

# NEWSLETTER

» Training Information & News in Printing and Paper Converting Technology | No. 101 | April 2016





**drupa**  
no. 1 for print  
and crossmedia  
solutions

## drupa 2016 – touch the future

### 31 May to 10 June 2016 in Düsseldorf

Mega trend Print 4.0 and the digital networking of machines and systems

2



**Wonderful drupa shell – printed in 3D – get yours at drupa 2016**

3



**Showcase Industrial Printing and 3D Printing**

3



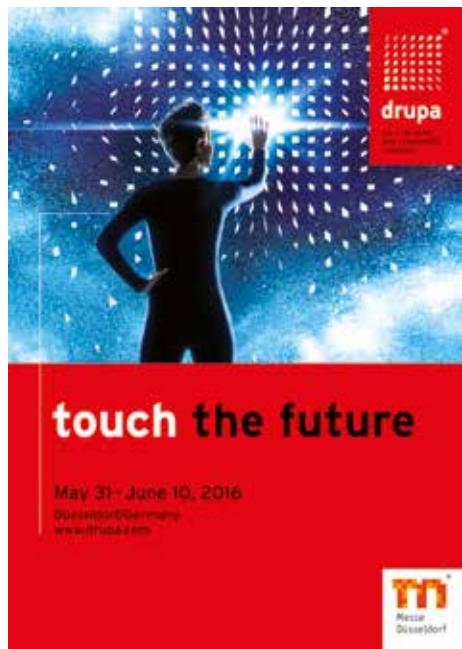
**Print 4.0 is an evolutionary process**

4

<b>drupa 2016 – touch the future</b>	2
In the run-up to drupa 2016: Fifteen PrintPromotion PrintMedia Management Conferences	2
The VDMA at drupa 2016	3
Wonderful drupa shell – printed in 3D – get yours at drupa 2016	3
Showcase Industrial Printing	3
"Print 4.0 is an evolutionary process"	4
In the pipeline – the next PrintPromotion Specialist Teacher Course	4
The PrintPromotion training partner azp	5
UV technology with and without mercury	5
 <b>Company News</b>	
Baumann: Cutting 4.0 for the networked print shop	6
MOOG: Sophisticated packaging – a convincing image	6
WINDMÖLLER & HÖLSCHER: The new generation of flexo and gravure presses	7
IST METZ: Big portfolio of UV products	8
Heidelberg: "Simply Smart" – Curtain up for the printing world of tomorrow	8
Heidelberg: Digitized value chain	9
Heidelberg: Premiere of Heidelberg's restructured digital printing portfolio	9
 <b>Partners &amp; Imprint</b>	
 <b>Printers' Guide</b>	
Gravure printing – Doctor-blade based gravure printing	18
 <b>Heidelberg: New Speedmaster generation with greater intelligence</b>	
Heidelberg: Expanded postpress range	10
Heidelberg Web Carton Converting: Alternative production of sophisticated packaging	11
Kama: Comprehensive converting and finishing solution	11
KBA: Add more KBA to your day	12
KBA: First insights into full closed-loop solutions	12
KBA: KBA 4.0 expands customer service	13
KBA: KBA Rapida 145 with new double-pile delivery	13
KBA-Flexotecnica: Hybrid web press	14
Planatol: Intelligent adhesive technology	14
Kolbus: Post-press solutions packed with innovations	15
Mosca: Strapping machines	16
POLAR: Cutting solutions for most diverse applications	16
WillPemcoBielomatik: Brands for stationery, digital print converting, and folio sheeting	17
 <b>Printers' Guide</b>	
Gravure printing – Doctor-blade based gravure printing	18

# drupa 2016 – touch the future

Mega trend **Print 4.0 and the digital networking** of machines and systems



Under the motto "touch the future" drupa 2016 places the industry's innovative power centre stage and provides a platform for future technologies. The focus is especially on next-generation and highlight themes such as print, packaging production, multichannel, 3D printing, functional printing or green printing. Some 1650 exhibitors from over 50 countries will give impressive proof of the versatility and innovative power of their sector from 31 May to 10 June 2016 in all 19 Düsseldorf exhibition halls. International global players and market leaders will present themselves alongside aspiring newcomers and innovative outfits from throughout the world. The complete spectrum of print and cross-media exhibits and topics will be represented. The mega trend at drupa 2016 will be Print 4.0 enabling individualisation and personalisation in digital printing. In the face of high-quality packaging and the rapidly diversifying range of solutions in industrial and functional printing, this digital networking of machines

and systems offers the solution and guarantee for efficiency and competitiveness.

One of the most important highlight themes at drupa 2016 is packaging production. According to current forecasts, the packaging market will grow to US \$ 985 billion by 2018. A dedicated Special Show, "touchpoint packaging" comprising some 20 participating exhibitors, reflects the relevance of this market. This special forum in Hall 12 (Stand B53) has been designed and organised in close cooperation with the European packaging design association (epda), Europe's leading association of brand and packaging agencies. To cater even better to the special needs of the various user industries, "touchpoint packaging" is divided up into four "future labs" namely "food & beverage", "non-food", "pharma" and "cosmetics".

Another highlight theme at drupa 2016 is 3D printing. The potential of these additive manufacturing technologies for any vertical markets should not be underestimated. The spare parts business in mechanical engineering or packaging design offer particularly great opportunities for machine producers, users but also print service providers. The touchpoint 3D fab+print featured in Hall 7A (Stand C41) reflects this spectrum. As part of this special show, the latest technical developments are presented here as well as visions and exciting examples of best-practice. Technology suppliers & users, exhibitors & visitors, visionaries & practitioners can all meet here for dialogue and drive this exciting subject forward.

A further major future theme at drupa 2016 is functional printing. Across the globe, there are many application examples for printed electronics. Touch sensors on furniture surfaces, Bluetooth loudspeakers

from paper or conductive inks are no longer science fiction thanks to innovative printing technology. drupa 2016 picks up on this highlight theme not at one but several points:

1. Under the PEPSO brands various exhibitors will be represented with stands on the theme of Printed Electronics Products and Solutions.
2. The OE-A (Organic Electronics Association) covers the topic with its members at "dip" (Hall 7.0).
3. ESMA, the European Specialist Printing Manufacturers Association for Screen Printing, Digital and Flexographic Printing Technologies, addresses this issue with a programme in Hall 6 (Stand C02) and Hall 3 (Stand A70).
4. And finally, VDMA (Hall 7A, Stand B13) also offers a number of activities at its showcases. (See page 3, "The VDMA at drupa 2016")

Impulse-generating innovations and business case studies for process-driven print and publishing solutions are centre stage at drupa innovation park, where young companies and start-ups as well as global players are presented with pioneering solutions. For visitors the so-called "dip" in Hall 7.0 has the hard-to-beat benefit of allowing them to explore trend-setting innovations, solutions and business case studies on an easy-to-manage area. Presentations, lectures and interviews at the "dip energy lounge" round off the ranges displayed by approx. 130 exhibitors.

The drupa cube has opted for a new approach under the heading "Entertaining, Educating, Engaging". This event and congress programme (Hall 6, Stand D03) will centre on the innovative power of printing and the multi-faceted possible applications of printed products across a multitude of industries and spheres of life.

drupa is open daily from 10.00 am to 6.00 pm (on weekends to 5.00 pm). 1-day tickets cost Euro 45 online and Euro 65 purchased at the ticket office. 3-day tickets are available online for Euro 120 (Euro 175 at the ticket office) while 5-day tickets are Euro 190 (Euro 290 at the ticket office). Students and trainees pay Euro 15 online instead of Euro 25 at ticket offices.

## In the run-up to drupa 2016: Fifteen PrintPromotion PrintMedia Management Conferences

Messe Düsseldorf gave more than 40 drupa press conferences on all continents until well into February 2016 to promote the world's leading trade fair for print and cross media solutions. PrintPromotion supplemented 15 of these events in 14 countries with Print Media Management Conferences. Following the PrintPromotion Print Media Management Conferences in Colombia, Peru, Ecuador, Mexico,

Malaysia, Indonesia, Philippines, Thailand, Vietnam (2), Saudi Arabia, and Dubai last year, the last ones were held in Istanbul/Turkey on 12 January 2016 with 110 attendees and in Almaty/Kazakhstan on 14 January 2016 with 120 attendees.

The companies contributing to the PrintPromotion Conferences were Baumann, Heidelberg, Heidelberg

Web Converting (Gallus), IST Metz, Kama, KBA, Kolbus, H.C. Moog, Mosca, Polar Mohr, WillPemcoBielomatik as well as Windmöller & Hölscher. Speakers from these companies provided first-hand information on the most important trends going on in the industry in general and on the specific innovations developed by their companies. As always, participation in these Conferences was free of charge.

# Wonderful drupa shell – printed in 3D – get yours at drupa 2016



About 2,500 unique drupa shells manufactured out of plastics with laser sintering will be ready for drupa visitors to collect.

One of the highlights of the VDMA presentation is a giveaway, a 3D printed shell of the Pacific sea snail with the zoological name **Drupa ricinus**. Production of this facsimile recreation was supported by the members of the Additive Manufacturing Association which was set up by the VDMA. The drupa shell shall demonstrate the potential of 3D printing. Especially noteworthy: Not only a 3D scan of the drupa shell was made, but the ambitious aim was also to recreate the shell's interior as exactly as possible, demonstrating a focal strength of additive manufacturing, i.e., the possibility of shaping component's interiors with cooling ducts, hollow spaces or any desired shape and thickness of walls in the layered construction. The exhibits in the Additive Manufacturing showcase are made available by members of the Additive Manufacturing Association. Besides highlighting the possibilities offered by 3D printing technologies the VDMA also wishes to make machinery manufacturers and printing houses aware of the potentials for process optimisation. Furthermore, it is a good opportunity to show consumer goods, new business models and links with print products.



3D printing technology adds layer upon layer to produce products.

# The VDMA at drupa 2016

make sure to come and visit  
VDMA Printing and Paper  
Technology Association!  
→ Hall 7A/B13

Make sure you do not miss any of the following highlights:

- see the real drupa Pacific sea shell – as well as its 3D printed cousins – in plastic and metal, in nano and macro
- be one out of 2,500 drupa visitors to secure your own unique 3D printed drupa Pacific sea shell
- Industrial Printing showcase including live demonstration of inkjet printing on 3D objects
- Print 4.0 demonstrator including live engraving of your personalized books and flyers

Also exhibiting on the VDMA booth:

- PrintPromotion
- Additive Manufacturing Association
- FGD research association
- azp training center (see page 5)

## Showcase Industrial Printing and 3D Printing (Hall 7A/B13)

VDMA members are presenting industrially printed objects at drupa 2016. Studies of the market researchers at Smithers Pira forecast a doubling of the global size of the industrial decoration and printing market to 103 billion USD in 2018. It is true that digital inkjet printing is the fastest growing technology due to its flexibility, yet there are also sound growth perspectives in industrial printing for analog technologies like screen printing, dabber printing or gravure printing. A good example is automotive engineering, i.e. rooftops coloured with diverse printing technologies, heating wires and antennas applied to windshields and rear window panes, touchscreens in cockpits as well as scales, letters and symbols on tachometers, switches and buttons that are all printed. The products on show include printed bottles, decorative elements, sensors, measuring elements, packaging and bought-in parts manufactured by means of different printing methods.

The 3D printing process has found its way into the industry. The spectrum of applications ranges from prototyping to the production of small series. In recent years, the variety of materials has increased strongly and already includes precious metals, plastic materials and ceramics. For the manufacturing industry, this technology provides numerous opportunities for new applications. Visitors to the VDMA stand can see a variety of 3D printed products that were manufactured using different added manufacturing processes.

A flyer directs interested visitors to the stands of the companies that have contributed to the showcase Industrial Printing and 3D printing.



Printing on hollow containers will be one of the highlights. With a smart device and the right app, you can even hear some of the beer bottles talk!

