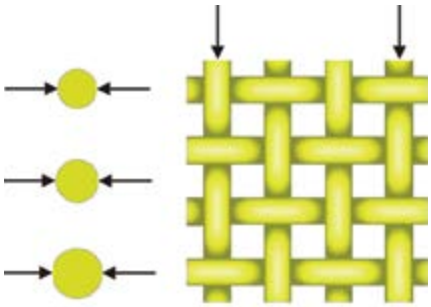


Figure 1: Yarn diameter thread count

Figure 2: Mesh thickness

Every screen printer knows that it is advantageous to use a coarser mesh type for high opaque printing areas and a fine mesh type for fine details. If there are still printing problems, it is usually sufficient to adjust the ink setting. Nevertheless, the limits regarding resolution of fine details, the maximal printable particle size or the achievement of a particular ink deposit are set by the screen printing mesh type. For this reason, we believe that taking into account the factors which lead to an optimal mesh selection will help to avoid unpleasant surprises, thus allowing greater process reliability in printing.

1. REQUIREMENTS FOR SCREEN PRINTING MESH

From a screen printing mesh, we expect a good stencil carrier, which reflects the applied printed image without interference even at high print runs. The screen printing mesh should ensure optimum ink release, so the printed ink layer thicknesses should be constant according to the mesh type within a print run. Fine lines and halftone printing require continuous precision to achieve a smooth image. High mechanical strengths are necessary in order to ensure a constant print image and exact registration in multi-colour printing, even over long print runs. High chemical resistance is required in order to keep the screen printing mesh resistant to a wide variety of ink/paste systems or when multiple times of coating and stripping are desired.

2. MESH GEOMETRY

The base of the mesh geometry is the number of threads and the thread diameter. The number of threads is given in threads / cm or threads / inch and the nominal thread diameter of the unwoven thread in microns – see **Figure 1.**

From these basic elements, all other screen printing relevant values result such as mesh thickness (microns), mesh opening (microns) and open area (%) – see **Figures 2, 3 & 4.**

The mesh opening limits the printable particle size, this should be at most one third of a mesh opening, preferably one fifth (**Figure 5**).

Smallest printable dot: The combination of thread diameter and mesh opening limits the fineness of the smallest printable dot. This should not fall below a minimum of two threads and one mesh opening – see **Figures 6 & 7.**

Finest printable line: It becomes more difficult when the finest printable line has to be defined, as this also depends on the ratio between yarn diameter and mesh opening.

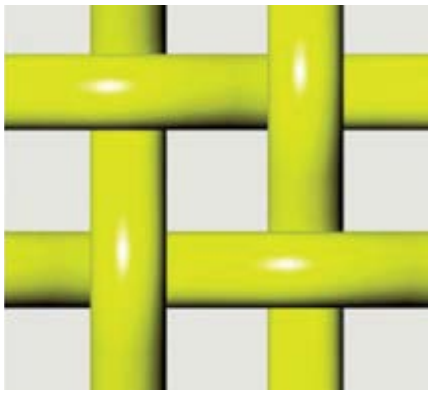


Figure 3: Mesh opening

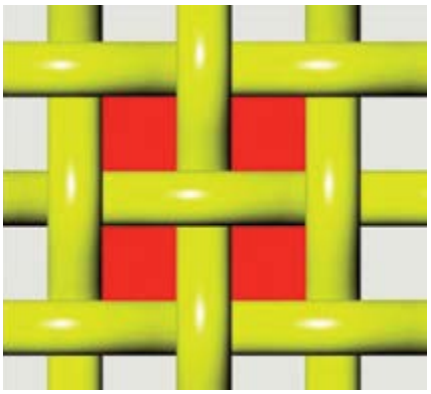
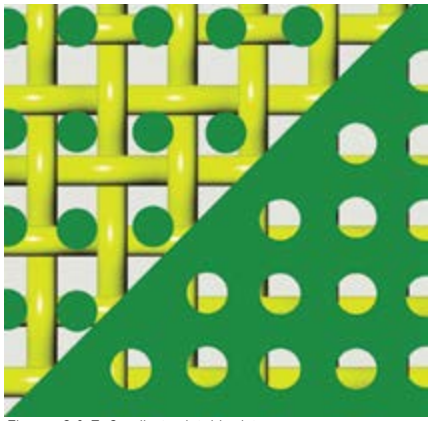
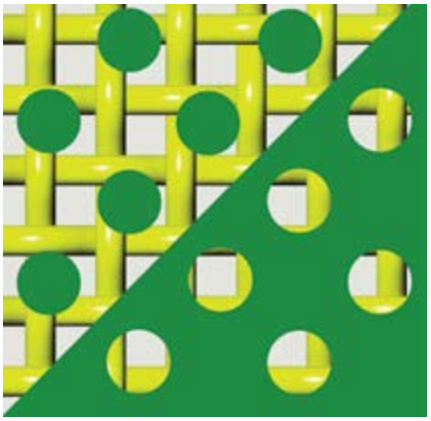


Figure 4: Mesh open area



Figures 6 & 7: Smallest printable dots



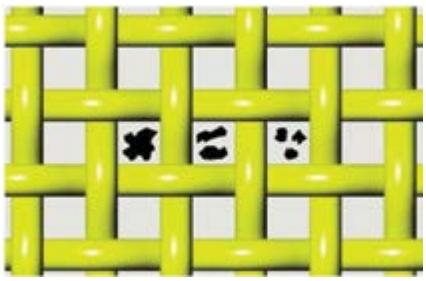


Figure 5: Printable particle size

Figure 8: Finest printable dots

Because lines follow often almost parallel to the threads, it is recommended to include at least two threads and two mesh openings for the finest printable line – see **Figure 8.**

The constancy of the line thickness also depends heavily on the coating quality of the stencil, on the resolution of the used emulsion and the printing template.

The theoretical ink volume is calculated from the open area and the mesh thickness. The theoretical ink volume can be used to calculate the approximate ink consumption (+/ -10 %), and it is also helpful as a comparison between the different types of meshes in terms of ink deposit. The theoretical ink volume in cm^3 / m^2 corresponds approximately to the wet ink deposit in microns – see **Figure 9.**

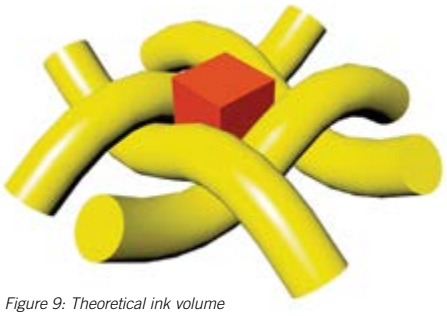


Figure 9: Theoretical ink volume

All these mesh parameters can be read from the article lists of the mesh manufacturers, so they do not need to be calculated, except for the ink consumption. If you look at the ink volumes in these technical lists, you will discover that they range in fine gradations from 5 to 323cm^3/m^2. This is also a reason why plastic bottles or tubes are often decorated by screen printing. For example, Sefar PCF 120/305-34Y can be used for high dense sharp edged base layers or Sefar PCF 180/460-27Y for fine characters or halftones. A Sefar PET 1500 32/83-100 may be used for relief print on labels for wine bottles. Opaque and dimension stable ink layers for dials are offered by Sefar PME 120/305-35Y.

Why different yarn diameters with the same number of threads? (See **Figure 10**.) The answer to this question arises from the priority requirement of the print job. It is advisable, for example, to select the mesh with the thinnest threads for finest lines to avoid blockage or loss of line thickness in the event of parallelism between the thread and the line to be printed. When printing halftones, the mesh with the average thread diameter is more likely to be favoured, since this has a balanced ratio between yarn and open area. The thread surface area allows optimal

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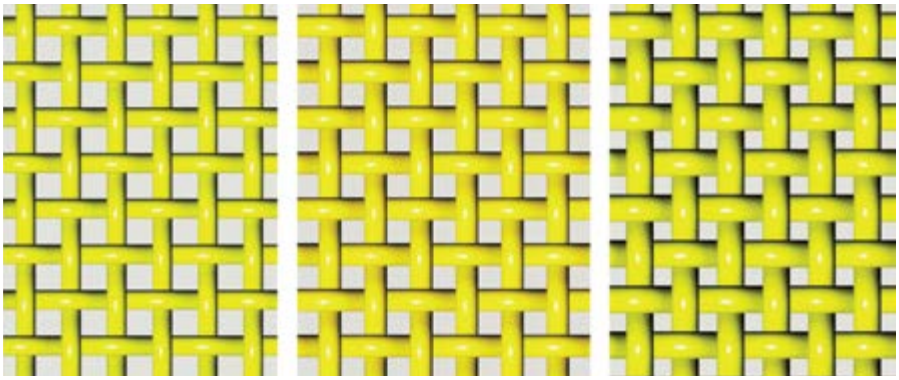

Figure 10: Thread count vs diameter

anchoring of the dots in the three-quarter tonal values, without [adversely] affecting the ink release in the highlights. Mesh types with thick threads and small mesh openings guarantee high tension values and high durability. Also, ink consumption can be significantly reduced.

3. WHITE OR DYED MESH?

White/undyed mesh has the disadvantage that UVA light – in which the photosensitivity of the screen-printing emulsions is located – is reflected by the thread surface, which leads to undercut the film positive in the copy. This undercutting causes quality losses in the edge sharpness of the stencil. Therefore, white mesh cannot be recommended if sharp edges or fine details are required. Yellow dyed mesh converts the UVA radiation to yellow light; the UVA light is absorbed by the thread, as yellow is almost at the other end of the visible colour spectrum. (See **Figure 11**.) The yellow-reflecting light does not affect the emulsion, so there is hardly any UV-A light scattering, which results in sharp printing edges. The only drawback of dyed mesh is the almost doubling of the exposure time.

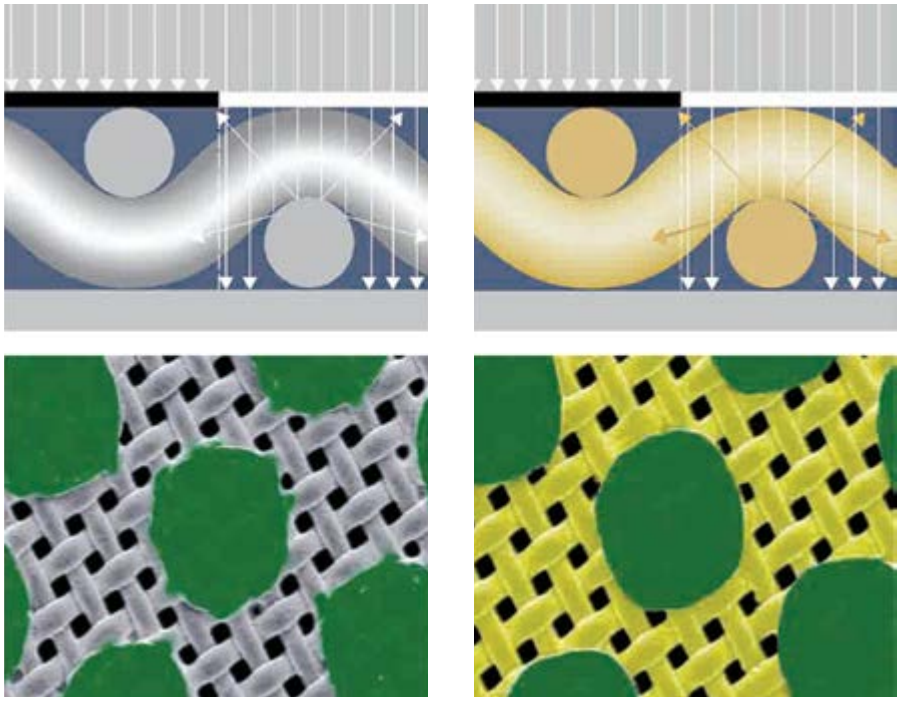

Figure 11: Mesh white vs yellow

W = **W**hite
Y = **Y**ellow
PW = **P**lain **W**eave 1:1
TW = **T**will **W**eave 2:1, 2:2
OSC = **O**ne **S**ide **C**alendered

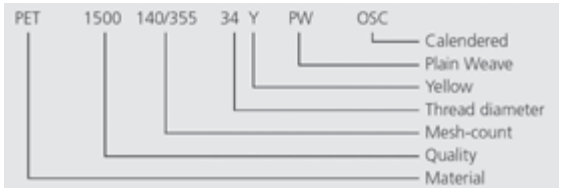

Figure 12: Mesh designation

4. MESH DESIGNATION

See **Figure 12** for an example of the mesh designation used in the Sefar article list.

5. MESH ELONGATION

A precision mesh geometry can only be maintained in combination with a balanced low elongation. This allows a reliable stencil making process and optimises the reproducibility of the ink deposit as well as the dimension stability in print.

The Sefar mesh range offers product lines with different stretching characteristics. For additional support, see Sefar's 'Mesh Selection' leaflet or contact your local Sefar mesh supplier. ■

Patrick Brunner is Product Manager at Sefar

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TROUBLESHOOTING

Terry Kimrey and Steve Noland tackle some common printing issues

Use Dyne test kit to confirm substrate is suitable for printing

Confirm cure unit energy output with a regularly calibrated radiometer

In a perfect world every print job runs with ease. The same job runs the same the third time as it did the first and second time. In the real world problems arise that have people scratching their heads. During any printing process there can be multiple things that could go wrong. How do you know if the problem is ink, substrate, equipment or a combination of constituents?

This article leans toward screen printing; however, some issues and suggestions expand to other printing processes as well. Downtime costs money no matter what printing process you are using. Understanding and locating the problem quickly can minimise downtime and keep the print shop moving forward. Let us look at common issues for suggestions that may be useful in the print shop.

ISSUE : Ink adheres to some areas of the substrate but not others, or intermittent adhesion failures

Troubleshoot: The first thing to do when printing on polyethylene or polypropylene is check the dyne level of the substrate in multiple areas. If a piece of substrate has a surface tension of 45 dynes in the right hand corner, that does not mean the surface tension in the middle is 45 dynes. So what causes dyne levels to decline? Dyne levels of substrates can be affected by heat, humidity, chemical contamination and substrate age. The way to check substrate dyne level is by using dyne testing solutions or dyne pens.

Treat the substrate with low dyne levels by flame treating or corona treat the print surface of the substrate. If an acceptable dyne level cannot be achieved by flame or corona treatment, the substrate may be past its shelf

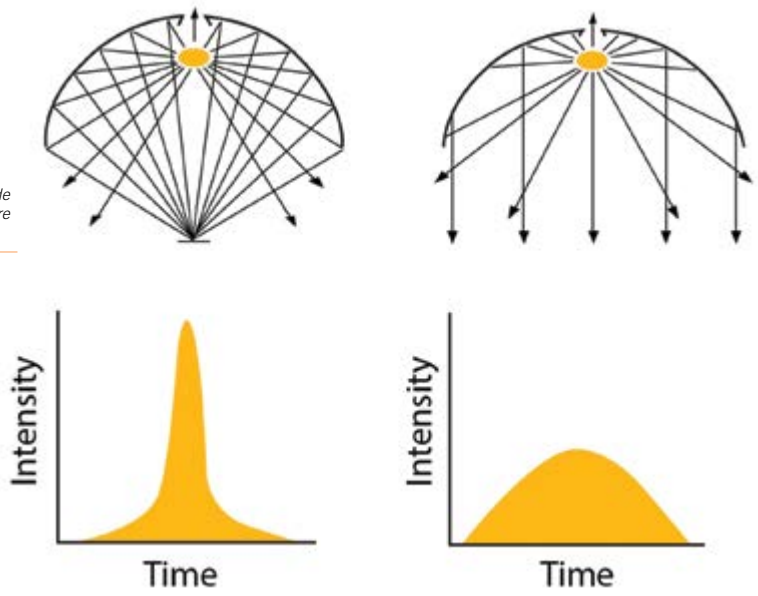

Figure 1: Focused lamps provide optimum cure strength

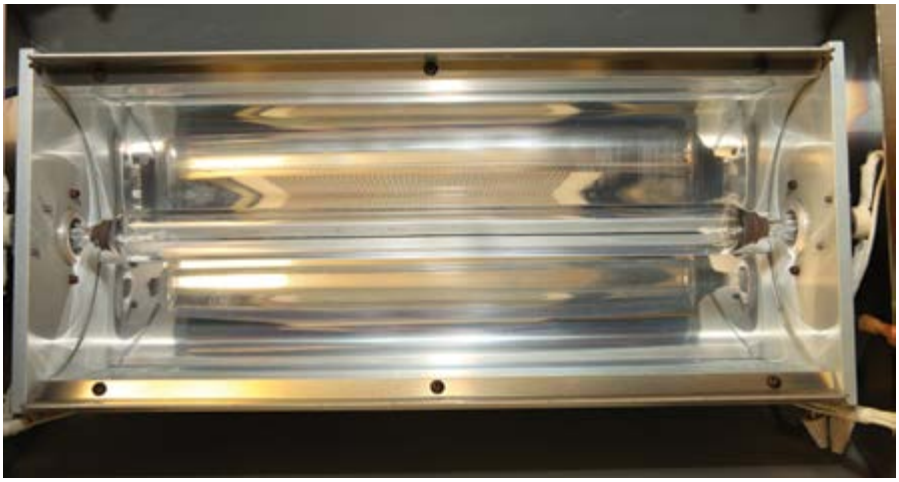

Figure 2: Example of well-maintained UV Lamp

life and become unprintable.

