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October 14, 2020

Unfold your Potential: Boosting overall efficiency in packaging printing with digital integration and intelligent automation

- **Heidelberg strategically expands its overall portfolio for folding carton production together with its partner MK Masterwork**
- **Digital integration automates folding carton production and simplifies even complex job changes**
- **World premiere: Introducing the new Mastermatrix 106 CSB die cutter for industrial and high-volume converting**
- **Fully integrated workflow: Expansion of the Prinect Business Manager Packaging MIS system announced for 2021**

The trends in packaging printing are obvious: ever-declining run lengths, an ever increasing number of stock keeping units and more demanding embellishments are used in order to attract attention at the point of sale, and all of this against the backdrop of extremely short delivery times and sustainability. Special applications and the need for flawless production add to the complexity. How can folding carton manufacturers manage this in a cost-effective way? How can they fully exploit the potential of their machines and achieve transparent and repeatable production? Heidelberger Druckmaschinen AG (Heidelberg) presented its innovations at an event in October of this year to answer these questions.

"The growth market of packaging and especially folding carton manufacturing are part of our core business. Our product portfolio is leading the industry, and we are introducing innovations to further enhance it based on our customers' demands. The optimization of folding carton manufacturing for the benefit of our customers is an integral part of our company strategy," confirms Jörg Dähnhardt, Head of the Folding Carton Segment at Heidelberg.

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Heidelberg offers innovative and customized solutions for converting operations: from job creation all the way to the finished folding carton. The Prinect workflow connects the various machines and processes and allows navigated folding carton production, or, in the ideal case, even autonomous production. The tried and tested consumables from the Saphira family and digital services ensure a stable production environment and the highest possible machine availability.

Innovations for Speedmaster presses – increased productivity with automation and digitization

The new operating concept based around the Heidelberg User Experience UX makes packaging printing easier than ever, across all format classes. An example is the **Speedmaster CX 102**. This press boasts innovative solutions from the Peak Performance class, including the new operating concept. The Speedmaster CX 102 from the new 2020 generation combines flexibility with navigated printing. It all starts with efficient production planning via the Prinect Scheduler: production is optimized for multiple print jobs with the same or similar spot colors, materials, or die-cutting tools, and placed in the Job Queue of the Speedmaster CX 102 fully automatically and in the correct order – without manual intervention. With over 50,000 printing units sold, the Speedmaster CD/CX presses are the most successful press series on the market and perfect for packaging printing.

The **Wallscreen XL** guides the operator through the individual processes. With **Intellistart 3**, up to 50 upcoming job changes can be prepared on the press while production is underway. **Intelliguide** navigates the operator through the complete job change and always selects the fastest makeready process. **Intelliline** visualizes the process phase at the individual printing and coating units and indicates when and where a manual intervention is required. Assistance systems like **Color Assistant Pro and Wash Assistant** use artificial intelligence for continuous improvement.

Good sheet production starts as quickly as possible thanks to precise ink presetting and an intelligent selection of the most suitable washup programs. This reduces paper waste and costs. Even repeat jobs can be set up quickly and reliably. With **Intellirun**, the relevant production information is shown at the right time fully automatically on the Wallscreen throughout the production run. Data feedback to the **Prinect Production Workflow** allows precise reporting for each individual job, including quality documentation.

Autonomous printing with standardization – Anicolor and Multicolor as a package

The **Speedmaster XL 75 Anicolor** with **Multicolor technology** offers an interesting bundle for packaging printers tackling digital production run lengths. With Anicolor technology the good

sheet is reached very quickly, thanks to fast inking by the format-size screen roller. The inking unit design ensures an even ink application across the entire sheet and the entire run. By using seven colors – the four process colors plus orange, green, and violet – the Multicolor technology can reproduce a very high number of spot colors. This cuts the time for job changes down since it is no longer necessary to change spot colors. Multicolor also opens the door for autonomous printing with Push to Stop in packaging printing as well. It is also an extremely economical way of producing short runs in packaging printing, for example for special editions.

New standards in industrial packaging printing
For highly industrialized folding carton printers Heidelberg expanded the capabilities end-to-end: Innovations for the **Speedmaster XL 106**, a new die-cutter and several innovations for the Diana folder gluers were demonstrated.
The Speedmaster XL 106 of the 2020 generation redefines peak performance once again: It systematically reduces touch points and relieves the operator of routine tasks, thereby significantly increasing efficiency.
A good example of an intelligent assistance system is the Wash Assistant: It selects the most suitable wash-up program by taking into account the differences in brightness of consecutive inks in the same unit. Especially in folding carton production with its many spot colors, this reduces make-ready times significantly. The Wash Assistant also reduces consumption of wash-up solution; all in all, this can increase the production capacity of a press by up to 125 hours annually. The new presetable **CodeStar** at the feeder ensures full traceability throughout the production. It marks each sheet with a unique number, barcode or batch number so it can be identified again at any time during production.