# "Print 4.0 is an evolutionary process"

An Interview with **Prof. Johannes Schilp**



Since the 1990s, Prof. Johannes Schilp has been doing research on concepts for digital factories. Now, the head of the Chair of Manufacturing Informatics at Augsburg University joins forces with the Fraunhofer-Projektgruppe RMV (Project Group RMV – Resource-Efficient Mechatronic Processing Machines) in order to create an exemplary 4.0 process chain for the VDMA Printing and Paper Technology Association that will be shown at drupa (31 May to 10 June, Hall 7A/B13). In the following interview, this expert explains where he positions printing and paper technology with reference to Industry 4.0, why stricter standards would be beneficial for the industry – and that he sees the present project only as the beginning of systematic research in order to transfer the ideas behind Industry 4.0 to a print process world 4.0.

**Prof. Schilp, as an expert for Industry 4.0 you have an eye on many industrial sectors. Where does printing technology engineering stand compared to other sectors?**

**Schilp:** This sector spotted the digitization wave and the inherent potentials very early. The manufacturers have used the last ten years in order to commence the evolutionary process of digitization. Therefore, they are ahead of quite some other sectors. I am convinced that, in hindsight, Industry 4.0 will seem to be an industrial revolution, but that the implementation in practice in the companies can only be an evolutionary process. In this respect, the printing press engineering sector has made a rather good job. Digital production planning and control for flexible job handling, condition monitoring and the collection of quality-related data within the process still need to be optimised. Furthermore, there is still a lot to do all the way through to a fully digital process chain in which machines and equipment for peripheral processes can be integrated per plug&play ....

**...because the networking of the processes is often based on proprietary solutions. Are standards missing or are the existing ones not adequately considered?**

**Schilp:** I don't think that standards are missing. The JDF standard is a good and far-reaching basis. The printing industry is, however, very heterogeneous: Mature global groups of companies on the one hand, print shops with a handful of staff on the other hand. The challenge is to define standards in such a way that all concerned feel included. At present, we conduct an analysis to identify the weak points of the JDF standard and to find out where it would need to be defined more narrowly. The parallel existence of propri-

etary solutions is due to the fact that it still leaves too much scope for interpretation. Within the companies, it mostly works reasonably well. The task will be to refine the standard so that compatible solutions can be generated that are independent of the manufacturers. Many sectors have to cope with the same problems. There are, however, also positive examples, for instance, the agricultural industry that achieved compatibility of the tractors and farming equipment of nearly all manufacturers with ISOBUS – and is doing very well in commercial terms too.

**Who benefits from standardised interfaces and communication protocols?**

**Schilp:** Customers from the printing industry and the technology manufacturers from prepress to printing and down the line to print finishing will benefit to the same extent. When a universal standard ensures that information is always uniform and can, therefore, be exchanged in a flexible way independent of the individual brand, it is possible to create solutions that are more individual and, in the end, more specifically tailored to the customers. This can be a source of major market dynamics; what's more, innovation processes, too, can be made faster and easier by such a fixed frame. In addition, full digitization will, of course, continue to ensure more process reliability and efficiency. For instance, when data need to be entered only once or are entered automatically, and data are so redundant and so securely stored that they are available in the required quality at every process step. The present co-existence and multitude of different printing sector brands also leave much to be desired for the user and the supplier .... I think that we still cannot comprehend the full potential of Print 4.0, because completely new business models may emerge in the future.

**You work on a project for the Printing and Paper Technology Association aiming at a digitally networked process chain. What is the present state?**

**Schilp:** In a dialogue with some member companies of the Association, we have prepared a requirement analysis, and for that, analysed the state of their processes and process chains. Using that as a basis, we are developing a digital demonstrator as an example of a multi-step process chain all along the value chain in printing companies that will be visualised for the visitors at drupa. Time is getting short. If we can manage, we also want to incorporate process simulations – and, if possible, also a cutting machine that is presented at the VDMA stand (Hall 7A/B13) anyway. We wish to show how a digital printing factory functions, how information and technological processes can be synchronised therein and how every data change in the first process step is automatically transferred to all further steps.

**Will you continue to do research towards Print 4.0?**

**Schilp:** Yes, we see this project not at all as a flash in the pan, but as a strategic area with a promising future. Together with the printing technology sector and the printing industry, we wish to advance our know-how about automation and the digital factory in a sustained manner. We will definitely try to get public funds for further research projects. Printing technology has a good basis for Industry 4.0. We wish to contribute our expertise so that the further evolution towards a fully networked Print 4.0 process on that basis will be successful.

## In the pipeline – the next PrintPromotion Specialist Teacher Course

This year, the Specialist Teacher Course in Germany at the azp – training center for print and media – in Chemnitz will be held from 31 August to 29 September. The preparations are already in full swing. Traditionally, PrintPromotion has also organised Specialist Teacher seminars at training institutions outside Germany with trainers from the azp. The decision as to the next venues and dates is still pending.

# The PrintPromotion training partner azp

The PrintPromotion partner azp – training center for print and media was founded over 25 years ago in Chemnitz, Saxony. azp offers a comprehensive range of training courses in the fields of offset printing, digital prepress operations, management and new media. The focus of the activities is on courses and practical training aimed at the high-level updating of the knowledge and skills of the staff in the graphic arts industry. With courses for basic and further training, re-training and consulting, azp intends to promote innovation in companies and training institutions worldwide. The staff is experienced in adapting the contents of the courses to the requirements of the target groups. In international courses, specialists, managers, teachers and trainers from all over the world have been made familiar with innovative prepress and printing operations.



<b>1. Name of school</b>	azp – Ausbildungszentrum Polygrafie GmbH
<b>2. Founded in</b>	1991
<b>3. Number of students</b>	60
<b>4. Number of staff</b>	4
<b>5. Courses of study, duration and degrees</b>	Vocational school/media designer and print operator
<b>6. Technical equipment</b>	
a. Prepress	Mac/PC computers Epson Stylus Pro 4900 X-rite i1/i1iO
b. Print	HD Suprasetter MAN Roland 200 Techkon Spectro Dens
c. Others	Cutting machine
<b>7. International activities</b>	Specialist teacher training in cooperation with PrintPromotion
<b>8. Contact</b>	AZP Ausbildungszentrum Polygrafie e.V. Annaberger Str. 240 · 09125 Chemnitz · Germany Chairwoman: Mrs. Birgit Cholewa Internet: <a href="http://www.azp.de">www.azp.de</a>

## UV technology with and without mercury

News from the VDMA Printing and Paper Association

Lamps in conventional UV dryers contain mercury which produces the specific radiation spectrum that ensures full curing (polymerisation) of the ink and coating layers in combination with the components of the printing ink and especially the photoinitiators acting as catalysts. It is, however, also a well-known fact that mercury may cause damages to the environment and human health if not handled properly. Therefore, there are more and more restrictions for the mining of mercury, directives for mercury emissions and bans on the use of mercury in products (inter alia, thermometers, lamps). The latter, however, with exceptions. Due to the physical limitations still present, the UV LED technology cannot replace the existing UV dryers with mercury-containing medium-pressure UV lamps in all applications because of the very low radiation dose of UV LEDs in the UVB-B and UVC-C range.

The increasing ban on mercury, of course, also causes some uncertainty in the printing industry as far as the continued availability of mercury-containing medium-pressure UV lamps for UV dryers is concerned. Therefore, the VDMA Printing and Paper Technology Association with its member companies seeks to achieve transparency and an objective discussion of this topic. The manufacturers intensively work on the further development of the LED UV technology. The

continued availability of the conventional UV technology shall be ensured until LED UV technologies offering the required performance will be available for all fields of application.

How is the present situation in Europe?

Here, the use of specific substances in electrical and electronic devices is regulated by the RoHS Directive (Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment) which limits, inter alia, the mercury content to a very low value. However, this regulation does not apply to the larger printing machines since they are so-called "large-scale stationary industrial tools" (LSSITs) and the UV dryer modules specifically manufactured for them are exempted from the RoHS Directive. Mercury-containing medium-pressure UV lamps in smaller machines and devices make use of an exemption defined in the Annex to the RoHS Directive that is applicable to many products, inter alia, a large number of lamp types for which there is not yet a corresponding alternative technology.

The respective Exemption 4(f) in Annex III of the Directive "Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex" is applicable until 21 July 2016, unless it is extended on request.

In 2015, the VDMA and its member companies filed an application for a five-year exemption extension, as did two other associations. In the application, the reasons for the extension are explained in detail. The application was assessed by Ökoinstitut in Freiburg/Germany on behalf of the EU Commission. A public consultation was carried out in autumn 2015. The decision of the EU Commission is expected to be made at the end of 2016 at the earliest. Until the decision of the EU Commission has been taken, the exemption will remain applicable beyond its expiry date. Insofar, the application alone has already brought about a renewal of the exemption. Due to the development stage of the conventional UV technology, through compliance with the manufacturer's information and proper disposal (product return to the manufacturer or delivery to a certified waste disposal company), the use of mercury-containing medium-pressure UV lamps in the printing industry is safe. The quantity of mercury used in dryers of the printing industry p.a. worldwide is approx. 220 kg. In Europe, this is an estimated amount of mercury of 0.2 per mille used in the total industry. The manufacturers are happy to give information about the use of different UV technologies and are working intensively on the further development of the LED UV technology.

# Company news

## Cutting 4.0 for the networked print shop

**Hall 14/A32 –** With Cutting 4.0, BaumannWohlenberg will present crucial solutions for the future networked print shop. In most cases, the area of cutting is heterogeneous: any job structure you can think of can be found there. All companies that are active in the post print field have the following problems in common: A (partly) high cost pressure, with pretty narrow margins and shrinking job sizes in conjunction with very short delivery times.

The result is mostly that several jobs must be combined on one printed sheet. Only customers who manage these challenges by rationalizing the production process have a chance to survive in the market. With the new solutions combined under "Cutting 4.0", BaumannWohlenberg primarily addresses all customers who handle a large cutting volume with a cutting time per ream of more than 5 minutes – most of them with a large number of jobs with medium and short runs. The "Cutting 4.0" process is composed of several single processes.

Ream feeding 4.0 and Job management 4.0: The underlying idea is simple. A jogging system supplies two or more cutting machines with pre-jogged reams. That's nothing new; in view of the fact that this was done in the past with the assistance of a central jogging station. What's new is that the automatic jogging unit

is directly connected with the two high-speed cutters via a logistics line and a sorting rack which carries out the job management. As a result, transportation and storage of the pre-jogged reams in the company are no longer necessary.

Production flow 4.0 comprising 3 steps: The first one is jogging. The pile with the printed sheets is put down on a buffer before the fully automated jogging station BASA. The reams are destacked, jogged to lay flat, the air still present between the sheets is smoothed out and finally the ream is transferred to the sorting rack BMR. The second step is job management. The jogged reams are buffered in the sorting rack. Since the sorting rack is automatically loaded from one side and unloaded from the other side, these two processes do not obstruct each other. The reams buffered in the sorting rack are distributed to the two cutting machines. For that, the operator of the cutting machine requests the job concerned. The next ream is then available immediately as soon as the last ream of the present job has been cut. There are no waiting times.

Step 3 is cutting. Once the job has been selected, the operator takes the job data from the barcode printed on the sheet and uses them as a basis in order to generate his cutting programme.

A special advantage of this process: The automated ream administration functions with every cutting machine, even those of the highest level. Finally, with Service 4.0, the BaumannWohlenberg cutting systems and peripheral equipment of the latest generation are not only able to programme and monitor themselves for the specific job, but can also indicate preventive maintenance intervals or activate the required remote services as soon as necessity arises.

Baumann Maschinenbau Solms GmbH & Co. KG



Cutting 4.0 – innovative solutions for the networked print shop of the future

## Sophisticated packaging – a convincing image

**Hall 3/A35 –** Printing, embossing and finishing in one machine? Is that possible? Visitors to the drupa can see that on the new TBR-compact from H.C. MOOG. It can perform all three processes in highest perfection and can be smoothly integrated in the process chains of modern packaging printing companies.