Vinyl substrates can exhibit plasticizer migration or diffusion. Plasticizers are additives that give vinyl substrates flexibility and reduce brittleness. Plasticizer migration happens over time in a vinyl substrate as the plasticizer comes to the surface of the substrate. In extreme cases, this may look like a waxy or oily substance on the surface of the vinyl.

Plasticizer migration can be addressed by wiping the substrate with isopropyl alcohol (IPA). Wiping with IPA will remove the plasticizer residue from the substrate surface, making the substrate printable again. If a large amount of plasticizer has migrated to the surface of the vinyl, after wiping the substrate with IPA, check for signs of brittleness as the vinyl may be past its shelf life.

If the dyne levels are fine, the cause of the issue could be cure related. First, check the output of the UV lamp with a radiometer. This should be done in at least three different sections of the bulb (left, middle and right). Issues with a UV lamp not emitting enough energy can result from the bulb sagging and causing the reflector to not properly focus the light, a dirty reflector, an old bulb not emitting enough energy, or a bad capacitor.

The use of a radiometer is the best way to troubleshoot UV reactor issues. Radiometers read the light intensity of a UV reactor. The radiometer software will give you a curve of the UV lamp output. The UV lamp curve should come to a peak or point like the image labelled 'focused' in **Figure 1**. If the curve does come to a peak but there is low output or intensity, the fix for this may be as simple as cleaning the bulb and reflector.

Figure 2 is an example of what a clean bulb and reflector should look like. A clean bulb and reflector should be free of any fingerprints, dust, dirt, and haze. A clean bulb should be clear and the reflector should have a mirror like finish. If the bulb and reflector does need to be cleaned, take care not to touch the bulb with bare hands. The oils from your hands can cause damage to the bulb. Use a lint free cloth with a fast evaporating cleaner such as Isopropyl alcohol to clean both bulb and reflector.

If cleaning the bulb and reflector does not help then the bulb may be bad, the reflector may need to be replaced, or the capacitor could be bad. Change the bulb to see if that helps. If it does not help, try replacing the reflector. If that does not help, have an electrician check the energy output of the capacitor to determine if this is the issue.

If the curve is slow and gradual, like the image labelled 'unfocused' in **Figure 1**, it means that the light is not focused. This could be due to a sagging bulb or the lamp assembly is too close or too far away from the unit's conveyer belt or carrier table.

ISSUE 2: A multiple layer print, ink is not adhering to the underlying layer of ink or the top layer of ink is tacky

Troubleshoot: Both issues go hand in hand, and most of the time it is because the first layer of ink was not cured or dried properly. First, check the initial layer of ink by doing a thumb twist on the ink surface. If it smudges easily, the ink is not properly cured or dried.

For proper cure of UV inks the UV reactor may need to be turned up to a higher output setting or the belt speed may need to be slowed down. Also check the UV output if the ink was curing on a previous run at the same settings. Keep in mind that darker colours and highly pigmented inks will need more energy for proper cure.

For conventional inks the bake cycle may not be hot enough, the dwell time may be too short or there is not enough air circulation to properly remove the solvent. With conventional air-dry inks the dry time may need to be adjusted due to seasonal weather changes. Thicker ink deposits will need additional time to properly evaporate the solvents from the ink film.

In some cases, additives such as a catalyst can cause this issue. The catalyst will create a harder ink surface that can be difficult for other layers of ink to adhere to. Adding the same additive or catalyst to all ink layers can alleviate this problem in some cases.

Continued over

Wear gloves during clean-up process, to reduce risk of skin irritation

Reducing the amount of time between printing multiple layers is also a good idea. UV inks will continue to cross-link over time. If too much time elapses between ink layers, the ink may have crossed-linked to such a hard surface that it will no longer accept ink.

Conventional inks can also cure to a level that becomes too hard. Conventional inks can be tricky when it comes to timing the next layer. You do not want to wait too long, but make sure that most of the solvent or water has evaporated. If a layer of conventional ink is printed before the underlying layer has dried, it could cause improper laydown, adhesion or drying as you are trapping solvent in the underlying layer. Test each layer of ink for the desired results before continuing with the entire print run.

ISSUE 3: Ink is curing/drying in the screen

Troubleshoot: UV ink can react to any source of light emitting UV rays. This includes windows, overhead lighting and light escaping the UV reactor. Overhead lighting may need a filter cover. If the light is coming from the UV reactor, contact the equipment manufacturer to see if they have a cover of filter for the reactor.

Adding a slow evaporating thinner or retarder to a conventional ink will help slow drying in the screen. Only enough ink to print for ten to fifteen minutes should be added to the screen at one time and fresh ink should be added frequently during the print run.

Clean hands after every use, to reduce risk of skin irritation

Scooping ink that has made its way to the side of the screen back into the print area periodically is a good way to keep stagnant ink from drying or curing. Covering the print screen during breaks is also a good practice, and keeping the screen flooded helps keep fine areas in the screen from getting clogged.

ISSUE 4: Ink is causing my squeegee to swell and or degrade

Troubleshoot: Squeegees have pores and the more often you use them the more those pores can swell and become susceptible to solvents. Rotate squeegees often, and once you have cleaned it with solvent, allow at least 24 hours for the squeegee to recover. Another good practice during a print run is to wipe the ink off the squeegee with a clean dry rag when idle.

Not all squeegee material is appropriate for UV inks or conventional inks with aggressive solvents. Make sure the squeegee you are using is designed for the ink with which you are printing.

ISSUE 5: Inks are causing eye, nose, or throat irritation

Troubleshooting: The most common cause is poor air circulation. Solvent inks dry by solvent evaporating from the ink film. It is very important to have good ventilation when printing solvent ink to remove the solvent out of the workplace.

UV inks have little to no volatile organic compounds; however, they can still release things that can cause irritation to the skin, eyes, and throat. Therefore, good ventilation is needed even with UV inks.

Just moving the air is not sufficient. A way to remove the air and circulate fresh air into the workplace will alleviate irritation most of the time.

Skin irritation is more common in the summer months when temperatures rise. This is because the heat opens the pores of your skin and sweat can trap solvent and allow it to stay in contact with the skin. Washing exposed skin often will help with irritation. DO NOT wash off ink with solvent. Using a soap such as Dawn dish soap is recommended.

ISSUE 6: Black and white UV inks cure fine, but a grey mixing the two colours will not properly cure

Troubleshooting: This issue is called windowing. White inks block certain wavelengths of the UV light output and black inks block other wavelengths. When the two colours are mixed, the UV light output needed to cure the ink is blocked by both colours and can cause curing issues.

Using mixing clear to reduce the opacity of the grey can help UV energy penetrate the ink film and cure the ink. Using colours other than black to create a grey can also help windowing.

ISSUE 7: Ink is cracking when the substrate is bent

Troubleshooting: This can be caused by a few things. The first thing to check is the substrate surface. There may be micro cracking in the surface of the substrate even before ink is applied. If the substrate is cracking, more than likely, the ink will crack along with the substrate.

If the substrate looks good, then check if the correct ink is being used. The ink being used may be designed for rigid substrates. Inks designed for rigid substrates will often have hard surface properties that result in poor flexibility.

If the proper ink is being used, the problem may be too many ink layers. The fewest number of ink layers will be the most flexible as shown in **Figure 3.**

Using a finer screen mesh or adding thinners or reducers to create a thinner ink deposit can help cracking issues. There may be a flexiblizer additive that can be added to the ink. This should be the last resort as flexibilizers may cause blocking, scuffing, or cure issues.

These are just a few issues that can come up in a print run that can be resolved if you know what to look for. Understanding the relationship between substrate, ink, processing, and final application is a great way of creating a successful print job from start to finish. Contact your substrate or ink supplier's Technical Support Team for more information on these and other issues. Nazdar's Technical Support can be reached at inkanswers@nazdar.com. ■

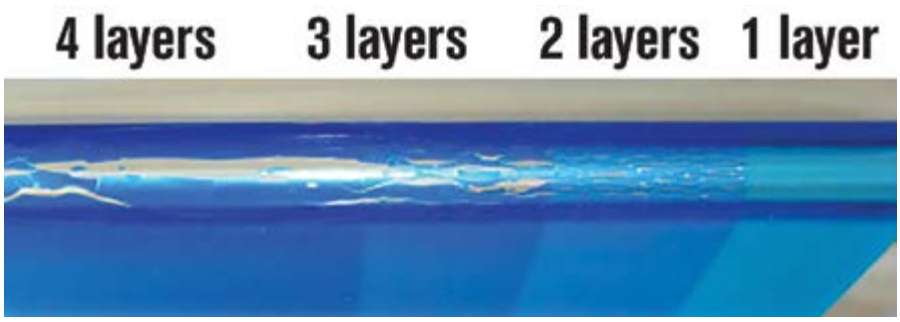

Figure 3: Increase ink cracking with increase layers

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AQUA ADVANTAGE

Alexandra Riese and Matthias Schieber show how water-based digital inks are gaining ground

Water-based inkjet inks are in greater demand than ever before, which is why the market is reporting a lot of catching up to do. The focus is on the digital printing on products that come into contact with human skin or foodstuffs.

In close cooperation with the industry, Marabu develops water-based inkjet inks for flexible packaging in the food industry, for cardboard boxes, toys (fulfilling the EN71/3 standard) or digitally printed wallpapers.

PRINTING FLEXIBLE PACKAGING

Flexible packaging is used for food products to protect, market and distribute them. Printing is done directly on the packaging material. Flexible packaging adapts to the shape of the product; it is easy to change, user-friendly and material-efficient.

Advantages of water-based inkjet inks:

- Suitable for food packaging (compliant with EuPIA 'Swiss Ordinance on Food Contact Materials and Articles' and 'Nestlé Guidance Note on Packaging Inks')
- Multilayer packaging
- Laminating and welding capability

WALLPAPER PRINTING

Individually printed wallpapers hang in living rooms, schools, kindergartens or at the workplace. Therefore wallpaper printing should be odourless and free of harmful substances.

Important for wallpaper manufacturers and consumers: Marabu's water-based digital printing inks guarantee that the end product is certified according to DIN 15102 and RAL 479 (quality mark for wallpapers).

Wallpaper printing should be odourless and free of harmful substances. Copyright: Marabu

Advantages of water-based inkjet inks:

- No VOC evaporation
- Cost-efficient for small series and medium runs
- Endless motifs and motif variants possible
- Gloss level precisely matched to wallpaper

PRINTING ON PAPER, CARDBOARD AND CORRUGATED BOARD

In the case of cardboard boxes, there is a high risk that the printing inks used will be absorbed. Production and processing suffer. Water-based printing inks are suitable for flexible, environmentally friendly and compatible cardboard packaging and folding.

Advantages of water-based inkjet inks:

- High colour brilliance even on non-pre-treated cardboard boxes
- Highly flexible ink film, thus no stress whitening during punching and creasing
- Low substrate penetration

As its water-based inks demonstrate, Marabu is constantly expanding its digital printing portfolio. The enterprise develops its products by harnessing insights gained from extensive hands-on experience, and its knowledge of interactions between polymers, pigments, and water as the primary solvent. Product Manager Matthias Schieber, responsible for water-based inkjet inks at Marabu, explained: "We focus on project-driven development, tailoring our inks in line with the customer's specific requirements. This approach ensures we achieve the best-possible results." ■

Water-based inkjet inks are suitable for food packaging. Copyright: photographee.eu/Fotolia

Matthias Schieber is Product Manager and Alexandra Riese works in Marketing & Communication at Digital Inks

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FINISHING WITH A FLOURISH

Claudio Moffa examines the benefits that inline foiling brings to screen printing embellishment

Research has shown that packaging which is printed with laminated graphic finishes has a greater capacity to capture the consumer's imagination and to positively influence the purchasing decision. The finishing of the printed materials is recognised as a key component of the commercial strength of a product and as a result is a variable to act upon, to increase product penetration in a given market.

This type of finishing process can be achieved through two types of lamination: hot or cold. In both cases the existing technologies involve pros and cons.

COLD VS HOT

In cold laminations, where the primary advantage is the possibility of the lamination being performed during the printing process, and destined for temperature-sensitive materials, there are significant disadvantages:

- Very thin lamina effect (< 1 micron) which appears like a metallic colour
- Low foil optimisation

In hot print processes however, the gloss, tactile effect and 3D structure offer a wide variety of metallic effects and an excellent holographic finish. In the face of these benefits with the existing hot technologies, it is important to consider the time of mould setting and subsequent costs.

LUXURY QUALITY METAL

Specialising in offset and screen printing technologies, Japanese company Sakurai has launched its inline LQM 105 Luxury Quality Metal in response to growing interest towards the finishing of printed materials, and to help add value within the customer's production cycle and provide the advantages of hot stamping while avoiding the main side effects.

The LQM 105 Luxury Quality Metal 3D Foiling Machine allows customers to enjoy the advantages of hot stamping while avoiding the main side effects

Integration within the screen printing process allows laminates from complex geometries and 3D volumes to be applied to printed materials with an innovative process that is characterised by simplicity, economy and that is able to generate exceptional finishes on any material. The acronym LQM 105 stands for 'Luxury Quality Metal', because the process effect is that of a cast metal.

Sakurai's LQM 105 technology is not based on a digital variable data system, making the system easier to use and very economical on medium and long runs. With no related extra costs and implementation time, LQM allows customers to achieve unique definitions up to 2400dpi.

The foil can be applied anywhere on the sheet, on any type of material - paper, wood plastic board and many more – and with a degree of standard detailing impossible to match by other conventional methods.

Sakurai's Analogue Enhancement Solution produces a highly visible and tactile effect

ADVANTAGES OF LQM TECHNOLOGY

- LQM printing can be performed inline during the printing process, without disrupting the continuity.
- The use of the machine does not require specialised knowledge and the quality of the accuracy is always guaranteed.
- Only a screen printing frame is required. No additional moulding tools are needed.
- It allows printing on multiple materials and printing takes place directly on to the sheet.

LQM 105 stands for 'Luxury Quality Metal' because the effect is that of a cast metal, such as this metallic gold finishing

- The machine is equipped with three foil saving systems and therefore allows a high optimisation of materials with minimum waste:
  a) Sheet indexing (stopping the foil between sheets)
  b) Image indexing (function that stops the foil between the images on the same sheet)
  c) Zone foiling: using up to four foils rolls simultaneously; min. width 50mm
- Production cycle up to 1,500pcs/h.
- Maximum sheet size B1.

The LQM 105 3D Foiling Machine has sturdy and solid components that ensure accurate production and impeccable printing solution. Users will be able to offer their customers access to a finishing operation that goes beyond the usual spot painting, without having to outsource this phase of the process, therefore, optimising production costs and increasing quality control on results.

SAKURAI SMART FACTORY REVOLUTION

Motivated by the Industry 4.0 panorama, Sakurai's solutions meet the requirements of this new protocol, which intends to drive the international industrial structure towards a greater degree of automation and possible interconnection. To align with this new industrial revolution, Sakurai produces perfectly interconnected machines that communicate remotely with a directional headquarter transmitting in real time the information related to the production cycle and to the electronic mechanical status of the production station. The network connection of the machines allows the central management to interface with components such as PLCs, motors and various sensors and thus have access to the results of operations, to routine and preventive maintenance data, to the register of operations of the production plant, to alarms, control signals, and to generate a real database from this information.

Operating results such as print time, stopping time, handling speed, number of alarms and other data are collected in real time and analysed by managers to direct the distribution of the work while optimising it. Furthermore, the monitoring of machines through mobile terminals such as smartphones and tablet PCs allows administrators and maintenance personnel to quickly resolve any problems, even remotely.

Sakurai invites customers to visit the Tech Hub at its London Showroom and Testing Centre to experience, experiment with and refine the use of its technology. ■

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ALIVE AND KICKING

Marc Hermans lists 10 things signmakers and large format printers should consider when investing in RIP software packages

At the beginning of the digital age, the RIP was the premier tool of printers and repro houses. Today, output devices take centre-stage along with file sharing, remote access and Cloud storage applications. However, RIPs still matter – a lot – indeed, print quality depends upon it.

