



White breakthrough from VUTEK

How white ink and three-layer capability allow the VUTEk QS series UV printers to open up new vistas of creative and commercial possibilities



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Breakthrough white applications – in-line and three-layer white capability

Although the fundamental ability to digitally print white ink has been around for a few years, recent technological advances have significantly improved the processes involved, enabling printers to offer customers a wider range of print effects and entirely new applications based on white ink.

Apart from the often time-consuming option of off-line screenprinting, the choices available to digital printers who wished to produce white text or graphics in colour jobs were exceedingly limited. This has changed as increasingly innovative digital inkjet technology continues to push the boundaries. Superwide format printers can now offer new capabilities in the variety of substrates that can be printed, as well as new techniques for applying and using white ink.

Not long ago, white media was the standard substrate for inkjet. Now that UV-curable inkjets can print onto non-white substrates, such as wood, metal, fabric and glass, there's a growing requirement for white ink to act as a base layer. This is good news for digital printers who can enhance creative projects and explore new applications, differentiating themselves from the competition and increasing revenue.

EFI's cutting-edge VUTEk UV technology, long regarded as setting the industry standard in superwide format inkjet printing, leads the field with its white ink capability. Although other manufacturers offer white ink as an option on their equipment, EFI's latest VUTEk QS printer range offers a seventh white ink channel as standard. This means that VUTEk users, and ultimately their customers, do not sacrifice their light cyan and magenta ink sets to achieve white output, thus eliminating any trade-off in quality.

Unique in-line capability

But more importantly, the QS2000 and QS3200 superwide printers differentiate themselves from solutions offered by competitors thanks to their ability to print white in a unique mode, in-line. By including white ink as a seventh inline channel, the QS-series can apply ink in three independent layers enabling not just pre- or post- flood, but also in a number of valuable variations. This unique capability in the QS opens up an entirely new host of applications for white ink.

Kevin Currier, applications engineering manager for EFI's VUTEk solutions, explains, "Until recently, white ink was used predominately as a pre-coat or diffuser to flood a substrate. Digital technology really ups the tempo, as white can be used in new application areas. This is typified by our QS-Series, which offers in-line printing of white ink in six variations: overprint, underprint, spot, underspot, fill and overspot."

While some of EFI's competitors offer white ink in basic pre- or post-flood applications, the ability of the QS-series to deliver true in-line printing capability in three layer applications is a key differentiator that Currier highlights. "Unlike certain machines on the market, the VUTEk QS Series includes technology that sees the ink heads positioned in one line," he says.

"This means that we are unique in delivering superwide format solutions that can print three layers on top of each other in one pass, without the need to re-introduce the substrate into the printer.

White ink and three-layer capability allow the new breed of superwide inkjets from industry pioneer VUTEk to open up a whole new range of possibilities for digital printers.

"The printheads on some manufacturer's machines are positioned in the series: white, colour, then varnish. However, this makes certain applications considerably more time consuming, especially those involving transparencies. In such a print head combination it isn't possible to print white as an overprint to achieve a diffusing effect. As the panel can only go through the printer in one direction, a user would have to first print the colour, then re-introduce the substrate to print the white."

For Currier, it is this high level of versatility, achieved from three-layered printing, that sets VUTEk technology apart from the rest of the market. "What this basically means is that print shop owners can quickly and more easily achieve spot white effects under part of a print, so instead of just using it as a flood they are considerably enhancing certain aspects of images that they wish to emphasize", he adds.

These tools allow the user to interchange the lay-down order of the three individual data layers. In its simplest form, the process allows see-thru film to be printed for a window, as detailed in the panel on the opposite page. It's all done inline with no need for material reintroduction or any post-processes. More creative uses are also possible in the hands of a skilled pre-press operator.

The customisation of images is now limited only by the imagination and skills of the user. By making careful decisions in the early stages of image development, the second and third layers can be engaged in a variety of creative ways. Key colours can be emphasised by adding the equivalent of bump plates, rich blacks, or elements that are hidden under ambient light and only exposed when backlighting is applied.