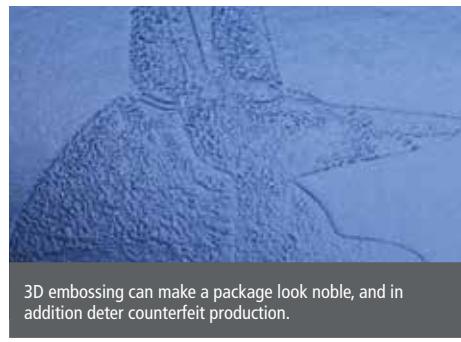
Whether cosmetics, spirits or tobacco, whether premium food or pralinés – the customers increasingly make their purchasing decision because of the packaging. Sophisticated look, the clever combination of glossy, matt or embossed surfaces, appealing design with soft colour gradients or striking, fresh colour tones determine the image of a brand and ensure that it stands out in the competition. The more mature and regulated the market, the more important is the persuasive packaging: if it evokes positive emotions, the customer spontaneously takes the product. The purchasing deci-

sion is influenced by what's pleasing to the eye. The multi-functional TBR-compact printing, embossing and finishing machine from Moog produces complex packaging designs in highest precision with ease. At the same time, its "all-in-one" concept is a guarantee of high economic efficiency and vast freedom of design that it supports by enabling manifold combinations with related printing methods. The TBR-compact is not only strong as a stand-alone-machine, but also when combined with different sheetfed printing methods. It's possible to use both, the commonly used gravure printing cylinder and the laser-exposed photopolymer plates on clamping cylinders – for large format sizes and small format sizes, because the consistent size of the cylinder enables to adjust this all-rounder to any specific job fast and flexibly. Thanks to its adaptability, this multi-functional printing press can be fully

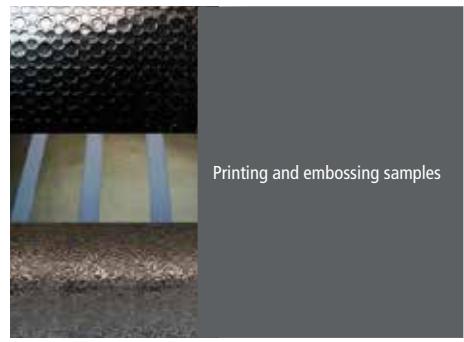
integrated into the process world of modern packaging printing and ensures high capacity utilisation. Not to forget the exceptional reliability and long service life of the MOOG machines that have convinced leading brand manufacturers for decades. Products stand out at the point of sale from the mass of others through fine appliqués, attractive colour designs and fascinating haptics. Fancy packages make the customer buy a product spontaneously, which opens up the possibility that spontaneous buyers become regular customers. Economic, reliable and highly flexible printing and finishing technology is the basis that gives the package a shining appearance as an image carrier. The TBR-compact can be operated with conventional gravure printing inks, but also flexographic water-based inks and, last, but not least, UV inks and coatings. The respective dryer modules are integrat-



The latest version of the TBR-compact



3D embossing can make a package look noble, and in addition deter counterfeit production.



Printing and embossing samples

ed and thus ensure uncomplicated processes with minimum make-ready times. The TBR-compact can be used for decorative embossing, 3D embossing, security embossing and finest micro-embossing in high precision thus supporting the packaging design which then looks especially precious, noble and elaborate – and, in addition, offers protection against product counterfeiters. Above all as regards counterfeit protection for high-quality consumer goods and pharmaceutical products, continuous, frequently changing measures are considered an effective tool to make life hard for forgers. The embossing of "hidden images" with irregularly changing motifs at varying places ensures that insiders can spot the difference between the original and the fake – and can remove counterfeit products from the market. Cost favourable, water washable photopolymer printing plates are the key to optimum print quality in sheetfed printing and flexibility as to the design. Thanks to the exposure with high-precision infrared laser technology, image resolutions of up to 10,160 DPI can be achieved. Theoretically, such a resolution is equivalent with a 4007 line screen. Even the smallest elements can be implemented without any problem – for instance, the "hidden images" or printed microstructures as counterfeit protection.

Digital photopolymer printing plates can apply up to 24 grammes per square meter onto substrates, which shows in excellent print results. Due to the enormous print density, even the unprofessional viewer can see the qualitative advantage compared to offset and flexographic printing with the naked eye. Moreover, at slimmer cost because the laser-exposed photopoly-

mer printing plate allows an exact assessment of the required quantity of ink.

Whether for printing, coating or embossing – laser-exposed photopolymer printing plates ensure highest resolution. The same applies to finishing with metal pigment inks, pearlescent inks, glossy and matt coatings, the commonly used functional coatings or coatings with special haptic effects. Furthermore, the cell geometries can be adjusted to the specific application by varying the screen width and the wall/cell ratio in the prepress stage so that optimal metering of the ink quantity is possible.

Even with extremely short runs, the TBR-compact excels with a minimum quantity of waste. Especially with short and medium print runs, the photopolymer printing plate is a cost-favourable option because the printing and embossing plates can be used several times. With the multi-functional "all-in-one" principle of the new machine, H.C.MOOG creates real added value – because the customers can print, emboss and finish the products in excellent quality both in visual and haptic terms and, at the same time, increase counterfeit protection. Thanks to the advantages of the digital photopolymer printing plate technology, even short runs can be produced profitably with outstandingly attractive special effects.

The high print quality is due to the direct printing process. It enables exact ink metering with the amount of ink applied being always adjusted to the variable depth of the so-called cells. The efficient use of ink is not only beneficial as regards the material cost, but also for the environment.

Other cost advantages are the result of the consistent cylinder diameter in the MOOG sheetfed printing and finishing process. Compared to web fed printing machines in which the printing cylinders need to be adjusted with nearly every job change, the time and cost savings offered by the MOOG sheetfed method is substantial. In addition, the sheetfed printing machines excel by the much smaller amount of start-up waste compared to the indirect printing methods – resulting in crucial time and cost advantages.

Also with regard to the dryer modules, MOOG puts emphasis on economically efficient and environment-friendly processes. The dryer modules can be flexibly combined and are all of the newest and most energy-efficient types. The range comprises high-speed jet dryers, hot air dryers as well as UV and infra-red dryers. Fast drying offers an important advantage: it ensures food safety because the ink can no longer migrate once it is dry.

The packaging designs become more and more sophisticated. Only the sky is the limit for creative ideas. Modern "print enhancement" applications support the trend towards frequently changing packaging designs, towards small, individual runs and the elegant appearance of the package to boost the image of the product. With the "all-in-one" principle, the printing machines from MOOG satisfy these requirements from one source and thus generate a high degree of independence from external service providers.

H. C. MOOG GmbH

## The new generation of flexo and gravure presses

**Hall 15/A41** – Windmöller & Hölscher Group will present its comprehensive product portfolio on more than 1,000 m<sup>2</sup> at drupa 2016 in Düsseldorf. A new generation of flexo and gravure printing presses will be premiered at the event. Live machine demonstrations will run several times daily.

At this year's tradeshows, W&H will focus on the concept of Packaging 4.0, the company's vision of Industry 4.0 applied to the production of packaging. The company will show how intelligent machines, integrated processes and intuitive handling are already increasing efficiency during production and bringing customers substantial added value.

In addition to the booth at drupa, W&H will simultaneously host an in-house Expo with further machine demonstrations in its new 3000 m<sup>2</sup> technology center in Lengerich.



Intelligent machinery, integrated processes and intuitive handling: W&H's booth will focus on the motto of Packaging 4.0.

# Big portfolio of UV products

**Hall 2/B10** – High-performance UV LED systems are a focus of the trade fair appearance of IST METZ. The company will be displaying both UV lamp and UV LED systems, and it will also be possible to see them in action. In collaboration with its subsidiary Integration Technology Ltd., which has specialized in digital printing products, IST METZ offers a very large portfolio of UV systems. The company supplies customized solutions to the printing industry in sheet-fed, web-fed and digital printing applications. IST METZ will be showing the practical application of its systems on a printing press on its stand, demonstrating the use of UV lamp systems for printing packaging and UV LED systems for commercial printing on a Heidelberg Speedmaster XL75-6+L (UV-Anicolor). The machine will run four times a day and make a printed product developed especially for the trade fair to highlight the benefits of the technology. The focus of the trade fair appearance will be the "HYcure" product concept for sheet-fed, web-fed and narrow-web printing. IST METZ equips its UV units in such a way that they can be switched to operate either with UV lamps or with UV LEDs. The housing, cooling and electrical supply are identical for both systems; the cassette with the light source just needs switching in the printing press. This hybrid concept is of particular interest to printers who would like to set up their presses to suit individual jobs, but without a great deal of complexity. If they acquire the one technology, they always have the option of switching to the other at a later date. If their customers' requirements change, they can easily retrofit the other system. The HYcure concept will also be demonstrated with the aid of the MBS system for label printing. IST METZ recommends use of its UV LED systems to commercial printers who have not

yet had much to do with UV curing, emphasising the very particular benefits of UV technology: dry in just seconds, processing can continue immediately, significantly reduced paper waste. And, UV LED technology is especially suitable for 4C printing without complex finishing effects.

.....  
IST METZ GmbH



In collaboration with its subsidiary Integration Technology, IST METZ offers a very large portfolio of UV systems.

## "Simply Smart" – Curtain up for the printing world of tomorrow



**Hall 1** – "Simply Smart" is the motto of Heidelberg for this year's drupa (also see PrintPromotion Newsletter No. 100 of December 2015). Technologies and new digital printing systems for industrial production are opening up completely new opportunities for companies in the print media sector. Therefore, Heidelberg is acting as a driving force behind the industry's digitization and further expanding the packaging, digital, and services growth segments to coincide with the drupa trade show. One focal point in this respect is making print shops more competitive by integrating and automating the customer's entire value chain. To this end, systems will in future operate ever more independently and autonomously with the relevant services. Another aim is to extend customers' business models with new digital printing solutions. In an industry environment that is still changing rapidly, print shops need to continuously improve their efficiency and respond to the global demands of end customers in ever faster and more flexible ways. It is important when doing so to shape the digitization of their own business model and involve print buyers in this process.

.....  
Heidelberger Druckmaschinen AG



Together with its partners, Heidelberg will show the Smart Print Shop of the future with a focus on commercial and packaging printing.

# Digitized value chain

The basis of a digitized value chain is an integrated software platform enabling a continuous flow of data – from job acceptance to the machines and on to order processing. Heidelberg has combined its entire portfolio in the Prinect print and media workflow. In conjunction with a completely new control system design and concept for sheetfed offset presses, an increasing number of steps for automatic pressroom operation are making their way into the printing systems. In the Smart Print Shop of the future, Heidelberg wishes to demonstrate a pressroom is more than the sum of its machines. The benchmark will no longer be the break-even point for individual systems, but the performance of the printers' entire value chain. The collaboration between Heidelberg and its customers will also change significantly in the digital

age. The company is working on a new cloud-based service platform that covers the entire Heidelberg service portfolio and makes it easily accessible. This platform is based on the Remote Service network operated by Heidelberg, which links over 10,000 machines and a further 15,000 software products to the Heidelberg service portfolio. Associated services such as Remote Monitoring and Performance Plus are provided on this platform and help customers with press availability, but also with improving their overall productivity.

.....  
Heidelberger Druckmaschinen AG

## Premiere of Heidelberg's restructured digital printing portfolio

The print market as a whole is increasingly moving toward shorter, more personalized runs. In response to the double-digit annual growth rates of digital printing, Heidelberg now offers a comprehensive digital portfolio that is integrated with the company's latest offset solutions. The digital printing portfolio has been extended for drupa 2016 with a world premiere for the industrial production of digital printing applications in B1 format: the company will be presenting the Heidelberg Primefire 106 based on the leading inkjet technology from its development partner Fujifilm and the proven peak performance platform from its own offset technology. Core competencies of Heidelberg such as the non-contacting paper sheet guide or the proven feeder and delivery technology are therefore incorporated into the system. Heidelberg is also taking account of the demanding market requirements of many companies, particularly from the consumer goods industry. They want an integrated solution for fast, flexible, versioned or personalized, demand-oriented and economic production of innovative printed products in short to medium production runs to support their increasingly digitized production processes, with quality on a par with the standard familiar from offset printing.

