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Ink drying and curing – which way next?

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According to market researcher Smithers Pira in its report titled The Future of Labels and Release Liners to 2021, economic and lifestyle changes and the focus on sustainable packaging will drive moderate growth in the global labels market by 5.4 % annually to \$ 44.8 billion by 2021.

With the increase in volume comes the ever increasing demand from brand owners and stakeholders and one of the main market challenges currently for labels and indeed for packaging as a whole is sustainability.

Traditionally solvent-based printing has been the main option for flexible packaging and long run label printing manufacturers. However, due to reduction in run length and growing pressures on the use of solvent inks from an environmental point of view, as well as risk of fire, converters and their machinery and ink suppliers are looking at how they can move away from solvent-based inks towards alternative solutions.

Sun Chemical has promoted the use of solvent-free technology for narrow web applications over the years and more recently has started to bring these processes and solutions to the wider web environment, especially to flexible packaging.

Flexible packaging has been the fastest growing sector in the packaging industry for the past ten years, largely driven by increased consumer demand for convenience and sustainability, with market indicators suggesting that this rapid development is likely to continue for some time to come. Smithers Pira forecasts that global demand for flexible packaging will continue to grow annually by around 3 % reaching a value of \$ 248 billion by 2020.

In general, solvent-based inks dominate flexible packaging, where its mature, proven ink technology continues to deliver on performance, productivity, versatility and quality across a wide range of applications and substrates. However, printers are looking at alternative ink platforms that don't contain such high levels of Volatile Organic Compounds (VOCs), but will provide the same quality of output and productivity and be economically viable at shorter run lengths.

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Equally challenging is the increasingly strict health and safety and environmental regulations, with more and more national and international governments adopting environmental regulations that specifically address the content and composition of inks and coatings. As a result, many brand owners are looking to suppliers that have a proven commitment to their workforce and the environment.

The good news is that there is a wide range of alternative, solvent-free ink platforms in the form of water-based,

water-based Electron Beam (EB) cured, EB Wetflex, UV and EB offset, UV flexo inks and UV LED cured, which offer viable options depending on application, equipment and specific requirements.

Conventional water-based inks have already gained significant market share and are proving to be the 'go-to' ink solution especially for lamination applications. Ease-of-use has also added to their attraction, as these inks can be used successfully on existing presses where there is the capability to introduce increased airflow for drying at higher production speeds.

Advances in the development of new alternative ink platforms and curing technologies have also seen the introduction of hybrid ink solutions combining water-based platforms with Electron Beam (EB) curing technologies. WetFlex® is Sun Chemical's technically-advanced, flexible packaging print solution comprising a patented print process and compatible EB curing system, which enable wet inks to be cured instantly inline at the end of the press, eliminating the need for individual drying units. With no dot gain, WetFlex® delivers high quality, gravure-level graphics and trouble-free print. In addition to wet-on-wet colour printing, last down whites, overprint varnishes and adhesives can be applied instantly as a second print layer.

AquaBeam® is another water-based EB-cured ink that can be used in existing higher speed presses retro-fitted with Electron Beam curing systems. AquaBeam® is a perfect option for process printing that requires blended and special colours and is suitable for surface print and lamination applications. It also offers EB cross-linking to create excellent resistance properties.

Lithographic offset printing is also a viable alternative for printing on to flexible packaging. SunBeam®, for example, is an EB-cured offset ink that is particularly suited to cost-effective, shorter run production. SunBeam is capable of working within presses at speeds of up to 300 m per minute, with the use of low-cost plates and a fixed colour palette, while the EB curing process creates excellent resistance through cross-linking. Adding to its appeal is that it can handle lamination inline, significantly reducing turnaround and customer delivery times.

Inkjet digital offerings in narrow web commonly use UV curing technology. Sun Chemical developed Aquacure®; a truly functional ink based on unique aqueous chemistry, which combines the best of water-based and UV (or EB) curing technologies, resulting in an environmentally friendly inkjet ink that delivers optimal production performance with a wider colour gamut. Comprising up to 80 % water Aquacure® has the print characteristics of a water-based ink – in terms of feel, weight and being odourless, with an impeccable health, safety and environmental profile for ease of use and handling. Its energy curing component provides versatility, durability and reliable jetting through the printhead.

Other options include well-established processes such as Ultra Violet (UV) curing flexo printing, which is widely used in label, lidding and flexible packaging production. Modern UV inks for food packaging now meet the most stringent compliance requirements and emerging LED curing offers environmental benefits in energy consumption reduction.

The key to selecting the right solvent-free ink is to understand that there is no 'one size fits all'. Selection is very much down to application, legacy equipment or the potential for new capital investment as well as market demand and potential opportunities. Fortunately, the sector is served with a wide selection of alternative, solvent-free inks and, by working with an experienced ink partner to help ease the process of auditing existing facilities and reviewing potential options, you can find the perfect alternative ink solutions for your business.

To learn more about alternative, solvent-free inks, Jonathan Sexton, Marketing Manager, Energy Curing Products Europe, Sun Chemical, is speaking on the subject of "ink drying and curing: the key to faster speeds, web handling and finishing" at Labelexpo Europe 2017 on Wednesday 27 September at 9.55 am in the Inks, Coatings and Varnishes Workshop.

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