So, what should large format print providers and signmakers look for when choosing a RIP?

1. DO BUNDLED RIPS OFFER GOOD VALUE?

Value is in the eye of the beholder. There are many excellent RIP software packages from leading suppliers bundled with printers. A bundled RIP/printer purchase is a good way of ensuring compatibility, but users should look beyond the headlines and the price tag. One important thing to remember is that this is a business decision as well as a technical one. What is your business' USP? Fast and cheap; top quality in everything; or somewhere in between? Do you need to consider the ability to add more printers or a cutter in the foreseeable future? These factors should influence your buying decision.

2. DO YOU KNOW WHO MADE THE SOFTWARE BUNDLED WITH THE PRINTER?

Is it branded and supported, or vanilla and anonymous? What's the track record of the supplier?

Knowing the origin of your software will inform your decision. If it's proprietary to the large format printer supplier, find out as much as you can about support, upgradeability, scalability, and flexibility. If you can't learn anything about the supplier of your RIP, should you trust your business with it? How will you handle a colour management problem? Where will you go for support? If the manufacturer is 10,000 miles away, where do you think the software supplier is?

If you really love the printer, find out if it will run RIP software from a supplier with whom you are familiar.

3. WILL IT ENABLE YOUR BUSINESS TO GROW?

Does the RIP software package offer the features, versatility and flexibility your business needs?

To play golf well, you need more than just a nine iron. Look for the tools you need to do the job well. Look also for things that you may need in the future: How easy is it to add new devices? Our industry-renowned Flexi software, for example, offers a comprehensive suite of tools to give large format print providers and sign-makers maximum versatility. Are there applications missing that you may need? Alternatively, you may not need a lot of bells and whistles; in which case a more basic, but robust, RIP will be more cost-effective – but double-check its upgradability and support!

4. HOW WELL WILL IT INTEGRATE INTO YOUR BUSINESS?

Look for RIP software that will support the majority of your equipment. For example, if you do a lot of banners, and have more than one printer and perhaps a cutter, you may need a RIP software that can combine these functions and drive all your devices. It will simplify operation, streamline workflow, and minimise training. You don't want little islands of different software in your production shop.

5. WHAT SUPPORT IS AVAILABLE?

Who is it from? How well supported/trained are they by the supplier?

For busy large format print providers and signmakers, these are crucial questions. Support teams don't exist just to fix unexpected problems, though how fast and how well they do it is extremely important. They can provide expert knowledge in configuration, workflow efficiency, information on industry trends, application and product advice as well as business development consultancy. A good software reseller will want to build a relationship, not just send you some CDs and move on to the next sale. Learning about the support offered before investing should be high on your checklist.

6. DOES IT INTEGRATE INTO CNC MACHINING SOFTWARE TO ENABLE 3D SIGN PRODUCTION?

Large format sign and display production is increasingly about differentiating your customers from their competition. Requests for the new and novel will only increase. Demands for new materials, colours, and formats will keep the pressure on your production team. High on the list of the growing trends is sign production using CNC machining. Some RIP software packages for signmakers now offer this capability. For example, the new SAi +EnRoute for Flexi simplifies file clean-up and toolpath preparation of 2D or 2.5D Flexi design files

Marc Hermans, Director of Sales, EMEA at SAi

SAi's MyCloud Mobile App gives business owners access to job status, information and production

EnRoute for Flexi from Sai enables CNC sign production

for CNC output. Making CNC sign production (2D, 2.5D or 3D) part of your offering and promoting it to your customers is an opportunity well worth exploring before deciding on a RIP package.

7. DOES IT REQUIRE A MAJOR CAPITAL INVESTMENT?

Are subscriptions and other purchase options available?

Buying a RIP can be a major investment, and the cost can even prevent companies from upgrading to the RIP software package that is best for their business. A monthly subscription is a much cost-effective option, and can be a small revenue expense rather than a large capital cost. SAi introduced the first subscription-based RIP software, offering subscription periods of as little as one month for maximum flexibility and value. Moreover, subscribers have all of the latest features, so they are using the best and latest available.

8. HOW EASY IS IT TO UPGRADE?

As all signmakers know, nothing is static. New features, new demands, new materials and colours all mean that an ability to upgrade is essential. How expensive this is, and how easy it is to do are important factors, and may be closely related. An inexpensive software upgrade that requires a lot of downtime is less good value than a more expensive one that can be installed quickly. This problem does not exist with subscription software that is always up to date.

To stay competitive, you should always keep your RIP software up-to-date. If you don't then you are giving your competitors down the street some serious advantages because they will have the latest features that make their production more efficient. For example, Flexi 12 includes an automated online Artwork Approval, which helps sign and print business turn jobs quicker and get more sales. Businesses without that feature are not as competitive.

9. DOES IT HAVE CLOUD CONNECTIVITY?

What other value-added services are available?

More and more work is done away from the office, and it is important for managers to be able to view work in progress and collaborate in multiple locations. A cloud-enabled RIP software like Flexi enables safe job storage and collaboration of sign design. Also, mirroring the trend to be away from the office, SAi's Flexi Cloud mobile app, the first to be introduced, gives business owners access to job status, information and production trends from virtually anywhere to keep them in control of their business.

10. WHAT IS ITS SPEED CAPABILITY?

Does it have the ability to output for multiple devices?

Understanding the 'sweet spot' of a large format RIP software package will help you make a decision. It should correspond closely to the type of work you do in terms of speed, quality, functionality and output requirements. If price were no object, what would you buy? Try to find something as close to that as possible. Remember, good enough today just might not be good enough in six months' time.

RIP software remains an important consideration and can have a long-term effect on your operation. Making the right choice will enable you to get the most from your hardware, and from your business. ■

Marc Hermans is Director of Sales, EMEA at Sai

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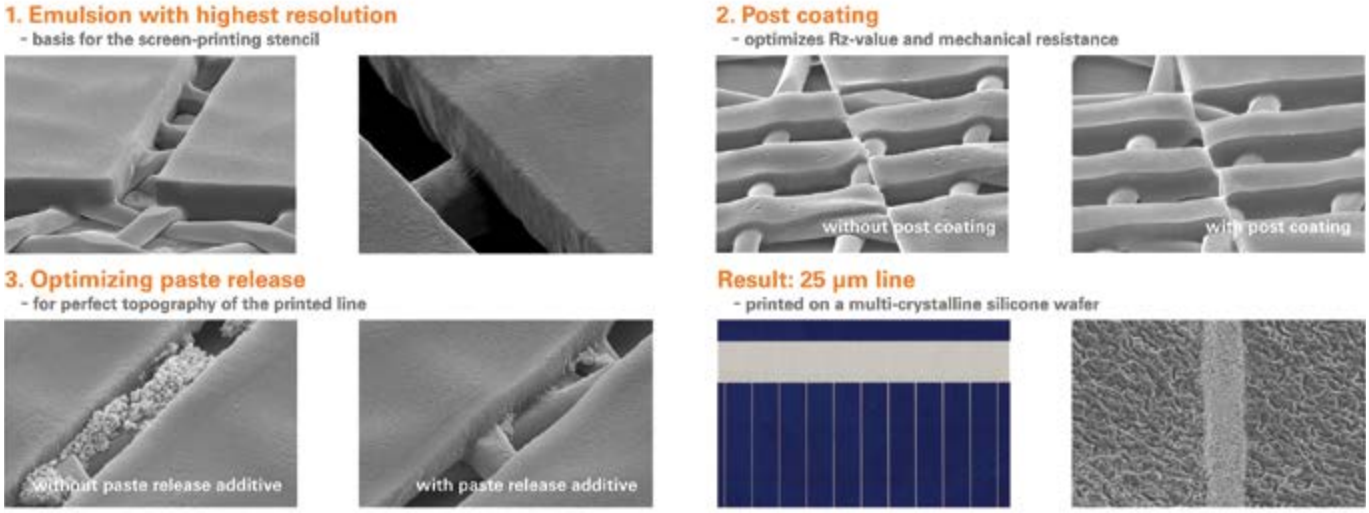


Figure 1: KIWO system chemistry – step by step guide to the optimum stencil

A FINE ART

Katrin Oehrle explains fineline stencil chemistry

The primary goals of crystalline photovoltaics are to lower cell costs while increasing their efficiency. Screen printing makes a considerable contribution here, as it enables ever-narrower conductive fingers to be achieved at high process speeds on the front side of the solar cell. This and also the miniaturisation of functional prints, for example in electronics, place very high demands on the screen printing stencil. So that the resolution of such fine lines not only occurs in the stencil, but is also able to subsequently function in print, all the stencil production parameters must be perfectly coordinated with each other.

The stencil chemistry used plays a decisive role in the first place. For this application, Kissel + Wolf offers a comprehensive system, since in this complex area of screen printing, a single coating with emulsion is often no longer sufficient.

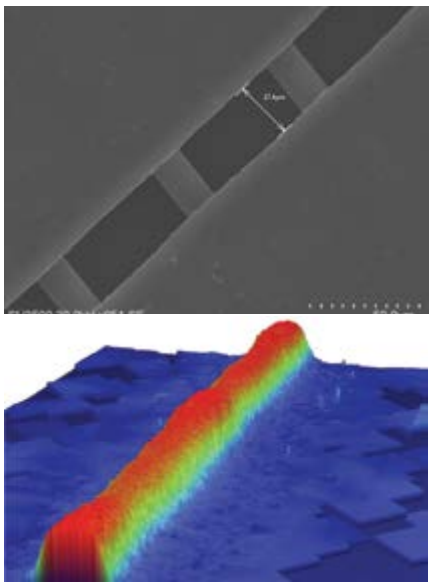


Figure 2: Top: AZOCOL Z 177/1 FL on zero-degree mesh (PV Micromesh from Nittoku); bottom: Profile of a conductive finger, printed with this mesh – which was printed and evaluated at the ISFH (Institute for Solar Energy Research Hamelin)

OPTIMISING THE STENCIL

This system comprises several steps, which are shown in **Figure 1**. With each step, the stencil can be gradually optimised for your own in-house process. First, a base coating with a high-resolution emulsion should be done. For example, using the highly resistant AZOCOL Z 177 FL or its successor AZOCOL Z 177/1 FL, which, with a higher EOM of approximately 15 microns, can achieve resolutions of up to 20 microns. When using aggressive solvents or for very high runs, AZOCOL Z 173/1 FL-H is recommended, which can also be post-hardened and at the same time can generate very high resolution.

Following the emulsion coating, ESTELAN D 271 TopCoat can be post-coated on the printing side, which further improves the Rz value and protects the screen printing stencil from mechanical attacks during the printing process. Uniform topography of the printed line is important, particularly in the solar sector, so that electricity can flow unhindered, Kissel + Wolf offers a product called KIWOMIX RA 1750, which can modify the stencil surface so that the paste release characteristics of the stencil are additionally supported.

If the resolution required has been generated in the stencil, this does not yet mean that it can be used for printing – the right mesh is also crucial. Mesh is now available with thin threads of 11 microns to eliminate disruption in the printed line. An increasingly important issue is also the angling of the mesh. Usually 22.5 degrees and 30-degree angles are used as standard. The problem with printing is that the lines to be printed run over the knuckle points of the mesh and this can lead to disruption in the printed image.

For this reason, zero-degree mesh is being increasingly tested and is already also in partial use. In optimum conditions, the

Continued over

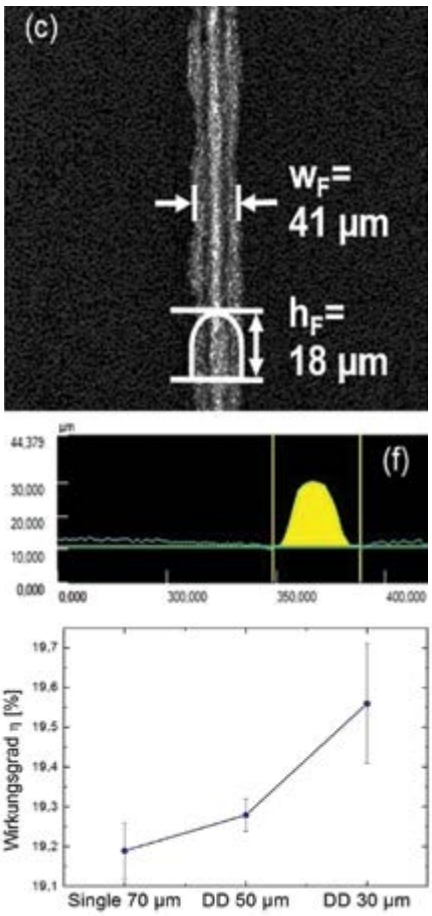


Figure 3: Double print (DD) of a 30-micron line – done at ipv in Stuttgart. Top: measured width and height in section; bottom: Diagram showing a comparison between a single print of a 70-micron line and a double print of a 30-micron line

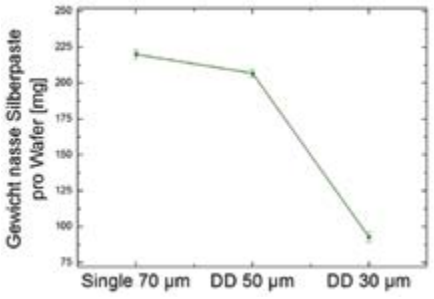
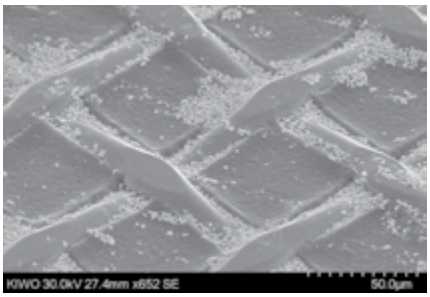


Figure 4: Paste reduction by double printing of a 30-micron line



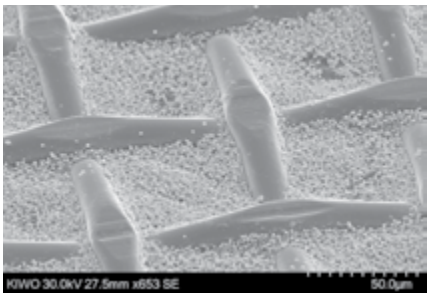
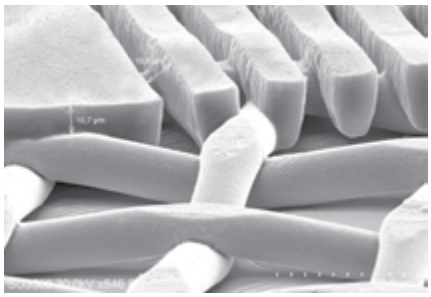
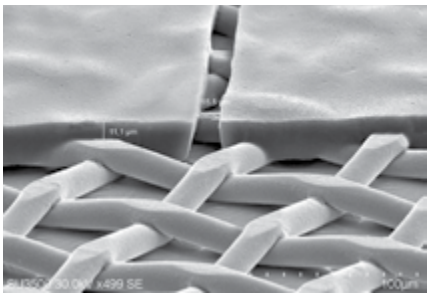


Figure 5: Distinguishing between different squeegee sides. The cuboid effect (left) reduces the consumption of paste





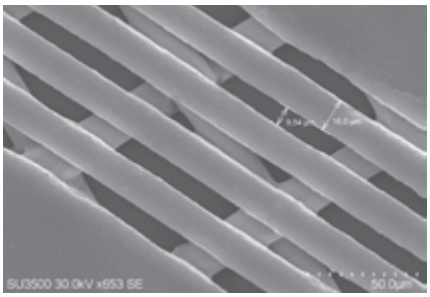


Figure 6: New development by Kissel + Wolf: 15-micron and 12.5-micron negative line (on the layout) with 11-micron EOM

negative line runs parallel with the threads, so that [even with] varying on mesh geometry, there are no 'thick' knuckle points but only a thin weft thread is transverse to the printing channel. This allows significantly better profiles to be printed – both shown in **Figure 2**.

It should be noted, however, that the demands on the emulsion for these mesh types increase, since reflection characteristics during the exposure process are different than at standard angles.

DOUBLE PRINTING

In printing itself, potential defects can be compensated for by double printing, resulting in more homogeneous conductive fingers, thus consequently enabling better efficiency to be achieved. The Institute of Photovoltaics (ipv) at the University of Stuttgart used AZOCOL Z 177 FL to test double printing with 30-micron lines. An efficiency increase of 0.37% was achieved compared to the simple printed 70-micron line – as shown in **Figure 3**. Furthermore, the paste consumption in this printing test was reduced considerably, as shown in **Figure 4**. If [paste used] was just 225mg/wafer single-printed at 70-micron lines, clearly less than 100mg/wafer was required at 30 microns when double printed.

