KOENIG & BAUER KAMMANN makes strides with hollow body printing

When it comes to classic screen printing three basic ink systems are contrasted - namely those of the organic, solvent-based and ceramic: all of which have different ranges of process application and permissions.

As for classic ceramic screen printing on glass, solid ink upon the screen is heated until it becomes liquid. The printed image will then be cured in an oven set at circa 600°C. The ink itself is characterized by excellent scratch and adhesion resistance. Thanks also to further developments it can be fed to the screen by ink pumps. All this makes it possible to design machines that can operate at extremely high printing speeds.

The classic use of ceramic ink is tableware glass printing as well as bottle printing. Due to their high scratch adhesion resistance, bottles printed with ceramic ink can be filled in a fast-running filling line. As is proven by Koenig & Bauer Kammann's HS300, printing speeds with an output up to 300 articles per minute pose no problem.

SOLVENT-BASED INKS

These are popular for such baby products as toys or drinking bottles, given that they're food safe once the solvent has evaporated. The same inks are used for

With customized decoration solutions still all the rage today on shaped articles in glass, plastic and metal, as well as many other substrates, KOENIG & BAUER KAMMANN continues -as always- along its path of innovation in both direct and digital printing.

paper finishing in thermoplastics, glass and metal - being cured either by hot air, by removing the solvent or by tempering. A disadvantage of solvent-based screen printing is the relatively long drying time as well as its restrictions concerning printed images. Ink processing time, too, comes as limiting to image printing - and caution is necessitated if the screen remains open during the printing process.

ORGANIC INKS

Modern UV-screen printing is finding ever more applications. Once developed for plastic articles, it's now becoming increasingly popular in glass finishing too. Several points speak in its favour, including the short drying times, elevated production speed, good resistance and high gloss. Halftone printing and fine lines are no problem in UV-screen printing owing to its long open-screen time. Thanks to the latest UV LED dryers, the required energy consumption and associated CO_2 emissions are reduced even further, making UV-screen printing ever more important as compared to ceramic ink. Thanks to further developed inks and pretreatment systems, adhesion and scratch resistance on glass have also increased significantly in UV screen printing.

DIRECT PRINTING

When comparing direct printing processes, hot stamping can't be excluded from the equation. Here embossing foils, embossing stamps, pressure and heat all

converge in the process. In the case of plastic articles, the print image will be transferred from the embossing foil by a heated embossing stamp or embossing wheel. The embossing tool, which has the image engraved on it, is pressed onto the article. Then with heat and pressure the image will be transferred or embossed onto it. The foil, usually metallized in various colours -gold and silver being typically the most elegant and preferred- is coated with a primer that ensures good adhesion to the article. As for glass articles, a flux in the decorated form is printed on the article in advance. When embossing glass, as opposed to plastic, the tool isn't image engraved. Here release of the image from the foil is done in advance by the printed primer, with the foil adhering only in the parts that have primer. Hot Stamping is among the most elegant ways of decorating glass or plastic articles and is mainly used for finishing glass flacons and plastic articles in the cosmetics industry or when finishing beverage bottles in the wine sector.

DIGITAL PRINTING

Digital printing offers a unique print quality with resolutions of between 360 and 1200 dpi, depending upon article geometry and tolerances. With special technical features, printing can be done in areas where conventional printing processes reach their limits. In combination with dynamically-tiltable holding devices for optimum article positioning under the print heads, even complex geometric

shapes can be decorated. Wheat beer glasses or bicycle drinking bottles, for example, can be printed over the full height of the article. Personalizations, special series or single prints are all possible thanks to digital printing. Online-based job control, direct from website to press, is also possible. Colour management software ensures consistent quality, even with different file types. With special features in the machines, such as an article scanner with corresponding software, the printing of conical and waisted articles can be optimized too. A perfect 360° banderol print is also possible with non-circular articles. And this is individually different for each printing station. For the K15 and K20 machine series from Koenig & Bauer Kammann, these solution types are standard.

ADDED VALUE WITH INNOVATION

With the latest technology, unique and personalized "digital relief printing" decors can be offered to the customer in relief form. This can be realized either transparently or with colour. Digital relief printing offers a notable cost advantage over conventional processes, short turnaround times and a good carbon footprint - not least due to the latest, energy-saving UV LED drying.