As of drupa 2016, Heidelberg will be repeating its approach with the Speedmaster series by presenting its entire digital printing offering under a standardized family name, the "Fire" product line. While the Speedmaster range predominantly stands for maintaining the competitiveness of a print shop's core business (operational excellence), the digital printing portfolio is aimed at particularly innovative business models and pioneering printing applications (business innovation). With this rename, Heidelberg is increasing both the clarity of the entire offering and the recognition value of the brand for customers. According to Heidelberg, the name "Fire" for the digital printing portfolio stands for performance, dynamism and growth – and also for digitally "transmitting" data and ink onto different surfaces. The Heidelberg digital printing offering will therefore have the following structure as of drupa 2016: Heidelberg Primefire 106 is the new digital inkjet printing system for the industrial production of digital and innovative printing applications in B1 format and meets the highest standards.

Heidelberg Versafire CP/CV is the new name for the existing Linoprint CP/CV digital printing systems. The Heidelberg Versafire is therefore the all-round system for the economic production of short and personalized runs in combination with a large choice of substrates and an impressive price/performance ratio.

Gallus Labelfire 340 is the new product name for the former Gallus DCS 340 for the growth market of digital label printing. It is distributed by Gallus, the Swiss subsidiary of Heidelberg.

Heidelberg Omnidire 250/1000 is the new name for Heidelberg's 4D printing systems, replacing the former name Heidelberg Jetmaster Dimension 250/1000. Heidelberg uses the term 4D printing to describe the personalized and flexible printing on various three-dimensional objects such as balls, drinking bottles, and other mass-produced items, especially from the consumer goods industry. In addition, Heidelberg is working on the development of systems also suitable for industrial applications, for example in the automotive industry.

The launch of the Heidelberg Omnidire 1000 is planned for the end of 2016. The entire digital printing portfolio can be integrated into the overall workflow of a print shop together with the Heidelberg offset systems via the new Prinect Digital Front End (DFE). Web-to-print applications as well as multi-channel publishing business models are also supported.

.....  
Heidelberger Druckmaschinen AG



Heidelberg's Omnidire 250/1000 direct to shape printing systems print on solid three-dimensional objects, e.g. footballs.

# New Speedmaster generation with greater intelligence



The heart of the new Speedmaster generation is the Prinect Press Center XL machine control station. It not only assumes the role of the digital interface in the workflow, but also the intelligent human/machine interface which helps the operator to fully exploit the performance of the machine.

The new Speedmaster generation to be presented at drupa 2016 can be integrated into the digitized process world more easily and quickly. The new Prinect Press Center XL 2 machine control station not only assumes the role of the digital interface in the workflow here, but also the intelligent human/machine interface which helps the operator to fully exploit the performance of the machine. Heidelberg will present the station with the new Wallscreen XL featuring a diagonal screen measurement of 65 inches, a resolution of 4K and an even clearer structure. The "myWallscreen" area permits the configuration of individually selected information panels, while new intelligent widgets provide practical

added value. For example, the areas with higher colour assignment on the sheet can be indicated based on the prepress data or the "Plate on Demand" function can be used which allows the printer to initiate the exposure of a new printing plate directly from the control station and in this way avoid or minimize downtimes.

A number of key innovations will already have been introduced by drupa 2016, for example, the second generation of the AutoPlate XL 2 simultaneous plate changer for the Speedmaster XL 106.

The inline measuring system that offers true spectral measurement, the Prinect Inpress Control 2, is also available in its second generation and boasts much faster measurement. Specifically for packaging printers, Prinect Inpress Control 2 makes it possible to measure and control print control strips printed on opaque white. Added

to that, Heidelberg is offering the offline measuring system Prinect Image Control 3 that even controls the opaque white itself. Therefore, the customers are offered unprecedented process control and colour constancy on transparent or metalized printing stocks. Furthermore, the evolution of the Anicolor technology will be presented. Anicolor 2 offers impressive new options such as the Anicolor Booster. This switches to a higher density range at the push of a button. The range of DryStar LED high-performance drying systems has been further expanded and is now available for the XL series as well as the Speedmaster CX/SX 102. The optimum integration of the systems into the machine and the machine control system permits additional energy savings thanks to format-specific activation of the LEDs. Energy savings of up to 50 percent are possible depending on the format. The high performance reserve of the DryStar LED ensures that production speed is maintained, despite the degradation of LEDs that usually occurs over time. The Speedmaster XL 75 is getting a new feeder, which has been carried over from the Speedmaster XL 106 and includes key functions like sheet slowdown and automatic sheet arrival control. The gentle, precise and reliable sheet guide means that high production speeds can be achieved stably even with critical and difficult materials.

Fast washing times of under a minute are possible with XL washing technology hardware and software. The washing modules can be swapped from unit to unit. This means that a prepared additional module can be used when changing the washing blanket, reducing the machine downtime by 80 percent. The fully automated delivery non-stop system has also been carried over from the Speedmaster XL 106. The new blanket system ensures reliable non-stop operation and is not just limited to cardboard, but is also suitable for thinner materials. With the new Air Transfer System and the optimized gripper systems, there is no need to adapt the gripper bar height to the printed stock thickness.

---

Heidelberger Druckmaschinen AG

## Expanded postpress range

Postpress plays an important role in the value chain in print production. On the one hand because it's where the final product is produced, and on the other hand because the machines are intended to be integrated into an overall workflow and timed in such a way as to achieve optimum overall productivity. The top priority for commercial printers is maximum productivity, while for packaging printers it is quality coupled with reliable and fault-free production. Heidelberg will be showcasing new machines for both commercial and packaging printers at drupa 2016. Visitors can see the new models of the Stahlfolder TH/KH 82-P folding machines. The "P" stands for enhanced performance, productivity, and reliability. This series is aimed at industrialised commercial printers with peak performance machines from the Speedmaster XL series or bookbinders with an annual production of over 40 million sheets. It rounds out the top end of the folding machine range, which now consists of the following product series classified by performance classes and customer requirements: Stahlfolder Ti, Stahlfolder BH/CH, Stahlfolder TH/KH, and the new Stahlfolder TH/KH 82-P as a complement to the Stahlfolder TX 96. The PFX feeder has been carried over into the new models of the Stahlfolder TH/KH 82-P as a technology transfer from the peak performance machine Stahlfolder TX 96. This is a basic prerequisite for reliable separation and feeding of the sheets to the folding machine in a stream of shingled sheets. The increase in productivity of up to 50 percent is achieved through

an innovative sheet guide, which permits shingled folding through the entire folding machine. This means that shingled processing of sheets is now also possible in the folding stations in the Stahlfolder TH/KH 82-P. For example, folded sheets in the final format 16-page A4 can be produced at a rate of up to 16,000 sheets per hour, at a machine speed of just 150 meters a minute. Common machine speed results in an increase in quality as well as more stable and constant production, even with sensitive papers.

The strategic partnership between Heidelberg and the Chinese company Masterwork Machinery Co. (MK) in the area of postpress for packaging printing is being further expanded. MK will have the biggest partner stand at drupa in Hall 1. There, the visitors will see an extensive range with new machines. In the future the value class will feature die cutters from the Easymatrix series which offer an attractive price/performance ratio. The professional class will feature die cutters from the ProMatrix models which are intended for medium to long production runs. A new launch for drupa will be the introduction of a die cutter from the peak performance class which delivers maximum productivity and can be integrated into a smart print shop with the Prinect workflow or data terminals.

---

Heidelberger Druckmaschinen AG

# Alternative production of sophisticated packaging



Finest packaging for finest products catches the eye of the potential buyer.

With flexographic printing in excellent quality, Heidelberg Web Carton Converting shows a completely new way of processing while using inline production in an efficient and unique way. With this alternative procedure, it's not only possible to save cost-intensive additional equipment and manufacturing steps, but also to achieve the highest possible output. Even complex and time consuming processes such as hot foil stamping/embossing, screen or gravure printing are already integrated in this smart manufacturing process. Besides exceptional layouts and eye-catching designs, additional features of the package decide on the success of a product. A finishing with cold foil or laminates provides glossy effects. Haptic experiences are created by the use of special inks in flexo, screen printing or gravure printing processes. In addition, attractive metallic effects can be applied. Hot foil stamping enhances the packaging and leads to elegant designs. Moreover, the Cast & Cure process initiates holographic possibilities. Even personalization or other variable data are possible by adding digital solutions. And all that – from roll to finished die-cut blank in a single pass.

Heidelberg Web Carton Converting GmbH

## Comprehensive converting and finishing solution

**Hall 2/A15** – KAMA is presenting highly innovative solutions at this year's drupa which effectively deal with the mega trends in the printing industry: short runs and digital packaging printing. A world premiere at the KAMA booth is the very first comprehensive solution for short runs of folding boxes. The solution includes the DC 76 ASB, an automatic die cutter with the newest in servo technology, and the newly developed KAMA FF 52i, the first folder-gluer dedicated to short runs. KAMA's combined solution has been optimised for very fast job and format changes and electronic job tickets, and it perfectly fits into the digital workflow carrying out all the applications from the printed sheet to the ready-to-deliver folding box. With their extremely short set-up times, faster finishing, inline stripping without tools and automated set-up, the solution paves the way for making short-run converting of folding boxes both efficient and profitable. With beta-phase testing now successfully completed, KAMA will launch the innovative folding box gluer FF 52i at drupa as a serial production model in the 52-cm format. KAMA will demonstrate how operators can easily do the changeover from straight-line to straight-line

carton in a sensational 5 minutes. The company will also present a module for the production of crash-lock bottom cartons and, important for folding cartons in pharmaceuticals packaging, inspection systems for all relevant parameters such as gluing line, flap codes, pharma codes and printed image to make for a true 100 % inspection.

For the first time, KAMA is presenting a die-cutting and embossing machine customised for short runs in packaging. The KAMA DC 76 ASB is based on the successful ProCut model for commercial runs and has been optimised for use in folding carton production especially for short runs, digitally printed runs and versioning featuring an AutoRegister and the stripping and blanking unit KAMA SBU, which works without the use of any tools. At drupa, KAMA will be showing the new solution in a workflow together with the HP Indigo 30000 Digital Press in the HP Hall 17 in the packaging area.

A highlight for the commercial market is the "Generation S" of the versatile ProCut line of automatic die-cutters, with servo technology and an asynchronous main drive that delivers more power and flexibility for the professional finisher. With the latest servo technology and more automation, KAMA has given its tried and proven ProCut die cutting and embossing machines a highly effective upgrade. The "Generation S" features a servo-driven sheet feeder, electronic double sheet detector, up-to-date electronics modules to control the main drive plus a fully-fledged touch panel at the delivery side of the machine. These and further novel features greatly shorten the changeover time and minimise the amount of waste for set-up – two significant factors for efficient short run converting. A further highlight for the KAMA finishing die cutters is the servo-controlled hot foil stamping unit with up to 50 % more performance and greater flexibility for the professional finisher. All KAMA solutions can be networked via the Cockpit and linked with a company's MIS, making it ready for industry 4.0. The finishing process can be tracked, step-by-step, on a smart phone. This tracking will be shown at KAMA's drupa booth.

Kama GmbH



Innovation for short-run folding cartons: KAMA launches the FF 52i folder-gluer with a sensational fast set-up at this year's drupa.



KAMA ensures more uptime in short-run converting – folding cartons "on demand".

# Add more KBA to your day



**Hall 16/C47** – Print applications are an indispensable part of our daily lives. The Koenig & Bauer Group (KBA) plays a decisive role here with its broad range of technological offerings for various print markets from banknotes, through manifold packaging solutions to magazines and newspapers. This is why "Add more KBA to your day" is the press manufacturer's slogan for drupa 2016. KBA 4.0. is the company's strategy to make its customers even more profitable by taking advantage of increasing digitalisation with new products and services. KBA develops additional potential for added value from existing digital data. The first results will be unveiled at the trade show with new and enhanced products, processes and service offerings.