ADVANCED APPLICATION

In addition to the stencil chemistry used, it is equally important how it is applied. An example of an optimised stencil technique is shown in **Figure 5**: The emulsion forms a cuboid effect on the squeegee side in the mesh. The big advantage is that the consumption of paste and associated costs can be greatly reduced. A negative example can be seen on the right-hand side. The emulsion forms a concave structure in the mesh, in which a lot of paste gets stuck.

It becomes clear that these finest lines can only be deposited with great effort on the substrate, but development in terms of resolution is still far from over. Kissel + Wolf will launch an even higher resolution product in the near future, which can achieve line resolutions of ≤ 15 microns with an EOM ≥ 10 microns. A small preview of this emulsion can be seen in **Figure 6**. ■

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BREAKING BARRIERS

After more than 100 years, why are we still talking about halftones? asks Charlie Facini

There are events in time that mark significant and undeniable change for the better; the introduction of the 'halftone' revolutionised the print industry, and set in motion a journey of invention. The halftone not only makes visual work more beautiful, but also sparked a technical revolution that carries on today. More than a century on, why are we still talking about halftones and who likes them, fears them, or finds ways to avoid them?

The invention of desktop publishing in the mid 1980s that delivered quality graphic printing to the masses was one of those steps that changed our world for the better forever, and arguably a change that gave many of you your career. Before that you could go back to William Talbot, who patented his use of textile screens in 1852 and is the person given prominence in any discussion of halftone printing in the screen print industry; or James Clerk Maxwell, who kickstarted the understanding and control of CMYK in the early 1870s; or the invention of the single lens reflex camera by Thomas Sutton that brought the world quality 'tone.'

The Foxy Full Chest design was film printed with a very clean lower line screen. Zoomed in to show the open space around each spot making printing dot gain friendly

Before halftone use the print industry was printing massive amounts of colour blocks to 'simulate tonality and colour range' – think indexing and the limitations to tone and high screen production needs. The world wanted better and more natural reproductions using less inks and materials, and halftones delivered it.

BETTER UNDERSTANDING

A halftone is not just about a smooth reproduction to 'fool the eye' into believing a printed piece is as real as the world around us, it also has 'style.' All too often screen printers attempt first to print a high line screen hoping to produce a print that looks like a photograph. They generally fail, become frustrated, and subsequently join the team of disbelievers.

Let's change that; let's learn a few key points and apply them. First, finer is not always better. I am known to say: 'a well executed low line screen is better than a poorly executed high line screen.' There is also a time and place for everything. First, educate yourself; then impress your clients.

As the substrate (printed surface) becomes smoother, higher line screens are more agreeable but when you print on a less smooth surface such as woven fabric, the use of a lower (larger) halftone not only makes

This image shows inks printed wet-on-wet, dot over dot (single angle flamenco style)

sense, it produces a better print. A typical line screen used on a t-shirt garment is 45. This line screen is not only visually pleasing at a focal range of approximately three feet and greater, but it is screen exposure- and press-friendly too. With more open space between the halftones (known as spots) the ink has room to migrate (dot gain) without corrupting the spots around them. This is controlling dot gain to benefit the print. The result is a cleaner, sharper, better appearing print with greater repeatable production value.

THE DREADED MOIRÉ

Moiré is frequency interference between two surfaces that can also be controlled with simple math. Take a film printed with halftones, place it on a stretched screen and spin it. The kaleidoscope effect you see is a moiré, and it eventually stops when the 'angle is right.' Bingo: this is a proper angle to set up halftones. So what is it? A properly stretched mesh on a frame is executed at a 90-degree angle. That mesh has its own frequency. Now that we have the first fact (factor) the job is not to produce a film with a frequency that conflicts with the mesh. A proven selection is 22.5 degrees. There are others too, but 22.5 degrees is half of 45, which is the optimal angle for the human eye to visualise a printed line screen. The more vertical (higher) than 45 you go, the more apparent the 'rows' between the halftones become, introducing another unwanted effect into a print. So, go lower and achieve exactly what we want: a line screen angle that does not moiré when exposed to a screen, and a visually pleasing print.

Offset printers will tell you since they use smooth plates and not screens they are not concerned with moiré in the same way screen printers are. They choose 45 degrees for any one colour tonal halftone print, because it is the angle that plays best with the optics of the human eye, but 45 degrees on a 90-degree stretched mesh is no good.

Your mesh manufacturer will have a formula for mesh count choice based on the halftone selection, and they will gladly share the technical data. Basically, the formula will be something like this to avoid a moiré: halftone line screen multiplied by a factor of 5 (sometimes they claim 4 or 3.5); use that number to determine mesh count. Example: 45-line screen at 22.5-degree angle x 5 = 225; since 225 mesh is not an actual count, move up to the next closest number (never down) and use a 230 mesh. For European mesh T values, consult with mesh manufactures.

DOES DOT SHAPE MATTER?

Sure it does, but generally not for the same reason you may think. Try round as the dot shape; it offers the best reproduction without introducing another visual element to the print. Elliptical still used by many screen printers was first created years ago to address dot gain issues on press. Printers of CMYK used rosette patterns to compensate for presses that could not hold registration well enough for all colours at the same angle one on top of another. The tapered spot shape was an attempt to open up space between the four spots printed at different angles making the classic rosette target shape you all have seen. In fact, as soon as presses improved and held better registration, printers should have reverted back to round and a 'single angle for all colours,' allowing colours to print wet-on-wet one over another not next to each other. Did I open a can of worms with that one?

Continued over

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EATING WORMS

For the best, sharpest, most controlled image production, print multiple colours using just one angle. This method is known as flamenco, and recognised as the best since the late 1800s. Multiple angles known as rosette patterns only came around in the early 1900s when presses could not hold registration, as noted. Dot gain became an issue rather than an asset producing prints that lacked clarity and colour control. Flamenco style printed out of registration also produces an unwanted moiré. To make matters worse is that they tried to fix a moiré by printing a moiré – odd, right? How many times have you heard printers talking about the proper angles they use to prevent a moiré when they are already printing a moiré; it's just a moiré they found acceptable. Sorry, I don't find any moiré acceptable. As professional printers we should prefer clarity and colour control. Let's get back to correct printing using a single angle (22.5) at the same halftone size and shape (round) and you'll have a cleaner better experience.

Over time dot gain unfairly developed a bad reputation, but it can be a printer's best friend. A better descriptive term is 'tonal value increase.' Printing would be boring and lifeless without controlled dot gain. With flamenco style printing the image will accept and handle dot gain far greater than your press will produce, at times as much as a whopping 35% depending on the size of the halftone. Lower line screens manage much greater dot gain values.

A magazine (printed to a smooth paper) is read inches from the eye; therefore, a 133- to 150-line screen selection makes sense as the human eye blurs the halftones into a smoother image. Garment materials are coarse and people stand back a few feet when they view a printed t-shirt, for example, so a 45-line screen makes sense. For style, lower line screens such as 10, 20 and 30 produce stylised art such as the works of Roy Liechtenstein and Andy Warhol. A billboard is printed at a super low line screen – viewed from a city block away the image looks smooth. Learn your applications; understand the right time and place for the size halftone you choose and enjoy producing fantastic works of art.

THE SKY'S THE LIMIT

An update on a screen printer challenged with printing grayscales on balloons [see previous issue]. The company took the time to discover the value and control of lower line screens then returned to their original desire for FM. Armed with a new understanding and confidence they are producing outstanding work. (Contact: Smiljan Slukan, tisknabalon@magic.si)

A discussion of halftones can go on and on. Halftones will be used to reproduce tints, blends and gradients, and is the basis of sim process style printing. The takeaway is that visual distance enhances tone. Select a halftone line screen with the substrate in mind, one that you can produce cleanly to film, expose properly to screens (remembering the mesh formula), and when ink is pushed through the screen – delivers a quality reproduction. ■

Balloon printing has even greater challenges. This screen printer quickly mastered halftone printing by starting with coarse halftone line screens

Charlie Facini is CEO of Freehand Graphics

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BIGGER IS BETTER

Wolfgang Passler explains how using a larger optical measuring aperture improves accuracy and repeatability of measurements

Alongside other details, the technical datasheets and specifications of every spectrophotometer mention the measuring aperture. But why does this matter?

It is because, generally said, a larger measuring aperture gives more accurate results and higher repeatability in digital large-format, flatbed and industrial printing.

The measuring aperture defines the area the measuring device 'sees' and captures the colour values from it. The bigger this area, as more information will be captured. This is particularly important in large format, flatbed and industrial printing, including textile printing. A larger measuring area is also necessary when measuring different kinds of media, low resolution prints or UV printing.

Note: The following statements are supported by the scientific paper 'Measurement uncertainty for printed textiles' by Nadile Nunes de Lima; Colour and Visual Computing Symposium (CVCS), 2018.

The Barbieri Spectro LFP qb is a device with switchable measuring aperture of 2, 6 and 8mm.

The findings in this publication are not limited to textile but they are valid for any kind of structured material used in digital signage and industrial printing.

REASONS FOR MORE ACCURATE MEASUREMENTS

When measuring structured materials, a larger optical aperture gives more accurate and repeatable results because:

- a bigger aperture captures a larger area and therefore also information which is outside the area of a smaller aperture
- a bigger aperture compensates for scattered light due to a structured surface
- a bigger aperture compensates the potential shadows on structured materials

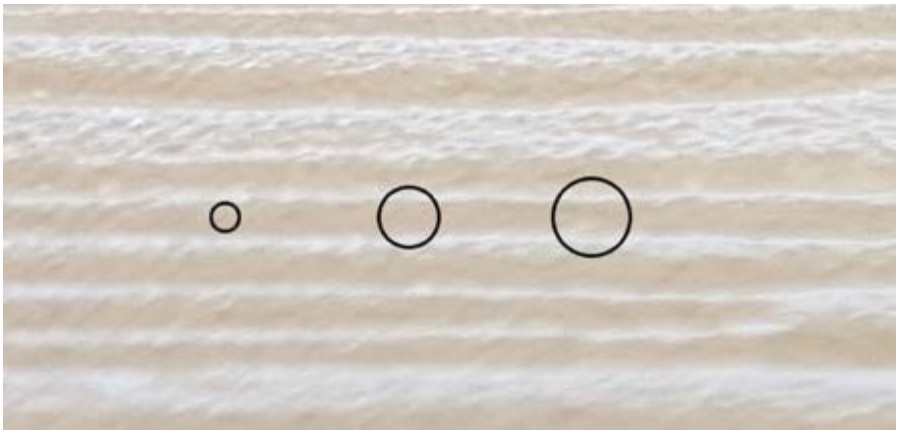
Structured media/low resolution prints: On structured media or low resolution prints, colour information can be located outside the measuring area when using a small aperture.

UV Ink: When printing with UV inks, the ink

Continued over

Spectro LFP qb with 2, 6 and 8mm aperture

Profiling chart with small and with large patches



2, 6 and 8mm measuring aperture on wallpaper

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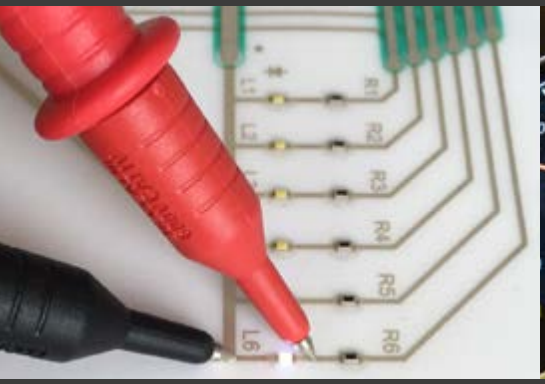

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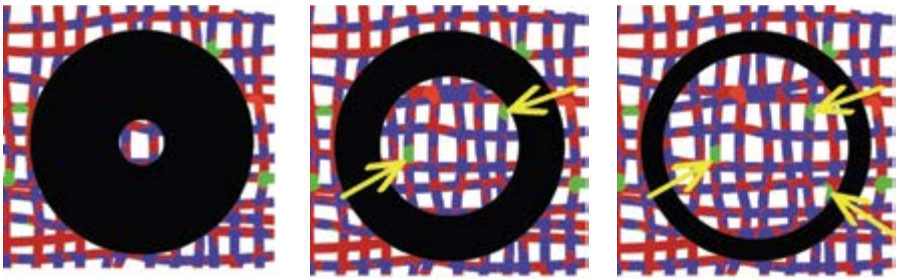
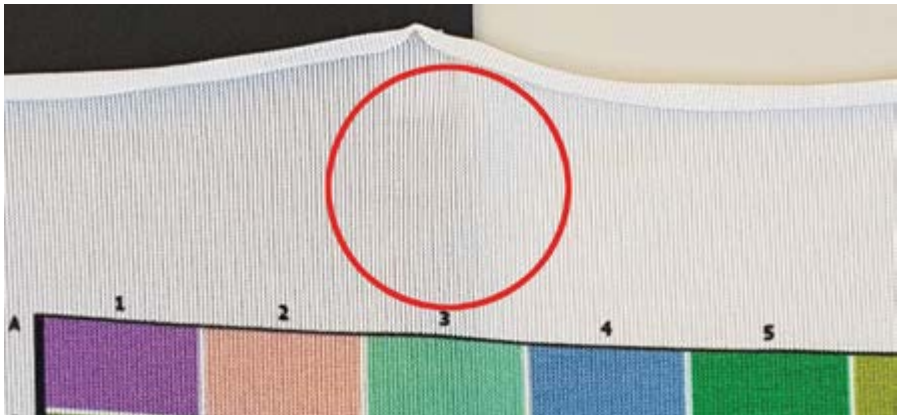
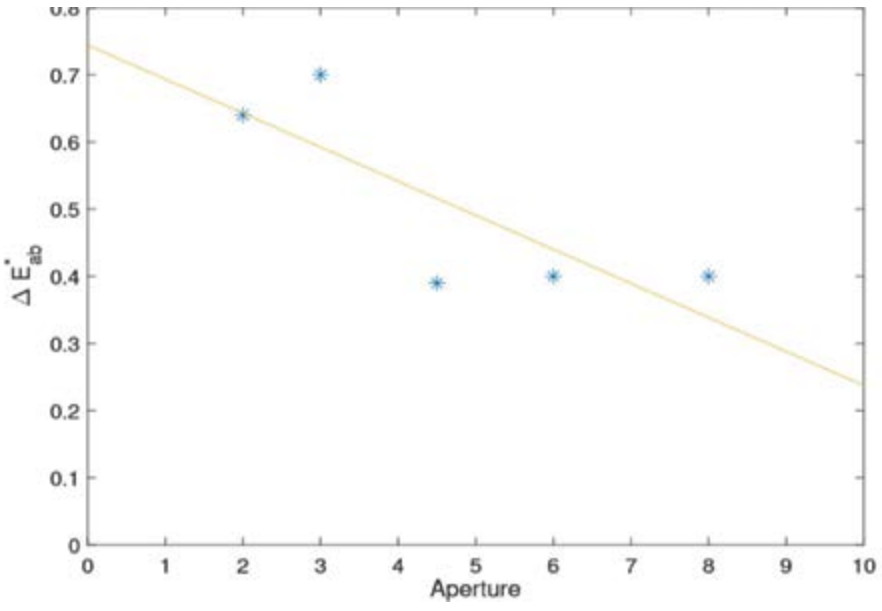


(L–R): 2mm aperture; 6mm aperture; 8mm aperture

Textile with low opacity

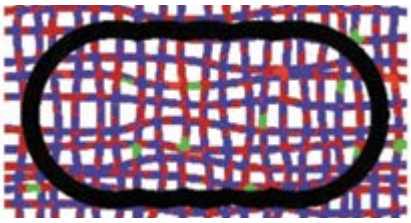


Textile with higher opacity



Average dE*ab against aperture for measurements rotating instruments

Five measurements with small aperture



Five measurements with wide aperture

can be cured on the surface, which creates an uneven and rough surface. The light will be scattered, and a small aperture is not able to obtain complete colour information.

Media with low opacity: When an assortment of different media is used – e.g. in digital printing – every media shows different opacity. On media with low opacity a larger optical measuring aperture ensures higher accuracy [of colour reading].

MULTIPLE MEASUREMENTS

Performing more measurements per patch and averaging these results in more accurate measurements. But [doing this] using a small aperture still does not give the correct picture. This is because the movement is in one direction only – in the case of resolution or structured media this will still result in inaccurate measurements.