Digital relief printing can be performed with up to 3 mm layer thickness and is especially suitable for printing small, fine details or even thicker reliefs. Such printing is precise and sharp-edged down to 0.01 mm despite machine tolerances. Depending on print length and height, up to 60 cycles/min can be achieved in digital relief printing on the K15, for example. Excellent adhesion resistance and more than 1000 dishwasher cycles are a matter of course. To ensure this, optimal pretreatment is necessary, for which Koenig & Bauer Kammann has just the right machines within its product range. In combination screen printing, digital printing, hot stamping and digital relief printing, the most complex artworks can be printed - which includes special colours in both screen and digital printing.

HYBRID MACHINES

These combinations become reality by hybrid printing machines, which are characterized by absolute flexibility. Much is possible, whether we're talking a combo of screen printing and digital printing, screen printing and hot foil stamping, screen printing and labeling or a mix of several processes. Here the customer is afforded the option of carrying out different finishing steps in a single work step. When combining different types of finishing in just one machine system, super high-precision register tolerance is hardly possible in conventional decentralized systems. The article remains in its holder during the process, which means both screen and digital printing can ideally be matched. With large machine systems, such as the K15Xl from Koenig & Bauer Kammann, the entire finishing trio can be combined, signaling how hybrid application saves an enormous amount of time and effort - not to mention cost.

CARBON DECOR

In many cases, such new technologies and developments are

already being used by Koenig & Bauer Kammann customers - whether it's pure screen or digital printing presses, or modern hybrid presses combining all the aforementioned decorating processes. The company's customers focus upon innovation, reliability and performance. One example of innovation here is Carbon Decor, of the Carbon Group. A French specialist in glass printing for the perfumery, cosmetics and bottle industries, it's proud to offer high-quality services every day thanks to Koenig & Bauer Kammann's digital and automated machines. The company's machines, both flexible and versatile, integrate a combination of all the aforementioned decoration processes, as well as recently-added personalized relief printing. Now able to look back on a long history in screen printing, Koenig & Bauer Kammann is constantly developing new machines today - which numbers it among the most innovative machine builders in the field of screen and digital printing. Such developments, made in close coordination with its customers, always aim to enable further advantages for their daily work - which is why, with Koenig & Bauer Kammann's machine portfolio, customers can configure the right machines for all applications.

K15 SERIES

The flagship in screen printing, the K15 series offers all the possibilities demanded by the market. Whether it's pure screen printing, digital printing, digitally printed relief printing or hybrid machines with hot stamping -even combinations of different systems- the possibilities are legion. Indeed for either "normal", high-speed with cycle rates of up to 110 cycles/minute, or its two-up version, the company's basic machine is always the same for all capabilities. Popular hybrid machines are combinations of screen and digital printing as well as screen printing and hot stamping - all of which increase the digital printed relief. Functions here include variable tiltable article holders in all stations, bottom register camera, article scanner, image inspection - to name just a few. However, the machine programme includes other machines besides the K15.

THE HS300

The HS300 is a screen printing machine for glass bottles that can reach up to 300 cycles/minute. To be able to run uninterrupted at these speeds the ceramic ink is fed to the screen by heated ink pumps. Indeed with the HS300, Koenig & Bauer Kammann is effectively demonstrating how developments continue also in classic glass printing.

THE K20 SERIES

This is a great solution for smaller production runs with one or two article fixtures. Tooling costs are low and set-up times short. Here, also as hybrid machines, the possibilities are as extensive with the K20 series as they are with the K15.

THE K31 SERIES

For the pretreatment of glass articles, this represents an optimal solution for UV screen printing.

FUTURE SUCCESS STORIES

All this signals that thing's are definitely afoot within the printing industry. Traditional screen printing continues to develop, complemented by in-line hot stamping and, in parallel, digital printing - which is also becoming more popular. Various decoration processes, with their very individual advantages (but also their limitations), will continue to coexist on the market. Thanks to the aforementioned modern hybrid technology, current advantages combine to offer customers optimal finishing options. Here's why the printing industry can look forward, upbeat, to the new surprises that Koenig & Bauer Kammann will bring to the market in the future. ■

KOENIG & BAUER
KOENIG & BAUER KAMMANN GmbH
Weidehorst 80 - 32584 Löhne
Germany
Tel: +49-5744-7710-0
Fax: +49-5744-7710-5130
E-mail: mail@kammann.de
www.kammann.de