Koenig & Bauer AG (KBA)

## First insights into full closed-loop solutions

Under the umbrella brand KBA 4.0, KBA-Sheetfed Solutions is utilising digital transformation for data-based business models in customer service. But KBA 4.0 is more than just that: It also encompasses the idea of a networked print factory, in which products, presses and tools are continuously exchanging information via wireless chips and sensors. Presses configure themselves on the basis of the supplied data, change automatically from one job to the next, and relieve the operator of routine tasks.

Where status and action data from the shop floor are automatically made available to the top-floor management information system (MIS) in real time, this achieves the transparency which is necessary for company-wide planning and control, as well as fast and flexible reaction to customer demands. This goal calls for purposeful networking of the relevant business processes with both the production centres and the measuring and control systems on the presses. To this end, all pertinent data are shared between the departments responsible for sales, job preparation, planning, production, operational management and logistics, and are even integrated with web-to print systems, where appropriate. The real-time communication within a full closed-loop solution ensures that complete information is available at all process steps along the value chain – structured, analysed and across the whole company. KBA has offered corresponding networking solutions for many years. The production planning and control software LogoTronic Professional is the key to a networked print factory. It serves as the link between MIS, prepress, print and postpress. Job, material, scheduling and PPF data are acquired from the MIS and prepress, and provided to the presses in the form of job lists and presetting data. LogoTronic Professional subsequently returns real-time production and resource data to the MIS. Production becomes transparent and costs are

kept under control – the desired 360° management perspective is achieved.

KBA-Sheetfed offers a range of high-performance MIS solutions as the heart for all workflow implementations. At the upcoming drupa, KBA will be presenting a new entry-level solution Complete PrintX. This is a compact system tailored precisely to the needs of commercial printers and can be installed with a minimised investment outlay. Its scope includes all modules of a modern MIS, such as job and master data management, price calculations, planning, cost accounting, inventory control and a link to financial accounting. The high-end solution Complete Optimus Dash expands these capabilities with unique process- and substrate-independent functionalities, right up to online solutions for print providers and their customers. Complete Optimus Dash is a global solution for packaging, commercial and digital printers, and can be expanded step by step in line with individual needs. Powerful and flexible templates require only a minimum of keyboard inputs and offer a host of additional functions, e.g. time management, inventory control or order and invoice processing, as well as in-depth reporting options, including a business intelligence tool for the visualisation of lean management KPIs. The add-on module Complete Cloud W2P, furthermore, enables an intuitive approach geared to the simplification and automation of print product purchasing. With Complete Cloud Mobile, quotations can be issued, orders can be accepted and customer-specific information can be called up quickly and precisely.

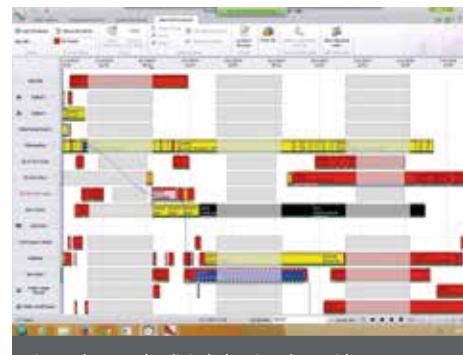
Depending on individual requirements, it is possible to realise complete networking of the whole print company, right down to routing of the last network cable. This is accomplished either in cooperation with KBA technology partners (Kodak, Optimus, Printplus) or else

as a manufacturer-neutral project. Many users already appreciate this open approach, as it permits the integration of existing products and software solutions via open interfaces.

Koenig & Bauer AG (KBA)



The LogoTronic dashboard presents all production-relevant parameters by way of clearly arranged diagrams



Live updates to the digital planning chart with KBA LogoTronic

# KBA 4.0 expands customer service

KBA-Sheetfed in Radebeul has already expanded its services in its comprehensive programme "Service Select", intends to keep following this path and will inform users on this topic also at the upcoming drupa. KBA 4.0. is more than just digital remote access to a press. KBA-Sheetfed has carried out remote press access since 1994. Intelligent encryption modules in the consoles only enable KBA service technicians and certified KBA suppliers to communicate with a large number of the some 7000 presses on the market worldwide 24/7. A virtual tunnel protects the presses from unauthorised third parties accessing its data. For the last two years, KBA-Sheetfed has been working on analysing available data automatically and using this for new services relating to the presses. One goal is a 360° user perspective enabling sales, service and marketing to offer relevant information and added-value services on the basis of this data. Every Rapida press features extensive control and sensor technology which captures and stores data on press activity. This includes press data, such as status and error notifications, time-stamped operating actions and other information on the day-to-day use of the press. KBA loads these log files automatically during each remote maintenance connection. Job, person and company-related data is naturally disregarded, also as this information is not included in the press log files. Currently a growing number of KBA users participate voluntarily in a data-exchange programme. This means that their presses are permanently online. KBA-Service accesses these presses daily to evaluate data and in return these participants receive a monthly performance report. The performance reports are an optional part of remote maintenance contracts, but this feature can also be ordered separately. The reports provide information on a user's press output, maximum and average press speeds, production availability, run lengths as well as printing, washing and job changing times. By networking customers and their presses with KBA and the service data available KBA is able to unlock potential for optimisation for its customers and make them more successful on the basis of this data. Milestones, such as exceeding

a certain number of printed sheets, are recognised at an early stage and communicated automatically as an email notification. These are aimed at maintaining a high level of press availability and production security throughout the press' entire service life. PressCall is a new automatic press error notification tool. Users now no longer have to call the KBA hotline. All data relevant for remote maintenance is transferred immediately and directly to KBA's service department. PressCall activates a dialogue window on the console. Error notification and maintenance is done via a menu. In the future KBA subsidiaries throughout the world will receive real-time information on hotline requests and are informed promptly about possible errors and maintenance requests in their region. The press is a key part of the process chain to the finished print product. Whether packaging or ad flyers, every minute saved through short makeready times or a higher production speed delivers cash benefits. KBA as a press manufacturer can support the optimisation process with international benchmarking. It is important to compare identical technology used for the same applications, which is why KBA is currently classifying technology according the various criteria. In the future users, sales staff or even service technicians are expected to be able to retrieve possible, untapped potential transparently and anonymously at the touch of a button. Along with proactive service, predictive maintenance is the future. This involves real big-data applications. Rapida press' sensor and logic systems deliver high volumes of data. This is in addition to service, quality and process data from the plant. Patterns can be derived from these data streams with intelligent software. Each component's probability of default can be determined in advance. KBA offers maintenance services before this happens.

---

Koenig & Bauer AG (KBA)

## KBA Rapida 145 with new double-pile delivery

With the enhanced Rapida 145 KBA-Sheetfed will be presenting a high-tech large-format press. The six-colour press with coater and automated pile logistics on display will be equipped with a raft of new highlights aimed at automating the printing process further and making this even more effective. Its higher maximum speed of 18,000sph (Rapida 164: 16,500sph) and new double-pile delivery are striking features. This option is now also available in medium format for the Rapida 106. The new double-pile delivery contributes to optimising production at packaging companies with high throughput. A waste-free delivery pile which stands next to a smaller pile of waste can be sent straight to a die-cutter or laminating machine to be converted. Productivity is increased as manually sorting through a pile for waste is now no longer necessary. Both piles can be embedded in substrate logistics. Waste can be ejected at full speed, i.e. at 18,000sph (Rapida 145) and 20,000sph (Rapida 106). What is more, start-up and run-up waste is removed automatically. Further applications are planned in the future. In addition, double-pile delivery makes nonstop pile change at maximum speed safer. Production with two piles is possible in both manual and automatic mode. Colour imposition, dampening and the number of colours influence the substrate and can lead to variations in print length. Stretching the printing plate along the axis and radius of the cylinder (up to 0.2mm) on Rapida jumbos remotely via the console (ErgoTronic PlateStretch) can compensate for the print length. Manual intervention is not necessary. The result is improved print quality and less waste. There have also been advances in inline colour control with QualiTronic ColorControl. Green and red lights show the operator at the ErgoTronic console's monitor whether the colour densities are within specified tolerances. A sound signals deviations and prompts immediate corrections. A feeder stop can be done to avoid waste if an error cannot be rectified quickly enough.

Another new product to be unveiled in large format is QualiTronic PDF inline sheet inspection as part of automatic quality control during printing. It compares a freshly printed sheet with the contents of a PDF file from pre-press. After approving the reference sheet, production monitoring creates a virtual reference as soon as the OK sheet counter starts. A camera with a resolution of around 300dpi detects the smallest errors up to 90µm, even at maximum press speed. The inspection parameters can be adjusted during printing. The operator can find detailed information on possible sheet errors on the ErgoTronic console's wallscreen. Certificates and reports provide detailed information on the print quality. QualiTronic PDF Pile View is an additional tool for subsequent error analysis following production or in the case of complaints. Press performance, the resulting energy consumption and individual components, such as the dryer, can be tracked at the console in real time. KBA LogoTronic Professional logs and stores the energy consumed according to job. VisuEnergy is KBA's solution for analysing all energy consumers in a printing house. These can then serve as input variables for a company's energy management system.

---

Koenig & Bauer AG (KBA)



A truly high-tech press – the KBA Rapida

## Hybrid web press



The printing tower of the NEO XD LR is engineered for all ink and drying systems currently popular in CI flexo printing.

**Hall 16/C47-1** – KBA-Flexotecnica will be showcasing the new CI flexo NEO XD LR HYBRID on the KBA stand. It is engineered for printing with solvent and water-based inks as well as curing ink systems, such as UV LED and EB. With up to twelve colours, a cut-off from 400 to 1200mm, a maximum web width of 1650mm and a maximum printing speed of up to 500m/min, in terms of automation and operation this extremely innovative press meets various production demands in flexible packaging.

The next flexo evolution developed by KBA-Flexotecnica embodies the essence of strategic principles which were synonymous with the latest new generation of the "X" EVO XD and EVO XG series from KBA-Flexotecnica, such as the application of innovative solutions aimed at assuring added productivity even with the shortest of print runs, excellent print quality and the eco-friendliness of the converting process.

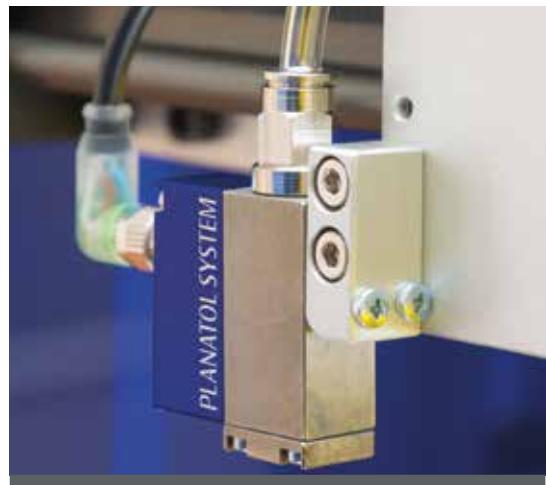
The NEO XD LR offers the possibility to use different flexo printing technologies ranging from solvent or water-based inks, UV LED or EB inks, either as a single printing process, or as a multi-process combination; on the main central drum printing group as well as on inline downstream units. And all this on a wide range of substrates ranging from flexible film to paper and board offering flexo printers utmost flexibility and availability.

Cutting-edge technical solutions have been applied to the NEO XD. These include a new ultra-stiff printing unit designed to minimize the effects of vibration and plate bounce in the most severe printing conditions ensuring an excellent print quality at maximum speed. During the EVO XG's development phase, the focus was on safety which was addressed by new wrap-up safety covers with protective glass doors ensuring maximum operator health and safety. A new level of press ergonomics, which makes anilox and plate sleeves change faster and easier even in the case of large web widths and repeat sizes, guarantees efficient and economic production.

A newly designed system for easy extraction of the inter-colour dryers and a new access door on the top of the central drum printing group frame, together with the renowned PIPELESS doctor chamber design that removes all ink piping and related adjustment parts from the operating area, make maintenance easier and faster.