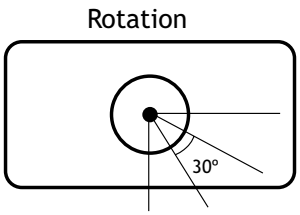
For structured media such as textiles, averaging multiple measurements per patch makes sense, but a large measuring aperture is more appropriate.

APERTURE SIZE IN RELATION TO MEASURING AREA

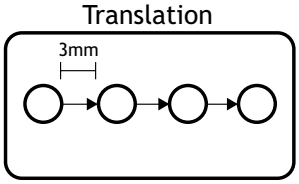
Even if the aperture size is always cited, what really matters is the measuring area. This table shows how much influence a slightly wider aperture has on the measuring area:

Continued over

Representation of measurement rotating instrument



Representation of measurement with horizontal translation



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8mm	50,12mm²	17 times larger than 3mm²

MAXIMUM ACCURACY

Ultimate measurement accuracy and repeatability on difficult media such as textiles can be achieved by:

1. Using wide measuring aperture
2. Multiple measurements per patch (using wide aperture)
3. Fully automatic measurements (to avoid the influence of human error)

EXTRACTS FROM THE SCIENTIFIC PAPER

Rotation: In this test, measurements have been taken and the measuring device has been rotated by 30 degrees each time. The results show that the smaller the measuring aperture, the bigger the DeltaE [the 'distance' between two colours as perceived by the human eye]; and the bigger the aperture, the lower the DeltaE.

Translation: In this test, measurements have been taken by moving the instrument by 3mm horizontally for each measurement. It shows that the small apertures give higher DeltaE and the bigger 8mm aperture shows the highest repeatability.

Scanning: Scanning behaves the same way as manual spot measurements and shows also that a bigger aperture gives the highest repeatability.

Opacity: There is also a relation between opacity of the media and measuring aperture. In all tests, rotation, translation and scanning, as less opaque a material is as more important it is to use a bigger aperture to get repeatable measurements.

CONCLUSION

The paper proves that:

- With a bigger measuring aperture the rotation gives less impact on the measurement results.
- With a bigger measuring aperture the translation produces higher accuracy.
- If opacity of the media is low, a bigger measuring aperture delivers more accurate measurements.
- Measuring in scanning (automatic) improves the measurement quality and with a bigger measuring aperture it gets even more accurate. ■

Wolfgang Passler is Vice President of international sales & marketing at Barbieri

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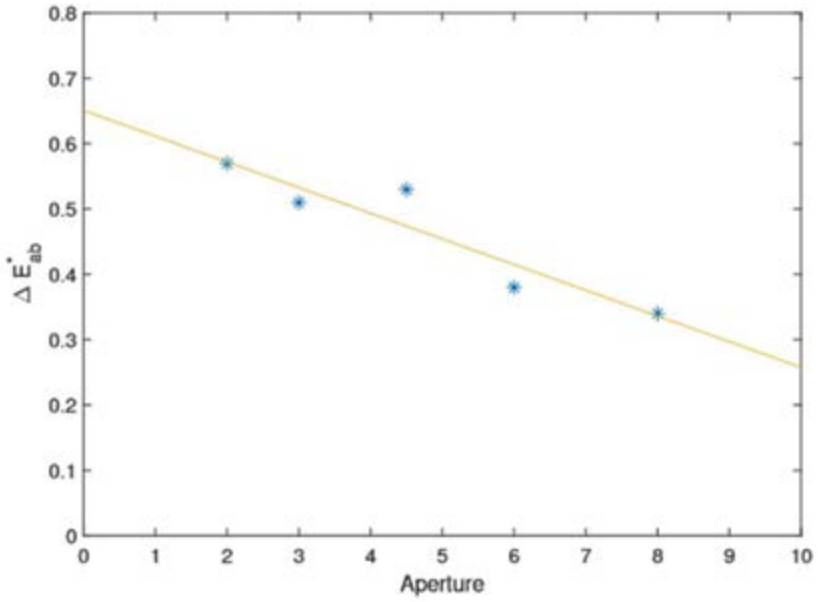
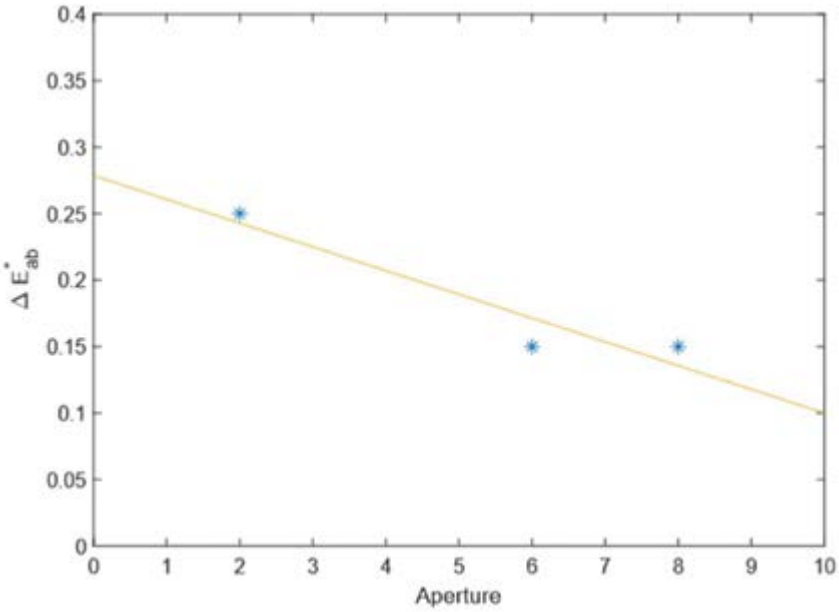
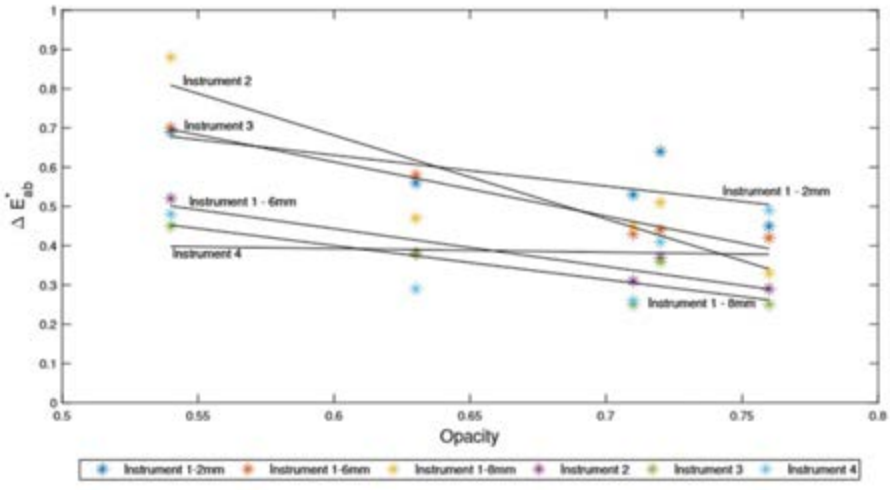


*Average dE*ab against aperture for measurements translating samples*



*Average dE*ab against aperture for measurements on scanning mode*



*Average dE*ab against opacity for measurements translating samples*

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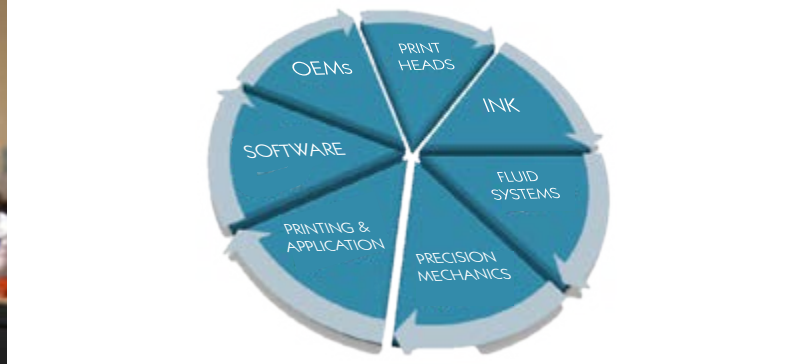

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INSIDER INFORMATION

Jeff Stadelman reveals how new developments in drywall graphics can increase interior design potential

More and more, retailers, businesses, restaurants and other brand owners are using interior wall graphics as a key component of interior design. Aesthetically pleasing, easily compatible with other design elements, permanent or removable, digitally printable and cost-effective, interior wall graphics offer numerous benefits to alternatives, such as wallpaper or paint. And, while nearly any interior wall surface, from brick to concrete, can be used to transform an interior design space, drywall continues to be one of the most common interior wall application surfaces.

As with many application surfaces, applying graphics to drywall poses a few challenges. For example, drywall is an extremely porous surface so sealing it is critical for application success. Additionally, new drywall (anything less than one year old) can move, which can cause graphics to lift, or it can outgas as it dries, resulting in the formation of bubbles or blisters under graphics.

NEW PAINT FORMULATIONS

Furthermore – and most importantly – in the last few years, paint manufacturers have been significantly modifying paint formulations. The new paints, when painted onto drywall, are making most of the industry's previously successful wall graphic materials, unsuccessful. The changes in paint chemistry are occurring across the paint industry as paint manufacturers look to produce paints that contain low or no volatile organic compounds (VOCs). While this change is positive in terms of environmental health and safety, adhering graphics to drywall that has been painted with these newer paints is difficult.

Unique textures can be created with wall graphics such as the brick wall displayed here

DRYWALL-SPECIFIC ADHESIVES

First, many pressure-sensitive adhesive (PSA) manufacturers have formulated new adhesive constructions designed to adhere to painted drywall. One of the primary features of the newer low- and no-VOC paints, as well as washable paints, is that the paints are designed to resist anything attempting to stick to the painted surface – which isn't exactly a benefit for those wanting to apply wall graphics.

Several graphics material suppliers have been creating new wall graphic solutions with specially designed adhesives that will adhere to low- and no-VOC paints. For example, Mactac has developed ultra-removable, aggressive removable and permanent adhesive options specifically for these difficult-to-adhere-to painted drywall applications.

SURFACE PREPARATION AND TESTING

Additionally, some graphics material experts now recommend that those installing graphics to drywall follow a dual-alcohol wash process – especially if unsure whether or not the wall surface features a new or old paint formulation. The recommended process includes:

1) Clean walls with a typical wall cleaner/ detergent to remove any dirt or dust that has accumulated.
2) Wipe down walls with an alcohol-saturated cloth containing a 70/30-alcohol/water mix.
3) Repeat step two, once again wiping down walls with an alcohol-saturated cloth. This extra alcohol wash helps ensure better graphic adhesion to newer paints.
4) Really focus on properly cleaning and preparing the drywall's edges (i.e. along the floor, ceiling and corners).

Furthermore, most graphics material experts

Mactac's aggressive removable adhesive adheres well yet will remove cleanly for up to 2 years after application

INSTALLING GRAPHICS TO DRYWALL

It is important to keep in mind the following:

1) Graphics that are applied to uncured paint may fail.
   - Different paints require different cure times. For example, heavily pigmented paints have a significantly longer cure time than lightly pigmented paints. For best results, consult your paint manufacturer to confirm proper cure times and wait 1-2 weeks to install graphics on newly painted walls (some paints may take months to fully cure).
   - Oil-based paints are designed to never fully cure so do not apply graphics to drywall that has been painted with oil-based paint.
   - Certain environmental conditions can speed up or retard cure times.
2) Do not apply graphics to unsealed drywall. Drywall finish should be at level 4 or 5.
3) A semi-gloss paint finish is most ideal.

To help overcome these challenges and give brand owners, designers, architects and print service providers the creatively designed interior spaces they seek, graphics material suppliers have been working diligently on several new developments for drywall graphic applications.

Test three to five clearly identified/labelled 1x10-inch sample strips of material

After 30 minutes, use a spring scale to measure adhesion

also recommend testing the chosen media on the drywall first to confirm compatibility of material and surface. To conduct a wall graphics material test:

1) Clean and prepare the wall testing area using a dual-alcohol wash process.
2) Test three to five clearly identified/labelled 1x10-inch sample strips of material. Apply 8 inches of each strip to the wall leaving an extra 2 inches hanging from the top to attach the sample to the scale.
3) After 30 minutes, use a spring scale that reads 0–4 pounds [0–2kg] minimum to measure adhesion. Attach the scale hook to the extra material and pull down slowly at a 180-degree angle (use a 40-second count to pull off the entire strip). Determine the average pounds required to smoothly peel the strip.
4) To confirm the best material for the application, refer to the following:
   a. 0–0.7lbs [0.3kg] = Poor adhesion
   b. 0.7–2.3lbs = [0.3–1kg] Good adhesion (removable)
   c. 2.3lbs [1kg] and up = Very good adhesion (permanent)

UNIQUE AND CREATIVE GRAPHIC FINISHES

Finally, a selection of graphics material suppliers are also upping the ante when it comes to offering designers, architects and print service providers more creative material options to better meet the rising creativity of today's interior designs.

Suppliers like Mactac have added unique finishes to their wall graphic material selections. For example, Mactac's IMAGin DecoMural décor media has a woven canvas textured facestock and the DecoFresco décor media features a unique flattened plaster texture.

Stevens Creek Church used ROODLE to turn several plain, blank drywall surfaces into eye-catching advertising canvases

CUSTOMER FAVOURITES

Mactac customers often choose IMAGin DecoMural (DM032), DecoFresco (DF052) and ROODLE (RO628) products for no- and low-VOC painted drywall applications – all of which feature Mactac's aggressive removable adhesive, which adheres well yet will remove cleanly for up to two years after application. Stevens Creek Church, a religious organisation in Augusta, Georgia, used ROODLE to turn several plain, blank drywall surfaces into eye-catching advertising canvases. Jeff Brotherton, lead artist at the church, said: "After talking with the team, we agreed to use the Mactac ROODLE due to its ease of installation and removal, and how well it adheres to wall surfaces."

Another customer-favourite is REBEL H (RB528H), a durable, flexible opaque matte vinyl with a high-tack permanent adhesive that is known to print and stick to just about anything – especially difficult, low VOC, painted surfaces.

A HORIZON OF OPPORTUNITY

With the recent developments in drywall-specific adhesives, surface preparation and testing, and unique and creative graphic finishes, wall graphics for interior drywall applications are becoming increasingly easier to execute, further enhancing interior design opportunities for brand owners, architects, designers and print service providers. ■

DecoMural, DecoFresco and ROODLE are registered trademarks of Mactac.

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JOINT APPROACH

Screen printers and non-printers stand to benefit from a new partnership formed to help with industrial screen printing challenges

Screen printers all know how complex the set-up can be, but for non-printers looking to integrate the process into their manufacturing line, it can be positively bewildering.

The interaction between the different elements – screen, machinery, substrate and ink requires an in-depth understanding that is rarely the exclusive domain of the suppliers of just one of the elements. However, expensive purchases often are made with little understanding of total suitability for the end product.

Seeing poor decisions like this made, on a regular basis, and with expensive consequences, has led three long-established companies to pool their experience and knowledge and offer production managers the opportunity to get it right – first time. The clear need for a joint approach to the screen print challenge has led to the formation of a new partnership consultancy.

(L–R:) Andrew Kippax, Director of Thieme KPX; Bill Kippax, Managing Director of Thieme KPX; John Teasdale, Managing Director of Advanced Screen Technology; and Karsten Soerensen, General Manager at Marabu UK

MEETING THE CHALLENGE

Partners in Screenprint (PinS) comprises Advanced Screen Technology (ASTL), Marabu UK and Thieme KPX, and has been formed as a result of first hand experience of companies making poor equipment and materials choices that have had a negative effect on their printing efficiency and economy.

Explained Partner, Karsten Soerensen: "Although screen printing is the perfect choice for many industrial applications it is also a complex process that requires not only good knowledge of the individual elements of the process but also the way these elements need to work with each other.

"We had seen so many companies making decision about the components of their printing line without considering some key factors that we decided to act – in the interests of individual companies and also the reputation of screen printing as a developing process.

"We want to provide accurate, knowledgeable and realistic help and advice and are already helping companies with the most successful, efficient and cost-effective ways to approach their projects," he concluded.

WEALTH OF KNOWLEDGE

PinS has committed to provide initial consultation free of charge.

The three PinS members are united in their belief that in the highly complex world of

industrial screen printing it's the companies who take a more strategic look at their supplier relationships, and adopt a partnership approach, are the ones who will gain the most from the wealth of knowledge within Partners in Screenprint.

A good example of the type of complex issue the Partnership is already starting to address for screen printers is the printing of conductive elements, which also highlights how the different elements of the process need to work together.

