

# Digital blister lid foil printing: Reduced setup times, lower costs

For small batches: DoD UV inkjet printing is more efficient than flexography, says Helmut Schneider, Product Group Manager Pharma & Packaging Solutions.

Production runs for blister lid foil printing are becoming ever shorter. The efficiency of flexographic printing, with its relatively long setup times, is suffering as a result. Fully digital drop on demand UV inkjet printing technology can keep the costs in check even with small and medium-size batches.

Until now, pharmaceutical producers, packaging service providers and foil manufacturers have primarily used UV flexography for printing blister lid foil. Its advantages come into play with long production runs and large batch sizes in particular. As long as changeovers caused by different production jobs are infrequent, the costs of consumables and printing ink in particular are what determine a plant's efficiency. But as the number of changeovers rises, the high downtimes and setup times that occur with flexo printing assume much greater proportions, so that the costs for printing ink then become virtually irrelevant. And a clear trend is now emerging towards ever smaller production runs in future. There are various reasons for this. On the one hand, medicine and drug budgets in many countries are coming under substantial pressure, so that pharmaceutical companies are having to contend with reduced margins. In such a situation the aim is to minimize the amount of capital tied up in stock, in this instance either in the form of pre-printed lid foil and/or products ready for shipment that are not immediately required. On the other, it is evident that a growing number of preparations are being tailored to suit specific patient groups, for instance to match patients' typical clinical picture, or according to sex, age, lifestyle etc. Significantly smaller quantities of each

medicine are then being produced. Furthermore, many pharmaceutical companies are affected by the expiry of patents on their blockbuster drugs. As they search for new best-sellers, more clinical trials are required which also involve relatively small batch sizes. In addition, each country has its own regulations concerning the printing of blister packs e.g. concerning warning statements or symbols. All these reasons are factors in a trend that will see batch sizes become even smaller, often falling below 100,000 blisters per production run.

At the same time, the production procedures and packaging processes in the pharmaceutical industry are already highly standardized and very efficiently organized. Increasing the pure speed of the line is often no longer feasible economically and would at any rate produce only marginal improvements in efficiency. A production plant's efficiency therefore primarily depends on the number and duration of its idle times – for changeovers, for instance, that are

inevitably increasing in number as production runs become shorter. Flexo printing's key strength – the lower costs of printing ink – is practically cancelled out. Instead, downtimes become longer and high operating costs result, without the user being able to reap the original benefit in return.

## Simply by loading a PDF

DoD UV inkjet digital printing offers an economically highly attractive alternative. DoD stands for drop on demand. Piezo-electric components fire tiny droplets of ink through microscopic apertures onto the substrate being printed. Dried by UV light in a fraction of a second, the printing on many different materials is extremely durable and offers good resistance to abrasion and solvents. Building on this technology, Atlantic Zeiser has developed the DIGILINE Blister, a fully digital system for printing blister lid foil up to 330 mm wide that can easily be integrated inline into blister packaging machines. Its production speed of up to



30 meters per minute matches the maximum performance of a conventional blister packaging machine. As an option, the system is also available in a near-line variant and as a roll-to-roll offline version for pre-production and just-in-time provision to several packaging lines.

The key benefit of DoD UV inkjet technology is that, unlike flexography, it does not involve any time-consuming mechanical effort, such as required to change, clean, store and retrieve the print mats, for instance. To start a new print job on the DIGILINE Blister, a new PDF simply has to be loaded. Whereas with a conventional flexo printing system a good hour (and therefore several thousand euros) must be allowed on average for a product changeover including organizational input, the same task takes no longer than two minutes with the DIGILINE Blister. The system already has an original PDF processing algorithm installed for job setups, so that additional software or hardware are not necessary. If demand for a particular printing variant arises at short notice, it can be met almost instantly and with limited stocks – a major advantage, especially for service providers.

## Low operating costs, minimum wear

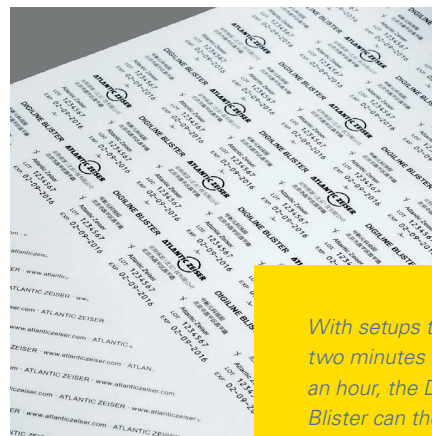
As well as the simple job setup, the DIGILINE Blister is also characterized by relatively low operating costs: on the one hand, the cost of sourcing flexo print mats and the associated logistical input for their installation, removal, cleaning and storage is eliminated. On the other, the UV-A lamps for the DoD inkjet printing are based on LED technology and last around ten times longer than the UV-C curing lamps used in flexography, that is to say for up to 20,000 operating hours. Furthermore, the UV-A LED technology uses considerably less energy and notably does not need an extraction system for the large volume of heat that arises with conventional UV-C dryers.

There are also maintenance considerations that should not be overlooked: the DIGILINE Blister's contactless inkjets are subject to little or no wear. An automatic cleaning function ensures the print heads are ready for operation. The actual cleaning process only takes around half a minute and is automated, that is to say, the cleaning results are always reproducible – and the life of the print heads is practically unlimited.

The UV special ink that is used for printing with the DIGILINE Blister is designed for high sealing temperatures and is suitable for both rotary and platen sealing. The quantity of ink can be adjusted to suit the special characteristics of a particular foil. Alternative foil materials e.g. Tyvek can also be printed with the system. So users need not accept compromises as regards print quality. The DIGILINE Blister is capable of faithfully reproducing even complex Asian scripts and very small fonts down to 4 point thanks to a native PDF resolution of 600 x 600 dpi. Because the printing system is digital, additional information such as expiry date and lot number or even variable datamatrix codes can be easily applied. Although hybrid flexographic machines have in the meantime become available that can do this too, the other drawbacks of flexography remain.

## Smooth exchange of information

Not only can the DIGILINE Blister exchange production-related data with the entire packaging line, but it can also be completely controlled via the user interface of the blister packaging machine. A further advantage is the option of connection to Atlantic Zeiser's MEDTRACKER serialization software via the VDMA-XML interface, thus permitting optimum integration in the workflow. MEDTRACKER can function as the central platform for the production management of several plants – including



*With setups that take just two minutes rather than an hour, the DIGILINE Blister can therefore print small and medium-size production runs with up to 100,000 blisters very cost-effectively.*

across several locations – for example for the administration and allocation of jobs, recording of audit trail information or the setup and management of user rights.

To sum up, there are fewer and fewer opportunities for flexo printing to exploit its strengths because batches are getting noticeably smaller. Short setup times and the low operating costs of the entire system then give fully digital printing technology the edge, without the user having to make concessions. Atlantic Zeiser has proved how this works: for printing small to medium-size batches of up to around 100,000 blisters, the DIGILINE Blister is currently one of the most cost-efficient systems.