The NEO XD is equipped with a number of new integrated electronic solutions. Latest generation touchscreen panels serving as a user-machine interface for data and operation are an effective response to printers' increasing demands for easier interaction with the machine's control system. A revised ESP (energy saving package) including latest generation electric and electronic components, the improved ventilation system with a redesigned air recirculation network and a new washing system with integrated cutting-edge viscosity control ensure maximum process performance with the lowest energy consumption delivering the highest level of environmental friendliness. Moreover, the NEO XD LR is equipped with an array of novel integrated solutions aimed at minimising waste during start-up and production.

## Intelligent adhesive technology



The glue application head AKS-250

**Hall 13/C06** – In the field of mechanical engineering Planatol System is one of the leading manufacturers of fold-gluing systems for rotary printing and in partnership with printers and press manufacturers has significantly moved this technology forward. Digital finishing conquers the printing industry and, from the beginning, Planatol System has offered the Coldjet system as the solution for cold glue application in longitudinal gluing. Furthermore, Planatol's range of products comprises the Hotjet hot-melt application systems.

All over the globe millions of brochures, periodicals and magazines are glued every day by means of COMBIJET longitudinal fold-gluing systems at high precision and speed. The modular structure makes custom-built configurations possible for any product concept.

Systems for longitudinal and cross-web gluing which are integrated into the folder of the web press allow fold-glued printed products to be realized in a single operation. This rationalizes the production processes and increases efficiency. At the same time, this technology provides finishing alternatives for printers and the possibility of producing additional printed products for their customers.

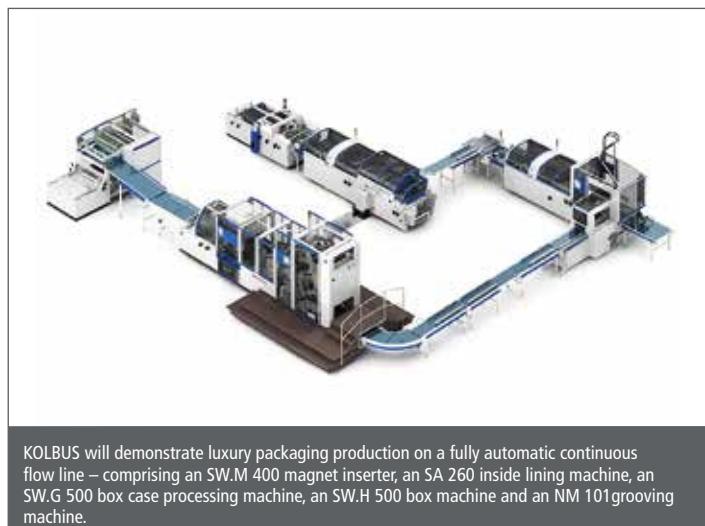
Planatol System also offers the QLW cross-web gluing systems. With this technology products with short cut-off can be glued in-line. The range is rounded off with the SOFTJET fold softening systems.

Planatol Wetzel within the Planatol Group develops fold-glues which are perfectly adapted to the COMBIJET systems and to processing from smallest nozzles at maximum speed. Planatol is the only supplier on the market to provide both the system and the adhesive from one single source.

---

Planatol Holding GmbH

# Post-press solutions packed with innovations



KOLBUS will demonstrate luxury packaging production on a fully automatic continuous flow line – comprising an SW.M 400 magnet inserter, an SA 260 inside lining machine, an SW.G 500 box case processing machine, an SW.H 500 box machine and an NM 101grooving machine.



Luxury packaging – produced on an innovative system for rigid boxes from KOLBUS

**Hall 16/C22** – KOLBUS, known as a bookbinding machine manufacturer since 1900 and a veteran exhibitor at drupa since 1951, is among the biggest exhibitors at drupa 2016. Still based on the rock-solid foundation of a fully-integrated engineering company, KOLBUS has developed into an all-round systems supplier for the book manufacturing, commercial and publishing printing and luxury packaging manufacturing industries and serves industrial users of embedded printing processes. KOLBUS provides product design, process design, systems engineering, supply and installation of manufacturing equipment and all relevant services. While benefiting from a very broad range of machines completely manufactured in house, KOLBUS has developed powerful systems integration capabilities that ensure that KOLBUS users can always be equipped with the best available solution from wherever it is available.

The KOLBUS Book Manufacturing division will present 3D Format Variation of books on a running machine without stopping for make-ready. The key elements of this presentation are the KM 200 Zero-Make-Ready Perfect Binder with newly enhanced 3D Format Variation capabilities and the brand-new HD-HD 143 Three-Knife-Trimmer. This new zero-make-ready trimmer can trim books of different thickness, different height and different width without stopping for format adjustment. This will be one of the technology highlights at drupa 2016. As always, this is all industrial scale equipment, capable of producing thousands of books per hour just as easily as runs of one book. For feeding printed signatures into the system, KOLBUS will demonstrate the full versatility of its approach. For digital web-fed printing, the bookbinding system will be fed by the WF 100 Webfolder. With a capacity of up to 1.5 million pages per hour in its current, standard version, the KOLBUS Webfolder has the potential to start working today and outlast several generations of digital presses. The WF 100 imposes no limitations on subsequent finishing operations, perfect binding, sewing, stitching, perforating, gluing are all possible. For the link into the bindery, KOLBUS has a wide array of possibilities. Fully-automatic, intermediate storage, inline coupling, variable speed links are all possible. KOLBUS can also create systems for fully-automatic handling of inserts just-in-time and just-in-sequence. Alternatively the KM 200 is also equipped for feeding of book-blocks or even stacks of loose-sheets. Furthermore, the KM 200 can easily be switched from paperback to hardcover book blocks. At drupa 2016, KOLBUS will demonstrate this capability and, at the same time, introduce the brand-new Hardcover Book-line BF 513. This machine will make all the zero-make-ready features of the flagship BF 530 Bookjet®-Edition available for the lower budget, 30 books a minute class. KOLBUS' Commercial and Publishing Printing division will present the brand-new KM 610 Perfect Binder. This new line of machines, running upwards from 5000 books

per hour, will be displayed in its 7000 book per hour version. The new KM 610 series has been newly designed to incorporate the user interface structure of the future, taking ease of operation to a new level. As a special feature at drupa, KOLBUS will be running the new KM 610 binder at full speed through the new digital zero-make-ready three-knife-trimmer HD-HD 143, thereby displaying the unparalleled hybrid capabilities engineered into the KOLBUS system.

This time, it will be KOLBUS' youngest division that will put the most sensational exhibit on display. For the Luxury Packaging industry, an innovative production system for rigid boxes has been developed that will revolutionise the luxury packaging industry and will even impact the luxury goods industry. KOLBUS will be producing rigid cardboard boxes with lids and metal fasteners on a fully automatic continuous flow line. This will be demonstrated at an unprecedented running speed of more than 2000 boxes per hour, and format changeovers will be shown to be just as easy as on a modern KOLBUS case maker. Another very young product segment for KOLBUS is technology for luxury packaging manufacturing. Based on almost 90 years of experience manufacturing casemakers for the book industry, KOLBUS has created a range of solutions for paper-based rigid boxes. Introducing the industry to consistent quality, rapid and tool-less make-ready and adaption to digital printing, KOLBUS is creating new opportunities for packaging manufacturers and their ultimate customers, the luxury goods industry. It will again be possible to produce luxury packaging in the same, affluent economies where luxury goods are sold. Minimum order quantities will drop dramatically, opening luxury goods market to small, artisanal manufacturers. And the famous mega-brands will get the possibility to fine-tune their production to sales trends on a weekly rather than an annual basis. At the same time, the product quality that can be achieved is far superior to today's market standards. On top of all this, there will be a lot of focus on the KOLBUS approach to workflow design and systems control, especially in view of the approaching era of Industry 4.0. A proprietary system is directly opposed to the needs of the modern, networked economy, were processes and resources need to be freely linked. Therefore, KOLBUS found it was time to deliver a powerful signal by giving networking software away for free. With this simple system, it will be easy for customers to design workflow systems within which they and their ultimate customers can communicate directly with the KOLBUS production systems fulfilling the orders, wherever and whenever necessary.

Kolbus GmbH & Co. KG

# Strapping machines

**Hall 12/D25** – In the drupa year 2016, Mosca can celebrate its 50th anniversary – a special report will be published in our next Newsletter. At this year's drupa, Mosca will present its range of strapping machines and strapping materials as a perfect solution to secure pallets, packages and cardboard packaging for transportation. Mosca's product portfolio ranges from compact, reliable and easy to handle automatic machines to strap small packages to fully automatic strapping machines which are easily integratable into every production line and reliably provide for correct protection of goods in transit – full-scale efficiency. Mosca's offering comprises inter alia the Base and Pro versions of their fully automated SoniXs TR-6 strapping machine for the entry level and high-end range. This was made possible by an efficient modular design and unique modular control concept based on a Standard-6 strap path system. Both models are available with a fully automated double strap dispenser. The company's latest machine is a new semi-automatic strapping machine that responds to the needs of customers who want a lower entry-level machine at an attractive price without sacrificing quality. Based on the established RO-M Fusion, the MO-M-8 offers reliable operation with high availability. The compact machine dispenses with Mosca's usual strap guide frame. Instead, the strap is wrapped around the package manually. This makes the MO-M-8 easy to use and

ideal for customers who need to strap a low number of packages without renouncing efficiency and reliability. To strap a product, the operator places the package on the machine and lays the strap on manually. The unit is available with an optional table stop to facilitate optimum positioning of the individual packages. Strap return, tension adjustment and the welding of the strap ends are conducted automatically after the strap is placed in the sealing unit to initiate the strapping process. The proven standard 3 sealing unit is at the heart of the new MO-M-8. Temperature is regulated via a controller on the heating blade, and multiple decentralized DC motors replace the central drive in the sealing unit. The direct drive for these functions completely eliminates the need for wearing parts, including toothed belts, clutches and chains. For the user, this means high availability and low maintenance. An automatic strap feed on the sealing unit supports coil changing, which is made easy thanks to the quick-change system. The MO-M-8 is also extremely energy efficient with a power consumption of only approx. 120 watts. The machine is controlled via Mosca's proprietary MSCB-1 real-time control panel. Operators can set the strap tension or required strap length via the potentiometer to optimize the process for their specific application. The soft tension capability makes it easy to strap even delicate products. The strap feed can also be easily readjusted via a push button. An illuminated

service push-button indicates the machine's current operating state with coloured signals. This means that the operator can see right away if the heating has not yet reached welding temperature or the safety circuit is interrupted, and can respond accordingly. The MO-M-8 is suitable for packages that are a minimum of 80 mm wide and 10 mm high. Polypropylene (PP) straps with a width of five, eight or twelve millimetres may be used according to requirements.

Mosca GmbH



The MO-M-8 strapping machine is especially designed for users who generally don't need to strap items often, but rely on high availability when they do.

# Cutting solutions for most diverse applications

**Hall 1** – POLAR and its sales partner Heidelberger Druckmaschinen will once again be presenting a wide range of solutions for handling the most diverse market demands. The highlights are the two new products: Cutting machine POLAR D 115 and POLAR Digicut PRO. POLAR will show a wide selection of solutions for commercial printers, finishing businesses and digital printers, from solo cutting machines and CuttingSystem 200 through to the automated CuttingSystem PACE. Label printers who attach great importance to first-class cutting precision hand in hand with maximum productivity will be especially interested in LabelSystem DC-11 plus. An enhanced version of the well-established P-Net Compucut® for generating cutting programs off the machine will be presented. The new POLAR D 115 is an upward extension of POLAR's portfolio of hydraulic cutting machines. Besides the hydraulic knife drive system, this cutting machine is characterised by its sound construction with optimized cast frame and sheet metal casing. Cutting machine POLAR D 115 PLUS features a distortion-free machine table with corrosion-free surface and air nozzles that ensures easy material handling. Cutting machine D 115 is a machine developed from scratch for digital printers and commercial printers with occasional cutting jobs. After the very successful market launch of Digicut ECO last year, the laser cutter family now has another new member in the shape of Digicut PRO. While Digicut ECO was designed for small runs, Digicut PRO is meant for industrial production. On Digicut PRO, the material is automatically transported over a flat pile feeder and into a cutting cabin where it is laser cut on-the-fly. This makes Digicut PRO the right machine for handling large runs, especially in printing houses and finishing businesses. With its Digicut family POLAR is offering interesting and creative finishing solutions; there are practically no limits when it comes to the contour.