Chuck Dourlet, VP marketing for EFI VUTEk, says that this enables VUTEk owners to enter a market previously dominated by photographic printers. "By utilising the seventh channel running white, our customers can not only achieve the same level of output as photo or RGB printers, but can do so without incurring the high cost of some films and consumables", he explains. "The expanded range of capabilities, including closer matches on photographic reproductions, is one of the reasons our customers are installing printers like the VUTEk QS2000 and QS3200."

The ability to use white to overprint, underprint, spot, underspot, fill and overspot has seen creative boundaries extended as VUTEk users achieve new and exciting effects. Currier cites examples of how users are working with creative bureaus to realize ideas that would have previously been unachievable.

“We have a customer who needed to produce printed output to promote bread for a food retail client”, he says. “He found that by printing the bread image onto wood, he was able to capitalise on its structure and emulate the rustic, artisan look and feel of traditional breadmaking – even though the bread was manufactured by industrial means. At the same time, printing the client’s logo onto a non-white substrate proved easy and allowed him to achieve a Pantone match using the white ink.”

Using the white ink seventh channel can also save time and ink when printing coloured substrates. Indeed, certain applications like spot underprinting can now be easily achieved when previously they would have been considered irksome, if not impossible to produce.

“The printer who needs to produce a small image containing white onto a large black panel, now has increased means of printing the job than merely resorting to digitally printing the black background using black ink”, says Currier. “It is far easier and more effective to produce the image onto something like black foam PVC Forex, under-printing the white in the desired area of the image. This would consume less ink and would likely be faster.”

Customer experiences

Typifying customers that are reporting increased business from the white ink capability is Bradford based large-format specialist, Multigraphics. “Our VUTEK QS3200 was installed during May and has been running virtually 24/7 ever since”, says Multigraphics’ marketing manager Jo Stuart. “Much of that work involves maximising the white ink capability to enhance our applications and demonstrate our increased service offering. We could have previously used our screen printing capability for larger volume work, but small quantities would have been troublesome for us and very expensive for the customer. Having the seventh channel running white is a key advantage of the QS3200 and saves a great deal of time and money.”

An early QS3200 job was printing the graphics for Breathalyser machines for use in pubs and bars. “The graphics were printed onto 0.5 m² clear acetate substrate and included a lot of white text”, explains Stuart. “The substrate was used as an overlay for a metal unit, but we needed to back it up with white. The first batch was for only 20 panels, but since then the job has been repeated three times, with the customer astounded by the vivid intensity of the white.”

Derek Johnson, sales manager at Multigraphics, agrees. “The print quality of the white ink on the QS3200 is far better than that of other manufacturers. The printer achieves a truly stunning white, which surpasses the expectations of customers and is enabling us to compete for and win more specialist work that would have previously been beyond our reach – such as fashion industry projects. As this type of work is considered more prestigious, its higher perceived value makes it a real revenue generator for us.”

For Currier, it is precisely such attributes that are currently driving market growth. “The capability of in-line, three-layered white-ink printing as standard enables printers to differentiate themselves and boost their competitive edge”, he explains. “This in turn is allowing them to drive additional demand by not only winning more jobs, but subsequently delivering them faster and at a higher-quality than the competition – which is what it’s all about.” ■

QS Series day/night print

Window film or day/night backlit sign application



Stacy Keenan

1. The top data layer contains a four-colour image. This will appear in reverse on the back side of the clear substrate. In a window film application, the graphic will be viewable from both sides. When used to create a day/night backlit sign, this will provide extra density when the sign is lit.



2. The middle data layer contains a white ink image. As a window graphic, only areas that contain 100% white ink will be opaque. The remaining areas will be translucent. A flood white option can be selected at the printer for full white coverage, when creating a day/night backlit sign.



3. The bottom data layer contains a four-colour image. This is the image that is printed against the clear substrate in a day/night backlit sign. It is also the right-reading image of a window graphic.