Crucial to a successful outcome, are:

Ink selection

As with any ink solution we need to be clear what the customer requires. Questions specific to conductive ink applications may be:

- Resistance required (normally specified in ohms per square at 25 microns dry ink film)
- Substrate
- End use
- Mechanical requirements (flexibility, humidity resistance, abrasion resistance)

Process controls

Once there is an indication regarding application, to narrow down suitable ink, it is possible to recommend the suitable mesh types and drying. The most critical part of the process is the drying as most performance issues (target track resistance) are related to drying.

Processing

- Conductive inks are not difficult to process, but the method must be consistent, repeatable and measured.
- Pre press is critical and must be controlled and consistent. (Mesh, tension, angle, eom, Rz)
- The resistance of the conductive in Carbon, Silver, Silver/Silver Chloride etc, can be varied if the solvent is not fully removed from the ink. Residual solvent in the dry ink film will result in a non-conformance, i.e. higher than expected track resistance.
- The drying temperature should be ramped gradually. This will ensure that the conductive ink does not 'skin' causing solvent to be trapped in the ink film. This is normally achieved using a multi-stage drying conveyor.
- Gradually ramping the temperature will also avoid rapid removal of the solvent, which can result in solvent boiling and causing voids in the dry ink film. This will also result in increased track resistance.
- The specified temperature to dry the ink should be used. The solvent in the conductive ink will have a boiling point which is required to remove the solvent from the ink film. If the tech data specifies 110°C for ten minutes, this should be the starting point. Using 90°C for 40 minutes does not mean that the solvent will be removed.
- Test: When the initial tests are made with the ink, the resistance should be measured against the target. If the resistance is higher than expected with the initial tests, re-run the drying. If there is a difference in the resistance by re-drying the drying schedule needs to be adjusted to either increase the temperature or dwell in the oven.
- Measure: During screen print production there are many variables which might be difficult to control accurately. As a result, the final printed conductive needs to be measured after correct drying off-line, normally with two test tracks or worms of known and standardised dimensions printed on either side of the main print. Measurements should include electrical resistance, thickness and registration as a minimum.

A website providing more information about PinS has also been launched at www.partnersinscreenprint.co.uk ■

Karsten Soerensen is a Member of Partners in Screenprint

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SOWING SEEDS

Bruce Ridge interviews Andy MacDougall, Managing Director at Wachiay Studio

Andy MacDougall is Managing Director of Wachiay Studio in beautiful British Columbia, Canada. He has worked in sales, marketing, management, and writing, but has never ventured far from his love and passion for teaching and training the Screen Printing process.

Conducted in August 2018 by Bruce Ridge, this interview with Andy MacDougall 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.

Andy MacDougall is Managing Director of Wachiay Studio

BR: I read that you grew up in Woodstock, Ontario where you went to high school but didn't care much for school. How is it that you have spent your whole life teaching people?

AM: I didn't care for what I was being taught and the way I was being taught. I used to write a weekly column in the local newspaper about things that were happening in our school. This was in the late 1960s. I wrote an article poking fun at the principal and vice principal and they didn't find it very funny. They told me if I ever wrote another column I wouldn't graduate from high school in this town. I wrote another column of course and they failed me out of grade 12.

The reason I got into teaching and training in screen printing is that I was working at a screen printing shop that was growing and every time we hired a new person who said they had printing experience, we found they had no skills, so we had to teach them. It started when I wrote a training manual for these new hires and that manual morphed into the book 'Screen Printing Today: The Basics'.

I am no expert, nor am I a high-end guy, but I do know how to help people get started. There are a lot of people around the world who have used this training to become successful and build nice shops. That has been rewarding.

The last couple of years I have been working with First Nations people here in Western Canada and we have a nice studio where we train young people to turn their art into money in order to create economic opportunity.

BR: You migrated from Eastern Canada to Vancouver Island going as far West as possible. How did you end up in Courtenay?

AM: When I was 16 I hitch hiked across Canada, and when I saw the mountains I said 'wow,' but I kept going and when I saw the ocean, I thought, 'I gotta live here'. I went back to my home town and tried to make a living as a musician and as a mailman. I was eventually drawn back to British Colombia where the jobs were scarce, so I moved to Alberta and drove a truck for an auto parts supplier.

The owner of the company found out I knew how to do lettering, so he had me making signs for the company. This led to me doing the company advertising for print, then

At the Flatstock rock poster exhibition during SXSW in Austin Texas. From left: Austin printer Jonathan Rebolloso, printer Gemma Monostereo from Barcelona, Spain, Artist and printer Shepard Fairey, and Andy MacDougall from Canada. All the prints in the background were produced live at Flatstock shows in Europe and the USA

radio, and eventually TV commercials. During this time, I started to screen print because the stores needed show cards. I really liked making things, so I took another job at a screen printing company and that is where I really learned the craft.

During those years, I remember the excitement of getting the latest copy of screen printing magazine and it was like getting the Bible. I would read it cover to cover. Thomas Fresca was the editor and I loved reading his articles. I eventually started my own company because I realised I was doing everything for the company from selling, to quoting, to running the screen department, and collecting the money.

BR: I understand you did a lot of printing for the 1986 World's Fair in Vancouver. I attended that fair and have great memories and photos. Did that fair help your business?
AM: Our business really took off when Expo 86 came to Vancouver. Many of the pavilions needed signage and we were right there to do the work. We printed displays for several country pavilions as well as the monorails signage and all the signage at the train turntable. After that work was completed our company started to build Parapresses, which we were selling across North America. Business was good, but my wife did not like Vancouver, so we migrated back up to Vancouver Island.

It was there that I started to print water-based inks on paper for art prints. That is when I realised that art prints are the biggest money in screen printing at the time. We started working with artists and built a studio to produce this work.

BR: Do you have a collection of prints and posters that you have done over the years? Do you collect prints and posters?
AM: I don't collect posters, but I do have thousands of them. This is primarily because of the work I do with the Flatstock exhibitions and the American Poster Institute. I have been doing live screen printing demonstrations at these Flatstock exhibitions for years. We have been to Barcelona, Mexico City, Austin, Chicago, and Seattle. The live printing is important for people to see how much work and craftsmanship is involved in making a multicolour screen printed poster.

This is not fine art serigraphy. These are rock art posters, which are design-focused using a handful of different colours. Classic screen printed posters. Printing live at an exhibition is like performance art. You can't stop because of a pinhole or some small imperfection. Students are always excited to see you can print with an ink that can be cleaned up with just water. Speed-ball inks work great for this application, and so does TW Graphics. In Mexico, some students who used solvent-based inks were cleaning screens with gasoline. Using solvents like this has killed graphic screen printing in schools. We want to bring it back.

BR: Do you find the Flatstock exhibitions inspiring?
AM: I do. These exhibitions keep me young. I am working with people who are in their early twenties or thirties and they are very accepting and energetic. It reinvigorated my life and has allowed me to travel to interesting places. These people will take you into their homes, so you really get to see what the culture is like there. I love it.

BR: Is there any part of the Flatstock exhibitions that use inkjet printing or is it just screen printing?
AM: There is a little bit of inkjet being done, but not a lot because people seem to know the difference in the two types of posters just by looking at them. The live printing we do is so much more interesting than just watching a full colour print spit out of an inkjet printer.

There is a local brewery that came to us to make posters for them; they have a black magic type of theme and they want a poster that will work with black lights. This is something you can't do with inkjet. We are now working with their marketing team to show the unique effects screen printing can offer them.

I think people are looking for something authentic, and screen printing is authentic. There are people here I am working with designing images for fabric and or wallpaper. Those items may be able to be produced digitally, but they are preferring to use screen printing. There will always be people who will buy the cheapest things they can buy, and there will always be people that will pay more for something of quality.

BR: I love the Squeegeerama videos on YouTube. How did these start and who attends?
AM: When I moved back up to the island from Vancouver, I was having a hard time generating business. Then along came a thing called the internet. I started the Squeegeeville website in the 90s. I started to participate in forums, and then eventually I was advertising on the internet. I started to get hits from people that Googled how-to do this or that related to screen printing. At that time, we just provided information and responses to printers who were asking questions. Eventually I published my book.

Today I am getting a bit lazy and I don't post new things on our website as often as I should. It is so much easier to post on Facebook, but then it gets buried so much faster. This is how people find out about Squeegeeville and Wachiay Studio, then they watch the videos (Wachiay Studio YouTube) and that gets them interested in attending.

Continued over

BR: So Squeegeeville is primarily training with a lot of personality?
AM: We offer several different courses. We have a weekend two-day course called Intro to Screen Printing. The first day they get my eight-step programme to screen printing along with fundamental training on the process. The second day they come to print. The printing can be on a poster, a shirt, glass, ceramics, leather – almost anything. We get people from all over Canada, the States, and as far away as China.

We also have a programme for local people where they can come in to rent shop space. This way they can print their art when they need to without the need to acquire all the equipment. There are 10–15 local printers who have started businesses in screen printing with our training and guidance.

One of the local companies that started after training here is Totem Design House. A mother and daughter company that now has work in the Smithsonian and the Burke Museum in Seattle. They do all their printing here at Wachiay Studio.

The Squeegeerama course is a printing adventure where people come up to Vancouver Island to spend five days creating and screen printing with a guest artist and our staff. When we are not printing we are doing things in the area, which is one of the most beautiful places on earth. We do this every year. Check out the website. www.wachiaystudio.com/products/squeegeerama

BR: Tell me about the Wachiay Friendship Centre and what it means to you?
AM: I took the job as Managing Director of the Wachiay Studio about three years ago. This is the first consistent paycheck I have had since 1984. It is a real-life changer to have to get up and come to work every day. I now sympathise with people who must do that. It has been good for me to become more disciplined. We are doing something good here. Friendship Centres are found across the country. In Canada we have a lot of First Nations tribes. If you are part of that tribe, they take care of you. We have a tribe here called the K'omox First Nation. They are very progressive and are doing well. But there are 7,000 indigenous peoples in this area that are not part of the band. We provide services for these urban indigenous people ranging from tax preparation to housing to job training. The screen printing part of Wachiay Studio is teaching skills and helping to create locally made products and promote the culture. A direct result of this work is that all three of the local high schools are now creating screen printing programmes. The focus is really to get the students to make products, not just to print. One example is one of the schools is making skateboards which makes use of the wood shop, metal shop, and printing class.

BR: Do you participate in printing forums or bulletin boards today?
AM: Right now, I mainly spend time on Facebook, but I lose interest when people want to argue about detailed technical aspects or get nasty with the newbies. I don't know enough to argue about it and it takes all the fun out of it for me. This business requires you to have a sense of humour. There are so many potential problems with the process, you must be able to roll with the punches.

I wish I was just starting out now because this is such a great time to learn. I feel we all need to remember everyone who prints started by doing crappy prints in a basement or garage. They eventually evolve and improve their process with technique and equipment. But they can't just go out and buy all new top of the line equipment and testing devices to start. My focus is to get people excited about starting in the process, and achieve success. Once they get the interest, they can move into more complex things. We cannot forget that people with low technology can still start a business and make a living. The world is still about the production of things, and screen printing is a catalyst for 'making'.

I am honoured to be a member of the Academy. Many of the members are the people I read articles from many years ago to learn how to do the process. I see my role in this industry as a Johnny Appleseed of screen printing. My job is to plant a bunch of seeds and get them started. And some of them will grow and when they do, they can access others to provide them with more technical guidance.

BR: What was your involvement in the 'History of Screen Printing' book by Guido Lengwiler?
AM: The first Academy luncheon I attended, Richard Eisenbeiss brought a binder of Guido's research that was piecemeal. Guido had been working with Tom Freksca at ST Publications to gather the history of how screen printing started. But when Tom passed away Guido needed someone to get approval to use the material from *Signs of the Times* magazine and I offered to do this because it was apparent to me how important this book was. I then sent letters to all the presidents of leading industry companies requesting them to pre-purchase books to cover the cost of the initial printing. This raised nearly $100,000. My daughter, Naomi, did the design on that book. She is a graphic designer at a publishing company in Vancouver. This book was purchased by many of the major universities, libraries, and museum book stores. It has done well and it is a book everyone in the industry should own.

BR: The work Guido and you have done on this book is an example of Academy excellence.
AM: 'The History of Screen Printing' book documents the true beginnings of commercial screen printing from the late 1800s to World War II. If Guido didn't put together the book, all that information and photos would have been lost. Screen printing is key to our current world: printed circuits, electronics, outdoor advertising, printed garments, solar cells. Think of all the great things that happened after WWII. I hope someone is considering writing the next chapter of this industry.

BR: I know you love motorcycles. How often do you ride, and do you ride in the rain?
AM: I ride every day. Depending upon how much time I have in the morning to get to work, I have three different routes I can take, the longer the better. I love to ride on a long twisty road if I have the time. The current bike is a 2003 BMW RT 1150. It rains a lot up here so yes, I do ride it in the rain! This has been a maintenance year for the bike. I would ride a lot more, but this job has me working all the time.

I really like riding in the US. The back roads there are so much better to ride on than the ones in Canada. Montana is one of my favourite States to ride in. Washington and Oregon are good too. The problem with riding in Canada is we only have two major highways that go East/West and in the summer, they are clogged with traffic.

BR: Academy membership has primarily been an acknowledgment of the work done by individuals who have given back to the specialty printing industry committing time to educate and communicate for the betterment of the industry. You are an overachiever in this area. Thank you for your contributions. ■

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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THE BREXIT EFFECT

ESMA
Driving Print Excellence

Frank Toma discusses the impact of Brexit on trade with chemicals

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

Last week I received a letter from the bank I got my credit card from. A British bank, that is, and so I was – perhaps predictably – informed that the credit card business for non-British customers has been transferred to an Irish subsidiary.

So what's the point? Why start an article in a screen printing magazine with a rather personal anecdote? Because the approaching (No Deal?-)Brexit will affect Great Britain itself, but also the remaining EU members and even Non-Eu(ropean) countries in many different ways.

Let's have a look at chemical products. In Europe, chemicals are regulated under the REACh regulation 1907/2006/EC. Basically it says that all chemicals sold in Europe have to be registered with ECHA, the European Chemical Agency in Helsinki. A registration can only be done by a company based in the EU. This is either the manufacturer, the importer of a chemical product or, if a Non-EU company wants to register a product, a so called Only-Representative.

Concerning the approaching Brexit, ECHA states on its website, that, since only an EU-based company is able to register, registration no longer is possible for Britain-based companies. The same goes for Britain-based Only-Representatives. And, not only that, but also all registrations done up to now by Britain-based companies or Only-Representatives are no longer valid.

IMPLICATIONS:

- A British manufacturer can no longer sell his products on the European market (at least, if he doesn't have a subsidiary in the EU).
- The same goes for an EU-based company which has done a joint submission with a British company as lead registrant; this registration also won't be valid any more.
- And a Non-EU company which registered products using an Only-Representative based in Great Britain might find itself suddenly in trouble. To retain the registration – and with it the access to the European market – it is mandatory to appoint a new Only-Representative in one of the remaining EU members and notify this to ECHA.
- For Non-EU companies where the registration was done by an importer based in Great Britain, the registration will not be valid any more after the Brexit.

ABSENCE OF PAPERWORK

Now you might say that all this has been known for quite a while; ECHA published the information given above more than half a year ago. But, honestly, I wonder. I was not thinking about my credit card company being based in England, and I believe lots of companies have not looked deeply enough in the implications of the Brexit for their trade with chemicals. Or have you seen, for example, a letter from one of your customers concerning a guarantee for an undisrupted supply chain in the face of Brexit? I have not. I still receive letters each months concerning conflict minerals, SVHC, REACh itself. But not one on the Brexit issue. Don't get me wrong – I'm not exactly a supporter of this kind of paperwork, but the absence of it makes me suspicious.

This said and with the Brexit rapidly approaching – if nothing unforeseen happens – it's time for manufacturers, importers and downstream users of chemical products around the world to check whether or not they are affected by the facts given above. And, in case they are, to take the appropriate measures (as briefly described here; for a more detailed view I recommend visiting the ECHA website). ■

Frank Toma is Chairman of ESMA's Health, Safety and Environmental Protection Committee and Safety Officer at ENVISAFE Consulting

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INPRINT ITALY RETURNS IN 2020

A successful second edition of InPrint Italy paves the way for a third show next year

Fashion, interior décor and automotive industries were strongly represented at InPrint Italy 2018, held at the MiCo Milano Congressi exhibition centre last November. The show saw an advance in the range of applications and increased collaborations between exhibitors, stimulated by direct requests from visitors.

The strong interest confirms Italy's market as a dynamic one, particularly interested in integrated solutions. From 20–22 November a total of 2,260 visitors came to meet 109 exhibitors from 18 countries. While 70% of visitors were from Italy, 30% were international, from 50 countries. Following Italy, the majority of visitors were from Germany, Switzerland, France, the UK and Spain. Established market leaders and new fast-growing companies brought to Milan the latest technology in the three sectors of industrial printing: functional, decorative and packaging.