The Digicut family allows the most intricate contours to be cut in diverse materials.

# Brands for stationery, digital print converting, and folio sheeting

**BW Papersystems**  
MarquipWardUnited  
WillPemcoBielomatik  
Kugler-Womako  
BW Bielomatik  
JAG SYNCHRO

We are Paper Converting.  
We are BW Papersystems.  
**Hall 10, Stand D 20**

drupa  
May 31 - June 10, 2016  
Düsseldorf/Germany  
[www.drupa.com](http://www.drupa.com)

**Hall 10/D20** – At drupa 2016, BW Papersystems and its brands MarquipWardUnited, WillPemcoBielomatik, Kugler-Womako and BW Bielomatik will present market leading technology for folio-size, cut-size and digital-size sheeting and packaging of paper, board and other materials, plus stationery, passport production and specialized paper converting applications. For the corrugating industry, full corrugators and

finishing equipment such as flexo folder gluers and rotary die cutters are available. One highlight on BW Papersystems' booth will be the live demonstration of an eCon sheeter. The eCon folio sheeter offers high-quality twin synchronous sheeting at an attractive price level. Since its launch 21 months ago, the eCon sheeter has recorded excellent results with 23 machines sold in North and Latin America and Europe. Its attractive price level assures a quick ROI for printers and folding carton manufacturers while they are able to reduce inventory, eliminate pile turning, lower material cost and increase press performance. The eCon sheeter delivers high cut quality and accuracy as well as ease of operation and maintenance. At printing and folding carton plants, the breakdown of a sheeter can quickly shut down production. The eCon makes no compromise on reliability and remote diagnostics and has the backing of the global BW Papersystems spares and service network.

Also demonstrated on the stand will be a Wrapmatic GREC automatic folio ream wrapper. This mid-range model offers the perfect flexible solution to paper converters and small mills wishing to produce high-quality

wrapped reams – wrapped in traditional poly-coated moisture barrier paper or Kraft paper. Quick size changes make the GREC ideal for handling small orders. Visitors will also be able to discover the greatly enlarged portfolio for stationery, book binding, digital print and book converting and RFID applications from WillPemcoBielomatik, BW Bielomatik and Kugler-Womako. Customers can now select the ideal machinery for entry-level up to highly automated applications. A wide range of high-quality solutions is available for producing exercise books or glued, plastic, wire or even paper bound products. Solutions for the fast growing digital print market include flexible digital size sheeters, book-on-demand binding machines for ultra-low volume book production and an innovative single-sheet book converting line for high volumes. Specialized equipment for the converting of RFID technology as well as passport manufacturing lines complete the impressive technology lineup.

WillPemcoBielomatik GmbH

## PrintPromotion Partners

<p><b>baumannwohlenberg</b> Baumann Maschinenbau Solms GmbH &amp; Co. KG <a href="http://www.baumann-mbs.de">www.baumann-mbs.de</a></p>	<p><b>H.C.MOOG</b> H. C. Moog GmbH <a href="http://www.hcmoog.de">www.hcmoog.de</a></p>	<p><b>HEIDELBERG</b> Heidelberger Druckmaschinen AG <a href="http://www.heidelberg.com">www.heidelberg.com</a></p>	<p><b>HEIDELBERG</b> Heidelberg Web Carton Converting GmbH <a href="http://www.heidelberg.com">www.heidelberg.com</a></p>
<p><b>IST</b> METZ HOLDING more than UV IST METZ GmbH <a href="http://www.ist-uv.com">www.ist-uv.com</a></p>	<p><b>KAMA</b> Kama GmbH <a href="http://www.kama.info">www.kama.info</a></p>	<p><b>KBA</b> Koenig &amp; Bauer Group Koenig &amp; Bauer AG (KBA) <a href="http://www.kba-print.com">www.kba-print.com</a></p>	<p><b>KOLBUS</b> Kolbus GmbH &amp; Co. KG <a href="http://www.kolbus.com">www.kolbus.com</a></p>
<p><b>MOSCA</b> EXCELLENCE IN STRAPPING SOLUTIONS Mosca GmbH <a href="http://www.mosca.com">www.mosca.com</a></p>	<p><b>PLANATOL</b> Planatol Holding GmbH <a href="http://www.planatol.de">www.planatol.de</a></p>	<p><b>POLAR</b> POLAR MOHR Maschinenvertriebsgesellschaft GmbH &amp; Co. KG <a href="http://www.polar-mohr.com">www.polar-mohr.com</a></p>	<p><b>WillPemcoBielomatik</b> A BW Papersystems Company WillPemcoBielomatik GmbH <a href="http://www.bwpapersystems.com">www.bwpapersystems.com</a></p>

## Imprint

Published by PrintPromotion –  
Corporation for the Promotion  
of the Printing and Paper  
Converting Industry

VDMA  
Printing & Paper Technology

Postal address:  
PrintPromotion GmbH  
Lyoner Strasse 18  
D-60528 Frankfurt am Main  
Phone: +49 69 6603-1453  
Fax: +49 69 6603-2453

e-mail: [info@printpromotion.de](mailto:info@printpromotion.de)  
Website: [www.printpromotion.de](http://www.printpromotion.de)  
Twitter: [@Printpromotion@promotion4print](https://twitter.com/PrintPromotion)

Managing Directors:  
Dr. Markus Heering  
Dipl.-Vw. Holger Breiderhoff

**WINDMÖLLER & HÖLSCHER**  
WINDMÖLLER & HÖLSCHER KG  
[www.wuh-group.com](http://www.wuh-group.com)

May 31 - June 10, 2016  
Düsseldorf/Germany  
[www.drupa.com](http://www.drupa.com)

# Printers' Guide

## Gravure printing

### 1. Gravure printing methods at a glance

### 2. Printing plate production

### 3. Doctor-blade based gravure printing

### 4. Pad printing

The inking roller is a supportive system in the ink pan. It rotates with slight pressure against the printing cylinder, reducing any existing air entrapping in the cells to a minimum and making sure that the cells are filled with ink. The inking roller is an elastic rubber roller optionally provided with a cover (illustration gravure printing) and/or a specially structured surface (packaging printing and decorative printing).

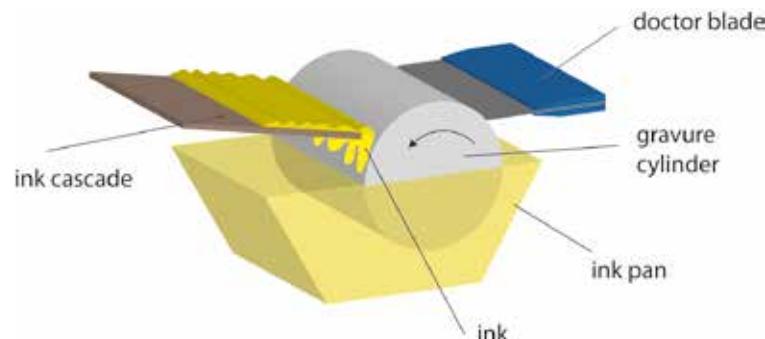
As soon as the cells have been filled, excess ink is removed with the doctor-blade. At this point, the ink metering system determines the amount of ink applied depending on the cell volume. The doctor-blade oscillates from side to side in order to prevent the gravure cylinder surface from being damaged by the scraping process. The doctor-blade is a positive doctor-blade, i.e. running parallel. In order to counteract high wear at the scraping point, a minimal ink film (as lubricant) is required under the doctor-blade. There are a large number of different forces acting on the doctor-blade. The most important one is the contact pressure acting

vertical to the cylinder direction, which is transferred to the doctor-blades by the blade beam. This force is spread to the gravure cylinder via the positively angled blade so that the blade lies flush on the cylinder. The second force acts in rotational direction on the back side of the blade and results from the hydraulic pressure of the printing ink, which, in turn, is dependent on the viscosity of the ink. If the viscosity of the ink is too high, the increasing hydraulic pressure makes the blade take off from the cylinder; in this case, the ink can pass the doctor-blade contact point in an uncontrolled manner. This phenomenon is sometimes also called "blade fluttering". A third force acts on the cutting edge of the blade from below in the form of the thin ink film. The generation of the lubricating ink film is influenced by the surface roughness of the cylinder. Many gravure cylinder manufacturers process the copper-coated, unengraved cylinder in a separate grinding process and produce defined surface structures. The doctor-blades used are extremely thin steel knives. They optimally adapt to the cylinder surface and

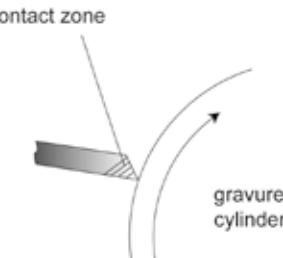
### Doctor-blade based gravure printing

Gravure printing using a doctor-blade is the leading industrial gravure printing method. A distinction is made between illustration gravure printing, packaging printing, including label gravure printing, and decorative gravure printing. All these methods are based on a common basic ink transfer principle. The (engraved) printing forme cylinder carries the image to be printed in the form of cells. The area of the printing elements as well as their depth, hence the amount of ink that can be transferred, vary depending on the cell characteristics. This principle enables doctor-blade based gravure printing to produce nearly realistic continuous tones in the printed image. The method is particularly strong in the printing of images. Compared with the other conventional printing methods, doctor-blade based gravure printing has the widest colour space. On the other hand, full uniform screening of all printing elements causes some lack of detail sharpness (saw-tooth effect) at the edges of type characters and finer lines.

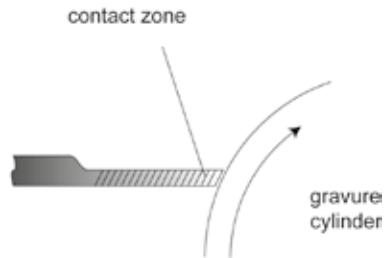
The inking and printing process is comparatively easy. The engraved printing (gravure) cylinder rotates and is partially submerged in the ink pan. As a result, the engraved cells are flooded with ink. Then a doctor-blade wipes off the excess ink from the surface. In the contact zone between the gravure cylinder and the impression roller, the substrate takes off the ink from the cells. The inking process of the engraved printing cylinder is normally supported by additional devices. For instance, inking cascades and inking rollers are used to ensure filling of the cells. The ink cascade also makes sure that drying of the emptied cells is reduced to a minimum since the printing cylinder is already flooded with ink again immediately after the printing nip. In particular, the highlight areas (finest cell structures) tend to dry very fast and cause losses in the printed image. This loss is also called "missing dots".



