Have you thought about UV curing inks?

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So, you’ve looked at all aspects of your business, cut back on costs and are making the most of your workflow. You’re already involved in digital printing and have been thinking about expanding to include a wide-format inkjet printer as you’ve recognised that this could open up new opportunities for you and your customers in areas that, to date, you haven’t been involved with, like Point of Sale. But have you considered the ink technology you would use?

For those in the know UV curing ink, which has been developed in the last decade, is currently the fastest growing ink technology around, set to dominate the industry with its incredible productivity, quality and versatility. Solvent based ink has an established place, with many machines on the market, and is ideal for certain applications such as outdoor poster, but has limitations with regards to printing speeds as well as versatility, cost and environmental performance.

In this world of wanting more of everything, a major advantage of UV curing ink is that there is no compromise on production speed. Anything printed with UV inks is cured before it comes off printer, making it a very fast process. For this reason, every supplier to the business - ink companies, head manufacturers, media suppliers, etc - are spending enormous R&D resource in both piezo and UV technology, as this is where the future of digital inkjet printing will lie.

UV inks enable printers to produce materials two to three times faster, significantly cutting the cost per print. To date, the real limitation for making an investment in UV has been capital equipment expense, an area of ongoing focus for system suppliers and manufacturers. This has resulted in prices coming down as each generation of machinery is brought to market. In the superwide format sector, many printers are already starting to retire their old solvent based roll to roll machines and invest in UV digital flatbed equipment in order to increase productivity and bring long terms business gains, despite the fact it is fundamentally more expensive as an initial outlay.

Although the quality and cost ratio for smaller, large format machines isn’t quite there yet, and today, UV ink is predominantly used in high end applications, ultimately it will become the ink of choice for low end applications as well. We’ve already mentioned that the cost per print has been reduced and productivity increased and this is noticeably starting to move down to roll to roll and flexible substrates, so if you can prove that your ROI will work, make your investment in UV technology, as it is the only real option for both high quality and productivity.

So, what about substrates? With UV, not only can you print onto a vast array of rigid and flexible substrates – the sky really is the limit – but your operator intervention time is negligible, as it is a very low maintenance technology. No more nozzle cleaning! One other compelling reason to invest in UV is to reduce the Volatile Organic Compounds (VOCs) you produce so that you don’t have to install any machinery to remove emitted solvent, better for the environment and for operators.

There are of course challenges with UV ink as with any product and, as a print service provider keen to make profits and bring new applications to your customers, you will naturally be concerned
with quality and productivity, which in the case of inkjet is related to drop size and the number of drops per second. So choose a system supplier who understands the industry and your application and has invested in R&D/manufacturing facilities to produce a stable system, being aware of how to produce ink with high cure speed, excellent adhesion and flexibility.

UV ink is a constantly developing technology that is all about achieving product stability while increasing levels of pigmentation and maintaining consistent viscosity for reliable jetting performance. None of the raw materials originally used in inkjet technology were designed for printing, let alone inkjet. However, today you will find that through significant R&D investment, suppliers have developed their own raw materials in order to make their UV inks stronger/brighter/more vivid and have a wider adhesion range specifically for inkjet applications.

An ink manufacturer partnering with a printhead manufacturer is able to develop the optimum ink for the nozzles in each printhead, and through this close relationship can ensure maximum cure speed. The trend is for more drops per nozzle, with smaller drops and higher nozzle packing density bringing greater productivity to each individual machine. Therefore if the ink isn’t tuned to the printhead, the quality of the printed product will be reduced.

Another challenging area in the development of UV ink is colour saturation, as there is a limit to the amount of pigment an ink can contain, in order for the ink to cure. Any reputable supplier will be investing in this area, looking at how to expand the colour gamut. It can be difficult to get the correct formulation in order to stop the ink from curing in its container and to ensure that the colour and viscosity remain consistent, not to mention getting inks to print onto thinner and more flexible materials that demand more environmentally friendly products. Working closely with customers is key to understanding the current application limits and developing fresh ideas.

By now you may have decided to look at some inkjet products currently in the market, and when choosing which one to go for, look carefully at the consistency of the printed material it produces and the colour gamut on offer. Individual UV ink pigment particles are coated with a dispersant that controls the size of the pigment particles, and these chemicals are critical to your final product. UV ink dispersant can easily be upset by the smallest of contaminations, and as UV is a reactive system, if the pigment particles get damaged it can trigger a reaction. In addition to formulation, process control is critical to producing products of consistent quality day to day.

The quality of the final print is driven primarily by your needs as a customer, and the reputable systems supplier will place a big emphasis on manufacturing excellence. Different machines have been developed to fit different requirements, and given the right timescale almost anything is possible for the future - just look at some of the latest announcements that have been made. Who would have thought this would be possible a couple of years ago?

So, take stock of the most recent achievements in the marketplace before you make your choice. As UV ink has so many demanding manufacturing criteria check that your system supplier has a good service and distribution network, as this network adds to the choices you have as a customer. If you decide to make what could be a considerable investment in UV technology the longevity of your supplier is important, but one advantage is that there is a limited number of suppliers manufacturing the ink, leaving you in a strong negotiating position. And, if you decide not to invest now, hold onto your knowledge for the future when the price point fits your needs.

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