The event connects the manufacturing industry with the industrial print community to discover the best and newest technology

AREAS OF INTEREST

Decorative printing was the prime area of interest for 48% of visitors, followed by functional (45%), packaging printing (34%) and 3D printing/additive manufacturing (20%). Machinery and printing systems, inks, print heads, materials and substrates were among the most sought after products and services.

The organisers conceived InPrint Italy 2018 to provide a perfect platform to connect new markets, understand new demands and create new business opportunities for advanced technologies aimed at the manufacturing industry. Visitors were able to find solutions to integrate new printing technologies, improve existing processes or introduce a revolutionary new digital system in production.

Leading companies in a large variety of industry sectors visited the show: fashion and textile (Salvatore Ferragamo, Louis Vuitton, Levi's Footwear and Accessories, Geox SpA, Calzedonia, Samsonite, Miroglio Textile, Tucano Urbano Ratti, Swatch Group); interior decoration (Alfredo Salvadori); ceramics and flooring (Marazzi Group); luxury goods (Danor, Luxottica); electronics (BTicino, IBM, Alcatel Lucent, STMicr); automotive (Demmel AG, Magneti Marelli, Sparco, Alcantara, Brembo SpA); software (Google); packaging (Ardaghgroup, Procter&Gamble, COCA COLA HBC, Venchi, A. Loacker, F.lli Saclà, Bauli, Luxoro); white goods (Groupe SEB, Tefal); pharmaceutical (Unifarco, Artsana); printing (HP, Xerox, Kodak, Durst Phototechnik AG, Atlantic Zeiser).

The exhibition was supported by an extensive seminar and conference programme sponsored by Xaar: 518 professionals attended the 72 sessions held by international speakers during the three days of the event. The programme included a two-day Technical Conference during which some 20 companies discussed inkjet technology for industrial application, and sessions organised by IMI Europe, TCM, The University of Sheffield and a conference organised by *Wide* magazine.

2,260 visitors came to meet 109 exhibitors from 18 countries at InPrint Italy 2018

INPRINT ITALY RETURNS IN 2020

The third edition of InPrint Italy will take place at the MiCo Milano Congressi from 24–26 November 2020. Leading companies such as Ricoh, Roland DG Mid Europe, Fujifilm, Agfa, Inx Digital, Siegwerk, Cefla and Sensient have already reserved their stands.

Ahead of the next event in Italy, Mack Brooks Exhibitions is organising two more InPrint shows: from 9–11 April 2019 in Louisville, USA, and from 12–14 November 2019 in Munich, Germany. ■

Further information:
web: www.inprintitaly.com

FESPA 2019

Explosion of possibilities at Fespa Global Print Expo 2019

FESPA has launched its visitor campaign for the FESPA 2019 Global Print Expo and the co-located European Sign Expo 2019, which will take place from 14–17 May 2019 at Messe Munich, Germany.

The campaign strapline for both events is 'Explosion of Possibilities', celebrating the multitude of commercial and creative opportunities within the screen and digital wide format, textile printing and signage markets.

SEIZE THE OPPORTUNITY

"Our insights from previous events and from this year's FESPA Print Census affirm that print service providers (PSPs) and sign-makers are continually looking at new openings and ways to grow their businesses", commented Roz Guarnori, Exhibitions Director at FESPA. "The Explosion of Possibilities theme for our 2019 global events underlines the boundless opportunity there is within our industry, powered by technology and media innovations, and an irrepressible entrepreneurial appetite to experiment with new applications and enter new markets."

Munich has previously hosted FESPA events in 1999, 2005, 2010 and 2014. FESPA Global Print Expo 2019 will cover six halls at Messe Munich, with more than 700 exhibitors expected to showcase the latest technology and applications for screen and digital wide format, textile and garment print, printed interior décor, vehicle wrapping, packaging and non-printed signage. Following its success at FESPA Global Print Expo 2018, FESPA will once again dedicate an entire hall (A4) to substrates.

European Sign Expo 2019 gives sign-makers and brand owners a dedicated exhibition for non-printed signage, while offering PSPs the opportunity to explore opportunities in visual communications beyond print.

Visitors will also benefit from a host of educational features reflecting FESPA's commitment to investment in education and promoting best-practice, including popular regular features from previous events and fresh initiatives guided by market trends and visitor feedback.

Over 700 exhibitors are expected at FESPA 2019 in May

INSPIRED TO INNOVATE

"It's evident from the record-breaking visitor attendance to our 2018 events in Berlin that the annual flagship FESPA Global Print Expo in Europe is regarded as a key destination for print and signage businesses looking for the tools to fulfil their ambitions," continued Roz, "and for inspiration from real stories of business transformation. As our exhibitors share their launch plans over the coming months, we look forward to seeing what fresh possibilities they are creating, and imagining new pathways to sustained growth for our visitors." ■

Further information:
web: www.fespaglobalprintexpo.com

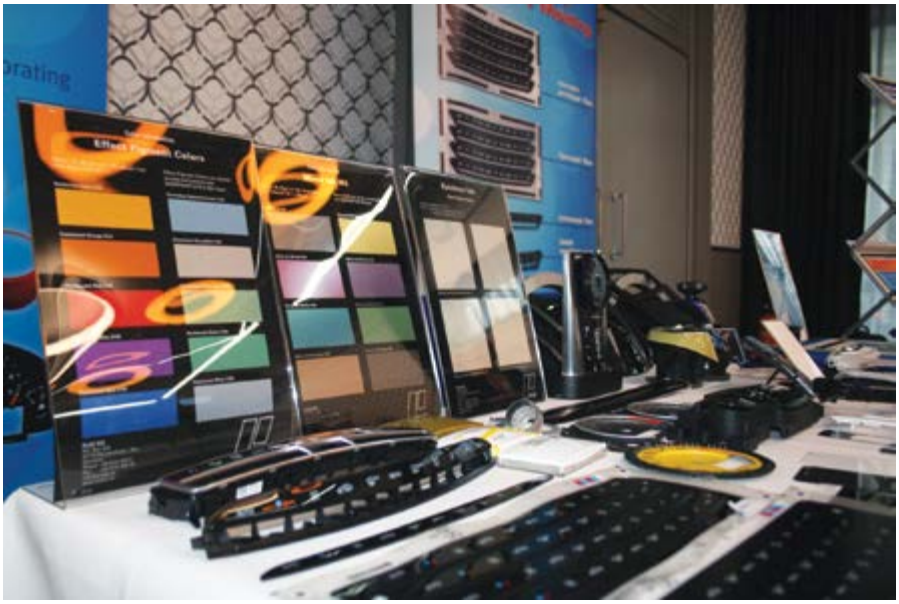
AFIP 2019 RELEASES CONFERENCE DETAILS

24 presentations to provide new inspirations for print in production at the Advanced Functional and Industrial Printing conference 2019

Technology suppliers, technology users and research institutes have already confirmed their presentation titles for the Advanced Functional and Industrial Printing conference, which returns on 27–28 March 2019 at the Radisson Blu Scandinavia Hotel in Düsseldorf, Germany.

Organised for the fourth time in its current guise, the AFIP conference is already an established brand on the industrial printing market and a platform to discuss market scenarios and a full spectrum of technical issues, such as chemical resistance, mechanical strain, abrasion and weather resistance, glossiness or fluid deposition on challenging substrates and components. As demand grows for products that increasingly incorporate print, there is a consistent growth across the functional printing landscape. Printed electronics alone are one of the world's fastest growing technologies, present in such application fields as consumer goods, Internet of Things, healthcare, aerospace or transport.

The conference continues to unite representatives of various market sectors. Next to major hardware, software and ink providers from the screen printing and digital inkjet world, AFIP welcomes input from technology users, emerging start-ups and academic institutions that want to highlight the latest available solutions and the future direction their research is leading them.



AFIP offers a particularly broad approach to printing methods which serve the production processes of today and the near future

KEYNOTE SPEAKERS

Keynote speakers include Prof. Timothy Claypole from the Welsh Centre for Printing and Coating at the Swansea University and Jesper Hassel, the CEO of the Swedish company Mevia. Prof. Claypole will talk about the recent research in fine line printing of functional inks for automotive applications and Jesper Hassel will show how printing facilitates adherence to medication. Jérôme Mouly will present the dynamic of the inkjet functional printing with market metrics for the next five years, following the findings of the latest Yole Développement study. 'Goodbye, membrane keyboard?' is a question that will be addressed by Martin Gehrig from the membrane switch manufacturer Hoffmann+Krippner and Dr Paul Jahnke will explain 'Radiopaque 3D printing of patient specific phantoms: An inkjet application for patient safety in radiology.'

Among other submitted titles are:

- 'aNIR-enabler for advanced functional printing applications' by Dr Kai K.O. Bär, Adphos,
- 'Digital fabrication of flexible electronics' by Peter Willaert, Agfa.
- 'The screen imaging process with different technologies for different applications' by Oliver Leven, CST.
- 'Inks for smart surfaces and in-mould electronics' by Dr Fabian Gyger, Elantas Europe.
- 'Advanced finishing solutions: A new era for market interaction' by Germano Primi, Eptainks.
- 'From 2D to 3D printed electronics: Two industrial approaches for integrating electronics in 3D objects' by Claudia Delgado Simao, Eurecat.
- 'Inkjet in coatings and complex shapes: Technologies and processes' by Debbie Thorp, Global Inkjet Systems.
- 'Simplify screen printing: The importance of a perfect screen' by Andreas Ferndriger, Grünig/SignTronic.
- 'High resolution silk screen print form imaging for exacting applications' by Dr Gérard Rich, Lüscher Technologies.

Educational sessions cover a whole host of presentation topics

- ‘Automotive 2.0: From analogue dial to display and from plastic to cooltouch’ by Claudia Bauer and Markus Rodrigo, Marabu.
- ‘Advancements in inkjet technology for material deposition for research and manufacturing’ by Scott Liniger, Matthews Automation.
- ‘Precise warp determination and measurement on silk screen sieves. Thread counting vs. mesh measurement’ by Jürgen Brag, OSIF.
- ‘IMD/FIM screen printing inks, adhesion promoters and protective lacquers for film insert moulding technology’ by Dr Hans-Peter Erfurt, Proell.
- ‘Mesh beyond the state-of-the-art’ by Peter Fleischer, PVF.
- ‘Advanced screen printing mesh in an industrial environment’ by Patrick Brunner, Sefar.
- ‘Make printhead jettability wider’ by Yoshinori Domae, Seiko Instruments.
- ‘How is printed electronics serving your everyday life?’ by VFP Inks.

TABLETOP STANDS

Organised in parallel to the educational sessions, a networking area featuring 25 tabletop stands welcomes visitors for more in-depth conversations and commercial information exchange. Among the exhibitors are Adphos, Agfa, CST, Elantas, Encres Dubuit, Eptainks, Global Inkjet Systems, Grünig-SignTronic, Industrial Print Solutions, Lambda Technology, Lüscher Technologies, Marabu, Matthews Automation, Microdrop, Natgraph, OSIF, Proell, PVF, RKS, Sefar, Seiko Instruments, Sun Chemical, VFP and there are still last spaces available for booking. One of the companies exhibiting and presenting at AFIP, CST GmbH from nearby Krefeld, invites all attendees for a factory tour in the afternoon on 26 March 2019.

A networking area featuring 25 tabletop stands encourages more in-depth conversations

See website for the detailed conference agenda, exhibitor and delegate registration. ■

Further information:
web: www.afip2019.org

INPRINT USA LOOKS TO THE FUTURE

The next InPrint USA show will take place in Louisville, Kentucky in 2019

Since the first InPrint exhibition launched in 2014, industrial print technology has flourished – inks have improved, print heads are more robust, print resolutions higher, engineering has developed, and software is able to process data faster thus enhancing digital print performance. Beyond that, the manufacturing sector, which encompasses virtually every industry, has grown its interest and investment into the future of print.

A survey conducted by the InPrint show indicates current adoption of industrial print technology is taking place mostly in the packaging industry, specifically flexible packaging, with printing for corrugated a close second. Packaging and décor markets both ranked high for industries showing the most promise for immediate opportunity and functional printing as the most technically challenging of the markets. Respondents also ranked North America high as a market showing strong growth potential for industrial inkjet. Helping connect the North American industrial print market is a main reason the InPrint USA show will take place in Louisville, Kentucky in 2019.

"According to Forbes, Louisville ranked number 1 in the nation for manufacturing and continues to stay in the top 10 going into 2019," says Christina Molina, InPrint USA Show Management. "Being centrally located between the packaging and manufacturing community in the Midwest and Northeast regions of the US and within a day's drive to more than half of the population puts the InPrint show strategically in a great spot to attract key visitors."

The InPrint USA show will help to connect the North American industrial print market

NEW PARTNERSHIPS

InPrint visitors consist of brand owners, CTOs, R&D directors, production developers and designers, end-users and more. Some key companies who attended last year's show include Boeing, Nike, Coca-Cola, Proctor & Gamble, Hallmark, Kimberly Clark, and GE Appliances.

To help identify key visitors, InPrint established new partnerships with leading end-user groups for the 2019 show, proving the need for a dedicated forum of print in manufacturing. To date, these include:

- Wallcoverings Association
- Kentucky Automotive Industry Association
- Flexible Packaging Association
- National Association of Printing Ink Manufacturers
- National Graphene Association

"We are very excited about the partnership with InPrint USA," said Dave Tatman, Executive Director of the Kentucky Automotive Industry Association (KAIA). "It is critical for our members to be aware of new solutions and cutting-edge technology for automotive manufacturing and we are thrilled that InPrint USA is bringing solution providers to our backyard."

FOCUS ON PACKAGING, DÉCOR AND FUNCTIONAL

Industrial print technologies can be applicable to a huge variety of industries, and InPrint has categorised those into three main markets: packaging, décor and functional. Exhibits and conference sessions presented at the show will feature products and content for all three of those markets.

As the sector seeing the most growth within industrial print, packaging is known to be an 'umbrella' term for a wider range of applications including folding carton, flexible packaging (pouches, bags, wraps) and corrugated. InPrint USA is co-located with ICE USA, the International Converting Exhibition for web-based materials which has attracted over 3,000 packaging, paper and plastics converters.

From textiles and plastics to glass and ceramics, there are myriad possibilities for décor printing. "Our partnership with InPrint USA will help expose our membership to new design and customisation possibilities available with industrial print," said Matt Bruno, Executive Director of the Wallcoverings Association. "This is a good opportunity for

our members to learn about the technology and how it can grow their business."

Functional printing is defined as enabling a product's functionality through digital, inkjet, or screen printing. This printing process has enhanced production of sensors, circuit boards, RFID tags and more within manufacturing. Industries served and present at InPrint USA include printed electronics, automotive, and security.

And the capabilities are meeting demand. At InPrint USA, exhibitors showcase printing equipment, materials and technologies to successfully and efficiently print on any flat, curved, or rigid surface. "We're looking forward to showcasing Roland's advanced digital printing technologies for interior décor and textiles at InPrint USA 2019," said Roland DGA Business Development Manager Chris Medrano. "Demand for these items is growing rapidly, and our state-of-the-art inkjet printers are making the decoration of everything from furniture and wallcoverings to apparel and accessories easier and more cost effective than ever."

GROWING WITH THE INDUSTRY

New technologies and processes are constantly changing the industry. Granted, it can be challenging to keep up with, but these evolving technologies keep designers, marketers, equipment suppliers, and integrators talking and focused to stay in front of the print evolution. The same evolution that calls for meeting consumer demand, sustainability, creativity, and business growth.

New features at InPrint promise to deliver opportunities for engagement on these topics. The 'Ask the Experts' pavilion will provide visitors with complimentary consultations with some of the industry's most accomplished professionals. Returning to InPrint is IMI Tech Talks, where leading OEMs highlight the latest developments and challenges within industrial inkjet technology. Tech Talks will run within InPrint's conference programme at the InPrint Theatre, located on the show floor.

InPrint USA will be held April 9–11, 2019 at the Kentucky International Convention Centre in downtown Louisville and registration is open via the website. ■

From textiles and plastics to glass and ceramics, there are myriad possibilities for décor printing

Exhibitors already signed up for InPrint USA 2019 include Wikoff Color

Further information:
web: www.inprintusaexhibition.com

HIGHFLYER

How EFI VUTEk 'cool cure' LED printing has helped Grand Kunlun DigiTECH to grow its business across China

Li Jun, the general manager of Shenzhen Grand Kunlun DigiTECH jokes that his entrepreneurial process in founding his company was not that complicated. Thinking the trade in China's southern region was prosperous, he came to Shenzhen with nothing in 1996 and started a printing materials and devices import and export business, and then gradually pivoted towards advertisement printing.