Cascade inking and inking roller



bevel doctor blade



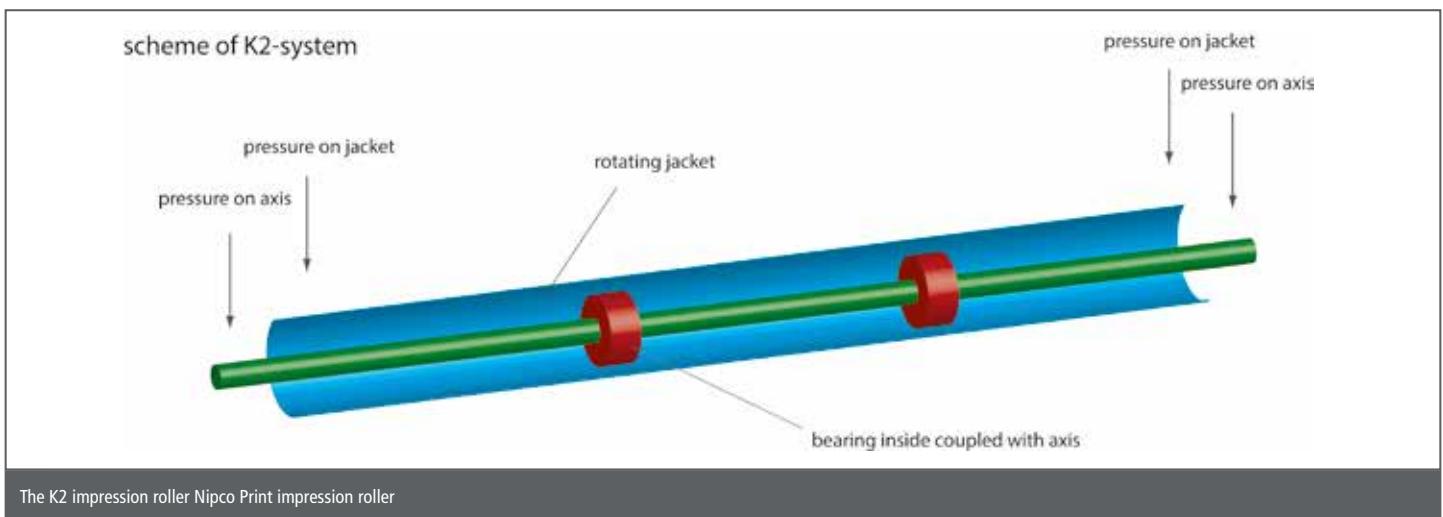
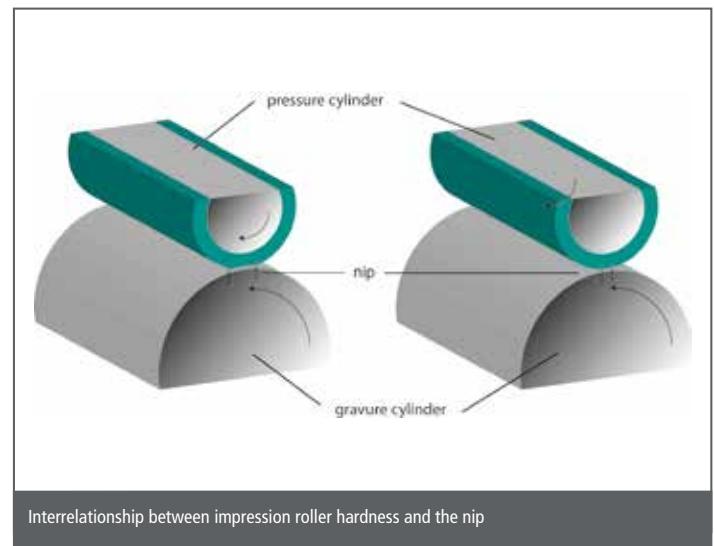
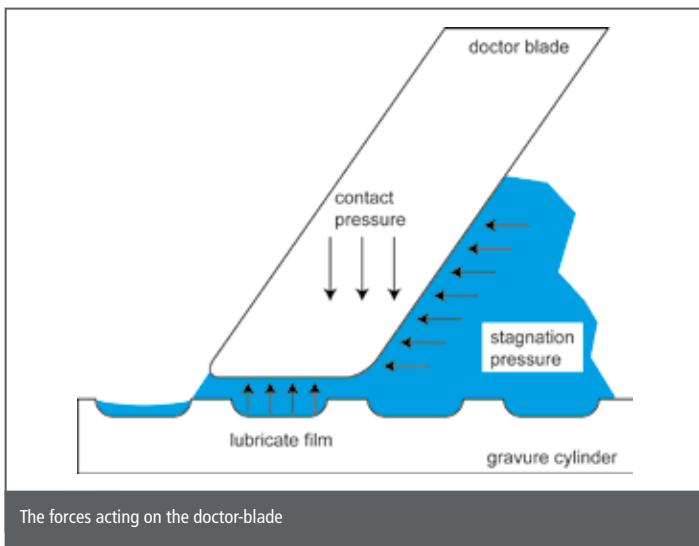
lamella doctor blade

Wedge-shaped, bevelled doctor-blade and lamella doctor-blade

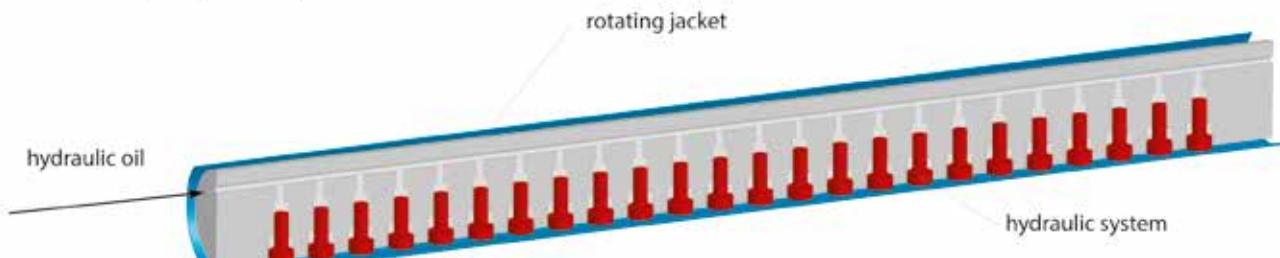
feature the necessary dimensional stability. Normally, two variants are offered. The conventional doctor-blade with a V-shaped cutting edge is based on a rectangular block with a partially ground bevel. This doctor-blade is suited for normal demands for the production of mixed halftone and solid printing products. While the print run stability is good, the tonal values in halftone printing vary depending on the state of the bevelled edge of the doctor-blade. With increasing wear at the blade tip, the contact area on the gravure cylinder increases. As a result, the halftone values in the printed image slightly increase. For high-quality halftone printing, doctor-blades with a lamella profile (stepped edge) have been developed. They feature a thin partially ground lamella at the tip of the knife. The size of the lamella corresponds with the wear area of the doctor-blade and perfectly adapts to the cylinder surface after a few rotations already due to its thin cutting edge. In the course of the printing process, wear only reduces the length of the lamella. The contact area on the gravure cylinder, however, remains nearly constant.

Another important parameter in doctor-blade based gravure printing is the contact area between the printing cylinder and impression roller with the substrate in between. This contact area is also called nip. The nip is substantially determined by the hardness of the impression roller. A soft impression roller produces a wider contact zone. The substrate has more time to take the ink from the cells. On the other hand, edge sharpness of the printed image will decrease. The figure shows the effects of the impression roller hardness on the width of the nip. The roller covering is made of rubber (elastomer). The hardness of the impression roller is measured in ° Shore (A). The higher ° Shore (A), the harder the covering and the smaller the nip.

While the nip is the contact zone created in cylinder circumferential direction, the impression line describes the contact between the gravure cylinder and the impression roller along the length of the cylinder, i.e. the nip width. The influence of the impression line is especially obvious in wide illustration gravure printing machines. With working widths of more than 2m, the deflection of the gravure cylinder due to its own weight has a negative effect on the impression line. In the worst case, the result will be a total loss of contact between the substrate and the printing cylinder and, in the end, deficiencies in the printing process if no countermeasures are taken. The necessity of print deflection compensation depends on the working width of the printing machine. Roughly, there are three categories. Printing machines with a working width of approx. 1m do not need any additional equipment. Machines having a working width between 1m and 2m are often equipped with an additional steel impression roller above the normal rubber-coated impression roller. Due to its dead weight, the steel impression cylinder bends the elastomer impression cylinder in the direction of the printing cylinder. The resulting forced position of the elastomer roller reminds of a sandwich and ensures sufficient contact between the printing cylinder and the substrate. Where the working width is larger than 2m, this system can no longer be used. Deflection will be so strong that the impression roller can no longer follow. In order to solve this problem, the flexible impression roller was developed. Additional equipment enables it to be deflected until reliable contact is ensured. For the flexible impression roller, different technologies are available. The K2 impression roller has supporting bearers inside. By means of two separate hydraulic systems, pressure can be applied to the jacket or the axis separately in order to produce the necessary deflection. The S impression roller consists of a fixed impression roller core



## scheme of nipco-print-system



The Nipco Print impression roller

covered by a rotating jacket. In the impression roller core, there are channels through which hydraulic oil is pumped in order to stretch the impression roller jacket towards the gravure cylinder. A similar method is used in the Nipco print impression roller system. It has an impression roller core with a hydraulic system covered by a rotating, elastic jacket. By means of the hydraulic stamps, the impression roller jacket can be pressed towards the gravure cylinder in high precision.

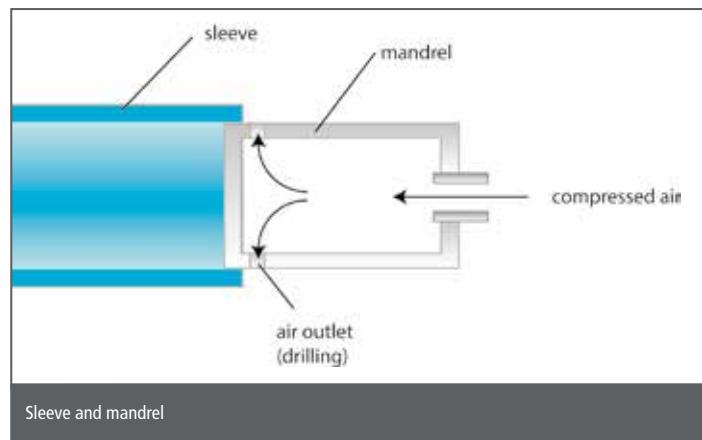
In packaging gravure printing, most working widths are in the range between 1.2 and 1.6m. The deflection of the impression roller is compensated for with an additional steel impression roller. Aspects that are more important for packaging printers due to frequent substrate changes and shorter and shorter print runs are fast make-ready of the printing press and the adjustment of the impression roller properties. For these requirements on the machines, modern sleeve technology has proved very useful. With the sleeve technology, heavy cylinders with fixed shafts are replaced with lightweight sleeves. This makes handling much easier for the printer and reduces the make-ready times.

Finally, we will now have a look at the printing inks used in doctor-blade based gravure printing. The printing inks used in this process are low-viscous inks. Depending on the requirements, the ink manufacturers offer water-based and organic solvent based inks. Normally, gravure printers do not use ready-to print ink containers,

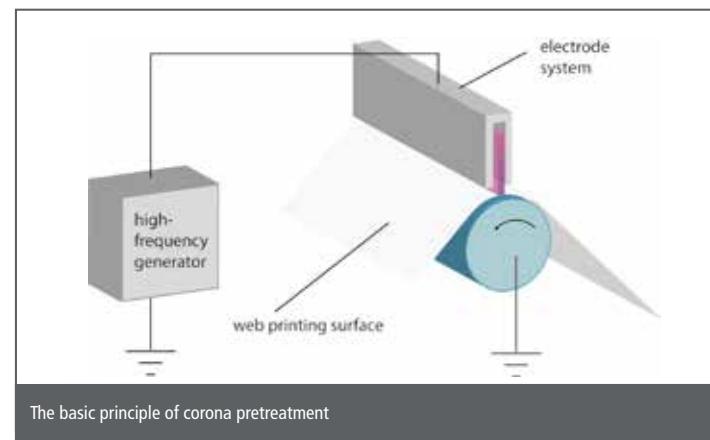
but produce their own printing ink according to specific recipes in their own ink kitchen. The ink mixing systems used by them mostly comprise 11 to 15 base inks. In addition, binding agents and solvents are used to set the colour brightness and/or pigment concentration as well as the viscosity. The recipes and the colour mixtures are produced computer-controlled and cover both base inks and special (spot) colour inks.

Printing on non-absorbent substrates (e.g., plastic films and composite materials) requires pretreatment of the surface in doctor-blade based gravure printing as well. The mostly non-polar plastic surfaces prevent the printing ink from anchoring solidly. The leading method for an adjustment of the surface tension is the corona pretreatment. This method uses a high-frequency generator to produce high alternating voltage. Via an electrode system, the charge carriers are transferred to the substrate and thus produce an activation of the surface so that the printing ink or the adhesive can be applied. The decisive factor for a successful surface activation is the amount of transferred energy per area unit. Therefore, it is necessary to align the pretreatment with the machine speed. Overtreatment with load carriers can damage or even destroy the film web.

Text and images: Ronald Weidel (azp Chemnitz)



Sleeve and mandrel



The basic principle of corona pretreatment