However, with strategic focus, the company has expanded its coverage, printing everything from aeroplane graphics to the fleet wraps for Shunfeng Express cargo vans travelling all around China.

THE GREAT OUTDOORS

Grand Kunlun has served as a 3M printing substrates sales agent for eight years and has been honoured with first place in sales nationwide. Li Jun noticed that few distributors and print providers had the capabilities and training to offer 3M MCS Warranty certified graphics (an internationally recognised offering for outdoor graphics) – based on his understanding of the outdoor advertising market, Grand Kunlun started to offer graphics printing as a new service using EFI technology.

Using high-quality substrates from 3M and advanced equipment from EFI, Grand Kunlun's products ensured quick growth in the out-of-home and in-store graphics printing market.

Meeting exacting standards for the aviation industry

Using the VUTEk GS2000lx 'cool cure' LED technology enables Grand Kunlun to print on a wider range of substrates

Grand Kunlun produces exterior aircraft graphic films, and has implemented a complete exterior aircraft graphic production offering

HIGH PROFILE CLIENTS

Walmart China head office selected Grand Kunlun as a signage supplier in 2010, servicing 400 stores as well as printing graphics for Walmart trucks nationwide. Six years later, the company also began providing graphics for Walmart's Sam's Club stores in China. And, since 2015, Grand Kunlun has supplied graphics to Amway, providing services for Amway's 12,000 stores and experience centres in the country.

Grand Kunlun also is the national supplier of logo printing services for Shunfeng Express cargo vans. According to Li Jun, Shunfeng Express has the highest brand requirements of all the brands he knows. The specifications for producing graphic films for cargo vans alone is several pages long, and they require the use of EFI printing devices and 3M printing materials. Because of the company's reliability, Grand Kunlun has been awarded contracts with Shunfeng Express for three consecutive years in nationwide bidding for its transportation and logistics logo printing services.

SETTING NEW STANDARDS OF EXCELLENCE

"After buying the EFI VUTEk GS2000lx Pro LED inkjet printer, our overall quality reached a new level, and many of our clients noticed the improvement," Li Jun says. "In particular, the printer's 'cool cure' LED technology enables us to print on a wider range of substrates. As a result, our clients have more choices available to them to create graphics that best represent their brand and product advantages."

By using the EFI VUTEk GS2000lx Pro printer, EFI and 3M co-branded inks, and printing on 3M substrates, products receive a guarantee under the 3M MCS Warranty system – a warranty from 5–7 years for outdoor graphic products – so clients don't need to worry about fading, cracking, peeling and other potential risks to graphic quality. The printer also has EFI UltraDrop Technology, which uses smaller drop sizes and more precise control with native 7-picolitre print heads and true multi-drop addressability in each dot position. Combined with four-level greyscale and two ink density levels, the result is outstanding smoothness in shadows, gradients and transitions.

The ability to produce and manage projects and meet an internationally recognised specification for quality graphics printing has helped Grand Kunlun spread its business across China and broaden its product portfolio in all areas.

"The warranty has led us to working closely with EFI. With EFI VUTEk printers, we can more confidently devote ourselves to setting industry standards and winning more orders," says Li Jun.

AVIATION INDUSTRY

Grand Kunlun scored a win-win situation for one customer who used the company to produce graphics for the exterior of aircraft using the EFI VUTEk GS2000lx Pro and 3M products. Graphics produced for the aviation industry must be in line with aviation standards, and the relevant governmental department has given approval for 3M-certified printing businesses to do this work in ways that meet government standards. Grand Kunlun is among the first companies certified to produce exterior aircraft graphic films, and has implemented a complete exterior aircraft graphic production offering.

"If you want to do business with a big brand and make it a win-win situation for you and your customer, you should have strong capabilities," believes Li Jun. "It is important keep learning and innovating." He attributes that motivation – superior service for brands and the drive to continue developing as a company – as the difference for his company, and using EFI's technology is part of that success. ■

VUTEk is a registered trademark of EFI

Further information:
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web: www.efi.com

Sensient Inks announces Turkish distribution partner

Developer and manufacturer of digital inks, Sensient Imaging Technologies has entered into a distribution agreement with Spot Uluslararasi Tekstil for the Turkish market. Founded in 1991 and based in Istanbul, Spot Uluslararasi Tekstil will help promote Sensient's range of digital textile inks throughout Turkey.

"Spot Uluslararasi Tekstil is an experienced partner with a strong reputation for quality and service that matches the values of Sensient and the professional service and commitment we expect for our clients," commented Jerome Jeanneret, Managing Director of Sensient Inks Europe. "We believe that this appointment will make Sensient a leading provider of digital textile inks for the Turkish markets and allow existing and new customers to truly experience the quality of Sensient."

In addition to its agreement with Spot Uluslararasi Tekstil, Sensient will maintain its direct supply of products to strategic partners and has appointed a Turkish sales manager to ensure the very best communication and service to all of its customers.

"We recognise the importance of the Turkish market as a centre of excellence in textile printing with strong growth potential," observed Mike Geraghty, President of Sensient Colors. "By adding local management and a quality-focused distributor to launch our new ranges of innovative inks, we are demonstrating Sensient's commitment to the success of our customers in Turkey." ■

SGIA creates first-ever Convergence Council

Ford Bowers, President & CEO of SGIA

The Specialty Graphic Imaging Association (SGIA) has created a Suppliers and Manufacturers Council (SMC), an elite group of industry leaders who will advise the association on issues and concerns related to the future success of their companies, their customers and, more importantly, the printing industry.

"The SMC will reflect the ever-changing diversity of the industry and provide an important voice from the supplier community," said Ford Bowers, President & CEO, SGIA. "It's strategically important for keeping with SGIA's larger, community-based approach."

The SMC also gives supplier and manufacturer members an opportunity for peer-to-peer interaction and advice in selected areas including event participation, access to customers and new markets, industry research, legislative affairs and advocacy, training programs and talent acquisition.

"We're relying on the SMC for their industry experience and knowledge as well as their desire to play a pivotal role in helping shape the future direction of the industry and our association," said Bowers.

"This council gives SGIA a unique opportunity to look at how these rapidly converging markets of applications and technologies are impacting the industry and where an increasing number of customers are now looking for us to help them enter new market segments. The SMC represents our first and best opportunity to really leverage this association and the PRINTING United partnership between SGIA and NAPCO Media to help define the future," said newly appointed SMC Chairman Andrew Oransky, President, Roland DGA Corporation.

COUNCIL MEMBERS

The SMC is designed to represent the convergence taking place in the printing industry. Members include executives from segments including commercial print/publications, in-plant printers, package printing, wide-format and graphics, garment decoration and functional printing:

- Andrew Oransky (SMC Chairman), President, Roland DGA Corporation
- Danny Sweem, CEO, The M&R Companies
- Kimberly Daugherty, President, Advanced Color Solutions
- Carleen Gray, CEO, Stahls'
- Heather Poulin, Director – Strategic Planning & Business Development, Ricoh USA
- Ken VanHorn, Vice President – Marketing and Operations, Mimaki
- Chris Raney, President, Baumer HHS
- Ken Ingram, President, Screen Americas
- Frank Tückmantel, Vice President – Corporate Marketing, EFI
- Michael LaBella, Commercial Director – Inks & Industrial Colors, Sensient
- Larry Moore, Vice President – NA Partner Programs, Esko
- Michael Abergel, Executive Vice President & Managing Director, MGI
- Scott Fisher, President, Fisher Textiles
- Eric Tischer, President, Verseidag
- Kay Fernandez, Senior Vice President – Marketing, Konica Minolta
- Michael Sanders, Director – Printable Textiles & Finishing Technology, Top Value Fabrics
- Jacki Hudmon, Senior Vice President – New Business Development, Komori
- David Wilkins, Vice President – Sales and Marketing, Xeikon ■

Calmatech joins MHM and Tesoma at LFFICIENCY Holding

A manufacturer of high-level flash cure units, Calmatech BV's expertise will be integrated into MHM Machines Highest Mechatronic and Tesoma. By acquiring the Dutch company, LFFICIENCY Holding has completed another step towards the expansion and further integration of its textile finishing portfolio.

"For our holding company and the other companies in the group the integration of the Calmatech competencies is a reasonable addition," commented Ulrich Loser, owner of the LFFICIENCY-Holding, MHM GmbH and Tesoma GmbH. "Together they will be able to offer an even more effective and attractive portfolio. For customers, this means more efficiency and complete service from a single source."

MHM Managing Director Thomas Fröhlich added: "Calmatech solutions have an excellent reputation especially in the field of so-called intermediate dryers in the textile industry. For us as MHM, this is exactly the complementary element to our textile printing machines. We will make good use of these synergies and offer our customers further integration." ■

Mutoh hybrid promises widest substrate compatibility

The 64" (1625mm) VJ-1627MH is the latest addition to Mutoh Europe's ValueJet collection of wide format digital printers. The new hybrid model features a hot air knife media drying system and resin-based inks, enabling direct printing on both rigid and roll substrates; prints are dry when they come off the printer. The ValueJet 1627MH incorporates a high end piezo drop-on-demand printhead capable of producing print resolutions up to 720 x 1440dpi, making it suited for top quality output for short viewing distances.

The printer is supplied with a new versatile CMYK + White resin-based 'Multi-Purpose' MP-31 inkset, allowing direct printing on white, transparent and coloured rigid substrates, including foam board, cardboard, alu panel; even on acrylic sheets as well as rigid sheets for thermo forming (PVC, PS, PP, APET, PLA). Printing on white, coloured and transparent roll substrates is also possible, including heat sensitive media, shrink film, recyclable non-PVC media, etc. The MP-31 series inks are stretchable and shrinkable, and have a UV durability up to two years outdoors without lamination. The inks also preserve the natural texture and look of substrates (e.g. matte; glossy).

For rigid printing, the printer can be equipped with foldable rigid print tables. It handles rigid substrates with a thickness of maximum 16mm and a weight of maximum 15kg. An optional media alignment system can be mounted to easily align rigid media at the front side, which allows perfect double sided printing.

The 1627MH can also be used with customised jigs for printing on all kinds of pre-cut blanks. For roll prints, the five-colour 1627MH can be equipped with a 30kg automated take-up system to roll up finished prints. Switching between rigid and roll set-up is fast.

Compared to its predecessor, the ValueJet 1617H, the VJ-1627MH delivers a performance increase of up to 20%. In CMYK setup, print speeds up to 12m² per hour at 720 x 720dpi are possible. Mutoh has also improved the user interface, and implemented semi-automated cleaning cycles as well as automated media height measurement, ensuring perfect output thanks to an identical gap between the printhead and the substrate, regardless of the substrate thickness. Maintenance features have also been improved.

The ValueJet 1627MH is available throughout EMEA territory via Mutoh authorised resellers. ■

DO YOU HAVE NEWS TO SHARE?
inbrief@specialistprinting.com

Azon boosts productivity with Matrix R platform

Taking a new direction with its Azon Matrix industrial solutions, Azonprinter has launched the Matrix R platform based on Ricoh Gen5 printheads for added productivity.

Azon's Matrix R industrial series offers flat-bed UV-LED inkjet printing solutions with optional bed sizes of 800mm x 1600mm / 1600mm x 2500/3200mm. The Matrix R platform will be able to print on to substrates up to 25cm in height and is capable of handling heavy materials up to 100kg for indoor, outdoor and industrial applications, ranging from ABS, polycarbonate, TPU, PVC, wood, stone, glass, canvas, ceramic and aluminium, and additionally covering ADA and Braille 3D printing and print on cylindrical objects.

The latest version of the printhead comes with four channels and four colours due to its four-row construction choice with 1200 nozzles per colour and full greyscale to enable printing speeds up to 25.8sqm/hr. The Gen5 is designed for 100 billion actuations per nozzle.

Along with new Gen5 printheads, Azon RIP software and flex, phthalate-free ink with EN 71-3 certificate ensures quality print and safe use on various applications.

The Matrix R series supports sign makers, printing houses, commercial customers, gift stores, photographers and enters new business areas with a diversified approach for future market demands in home décor, interior design, graphics industry and industrial applications. ■

The new Matrix R platform from Azonprinter is based on Ricoh Gen5 printheads

Andrew Oransky appointed CEO of Roland DGA

On 3 January Andrew Oransky was announced as Roland DGA Corporation's new CEO. Oransky has served as president, responsible for day-to-day operations at the California-based company since 2016. In his expanded role as CEO, he will assume overall responsibility for company strategy and performance and will report directly to the board of directors at parent company Roland DG.

"All of us at Roland have great confidence in Andrew's excellent leadership qualities as well as his extensive knowledge across the multiple industries we serve," said David Goward, previously CEO of Roland DGA and currently Executive Vice President, Director at Roland DG. "Under his capable guidance and with the cooperation of the rest of the leadership team, we expect continued growth and success in the years to come." ■

Andrew Oransky is now CEO of Roland DGA Corporation

Easiway extends its reach

The REACH ('Registration, Evaluation, Authorisation and Restriction of Chemicals') compliance programme adopted by Easiway Systems will improve the way the company delivers its eco-driven cleaning and reclaiming products for the screen printing and graphic arts industry.

Designed by the European Union to improve the protection of human health and the environment from the risks that can be posed by chemicals, while enhancing the competitiveness of the EU chemicals industry, REACH also promotes alternative methods for the hazard assessment of substances in order to reduce the number of tests on animals.

"The values of REACH line up with the values of our company: improving the protection of human health and the environment," said Sara Broghamer, Chief Operations Officer of Easiway. "We have developed a roadmap with our inside compliance team and European-based only representative to assure we are compliant with REACH now and in the future; this is a regulation we are not taking lightly," she explained. "It is by embracing regulations such as REACH that sets Easiway apart from the competition, and will only continue to strengthen our delivery of the best screen chemicals to the global industry." ■

Xaar gives Chinese ceramics competitive edge

Chinese tile manufacturer Inol Ceramics has adopted the Xaar 2001+ printhead for its latest tile designs.

Based in Foshan, China, Inol Ceramics Ltd works closely with Italian design companies to manufacture ceramic tiles and distribute them internationally. Having used Xaar printheads since 2013 and operating more than 10 machines with Xaar printhead technology, Inol chose the 2001+ printhead because its combination of speed, quality and high ink laydown would enable it to print the latest complex tile designs and differentiate itself from its competitors

Offering 720-dpi resolution and maximum ink laydown of 40g/m² at 25m/min line speed, the Xaar 2001+ GS12 produces tiles with higher definition. This results in delicate textures and natural, realistic colours. In addition, Inol found that designs with a significant use of black, which require very high ink laydown requirements, are easily produced, avoiding issues of lining or possible ink starvation that they have seen with other printheads.

Inol chose Xaar's 2001+ printhead to help it achieve the print quality and productivity required for its tile designs

The upgrade to the Xaar 2001+ has allowed Inol to expand its product range as well as producing a significant improvement in cost efficiency.

"We've had direct feedback from customers complimenting the clear colours and richer layering on our latest tile designs," said Wo Wai Hao, Deputy General Manager of Inol. "The Xaar 2001+ not only produces tiles with stronger colours; it has also helped us achieve true product differentiation by allowing us to create more unique and innovative designs."

Gerard Winn, Senior Product Manager at Xaar, commented: "We are delighted that the Xaar 2001+ printhead has been chosen by Inol Ceramics. With its productivity and reliability in single-pass applications, it provides the performance, durability and high laydown capabilities that ceramics manufacturers need to get ahead of their competitors." ■

Meteor launches new line of DropWatchers

Independent supplier of electronics and industrial inkjet printhead software, Meteor, has introduced a new DropWatcher family of products.

Driven by a single Windows 10 PC, Meteor DropWatchers are turnkey systems for evaluating and optimising printhead and ink combinations using proven electronics that can be transferred straight from the lab to manufacturing.

Incorporating easily interchangeable printhead mounts, printhead drive electronics and intuitive software with the familiar Meteor user interface, Meteor DropWatchers support all major industrial inkjet printheads from FUJIFILM Dimatix, Konica Minolta, Kyocera, Ricoh, Seiko Instruments, Toshiba TEC and Xaar.

"We are proud to crystallise Meteor's extensive inkjet electronics and software experience into this new DropWatcher family," said Matthew Pullen, Meteor's product manager for DropWatching Systems. "Ink manufacturers and print system developers will now benefit from a cost-efficient way to visualise and measure drops in flight while adjusting printhead waveform parameters in real time." ■

Meteor DropWatchers control printhead waveform characterisation and development.

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