Another innovation is **Hycolor Pro**, the Speedmaster XL 106's automated dampening system. The dampening solution is metered between pan roller and metering roller. The pressure/squeeze required for this purpose can now, for the first time, be controlled from the Prinect Press Center. The operator can now quickly confirm the correct settings in all units – that saves time and effort while also enabling targeted corrections during production: The printer can address dampening issues on either side of the sheet. This results in fewer waste sheets at start-up and a more stable production run.

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Eye-catching wow effects for point of sale

Complex jobs for special effects often involve elaborate and time-consuming makeready processes that must be planned and carried out meticulously. To illustrate the capabilities of the new User Interface, a demanding job change was shown in less than 5 minutes on a Speedmaster XL 106-8+LYY-1+L (eight printing units, one coating unit, two dryer units, another printing unit, and a second coating unit) with FoilStar. Intellistart 3, Intelliguide, and Intelliline navigate the operator through the various makeready processes for complex jobs. Even less experienced operators are guided through elaborate makeready tasks: complexity is mastered and can be managed. This 13-unit press can produce a wide variety of embellishments, offering economical flexibility coupled with high process reliability and short makeready times. Automation features such as the Hycolor Multidrive intelligent inking unit drive allow the blankets and the inking units to be washed while the plates are being changed. If an inking unit is not required for the next job, the washup program can continue to run while the press resumes printing.

Eye-catching metallic effects can be achieved in one pass with the **FoilStar** cold foil module. The most economical way of applying cold foil is using indexing and multi-reel capability. Foil consumption can be reduced by up to 80 percent. The cold foil can be partially overprinted to produce a wide range of metallic and color effects. All in all, this is a more sustainable solution than foil-laminated cardboard, which also can have long lead times.

Depending on the desired effect, different inks, varnishes and coatings are required along with a press configuration that provides the flexibility for many applications. The 13-unit Speedmaster XL 106 serves as an example for a press that can produce stunning effects for high impact folding cartons at the point of sale economically in a single pass. Heidelberg installs 40 to 50 of these special presses with customized configurations per year.

Fully integrated workflow with new MIS concept for packaging printing

From summer 2021, **Prinect Business Manager Packaging** will be launched specifically for packaging printing. Together with the **Prinect Production Manager** and the tailored packaging add-ons, the result will be a fully integrated packaging workflow. Job data, presetting or repeat job data for the Speedmaster, and for example printing plate handling will be linked in an automated process, thereby reducing makeready and downtimes. The integration of postpress will also be possible.

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World premiere: new Mastermatrix 106 CSB die cutter

The event attendees witnessed the world premiere of the new **Mastermatrix 106 CSB**: the new flagship die-cutter from MK Masterwork and Heidelberg with a production speed of up to 9,000 sheets per hour. The machine is designed for high speed and fast make-ready times. For example, a new quick-lock clamping system for the cutting plate shortens the setup time without affecting tool compatibility with existing plates. The setup time is further minimized by MasterRake: the non-stop swords in the delivery are locked pneumatically and can be disengaged at the push of a button and moved by the operator. This shortens the setup time at the delivery by up to 70 percent.

The Mastermatrix is integrated in the Prinect workflow. Job specific data is received at the die-cutter from Prinect. Data such as the sheet format is transferred and - after confirmation by the operator - the **MasterFeeder** sets itself automatically to the sheet format without further manual intervention.

During production, the **MasterSet** optical register system ensures perfect registration between the print image and cutting tool for each sheet individually with the utmost precision.

The camdrive of the Mastermatrix ensures a smooth and quiet production.

Two other new die cutters were launched earlier this year to complete the portfolio – the **Powermatrix 106 CSB** and **Promatrix 145 CSB**.

For short runs in packaging and commercial printing the Digimatrix line will be added in future: the Digimatrix 80 LR and the Digimatrix 106 LR. These digital die-cutters are integrated in the Prinect workflow and employ laser cutting technology; they are currently scheduled for launch in 2021. Both machines provide the option of an inline rotary creasing station and achieve speeds of up to 3,000 sheets per hour.

Discover optimization potential – reporting and analysis of production data

With the web-based **Prinect Portal**, the jobs in progress on a connected die-cutter can be tracked on a smart device in real time while production is still underway. After the job is completed, the production data is available for reporting and an analysis of short-term and long-term trends is possible. "Efficient folding carton production is part of our core business – yesterday, today, and tomorrow," confirms Jörg Dähnhardt. "We show that digitized processes now extend include postpress, and we will continue to develop this further."

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Folder gluers with new functions

Heidelberg offers now four series of the MK Masterwork Diana folder gluers. New features and options were added for each series.

The Diana Smart is now available with a high-speed package, allowing it to run up to 33 percent faster at up to 600 m/min.

The second generation of the Diana Braille unit now offers an option for cross adjustment of the braille tools. The positions of the upper and lower tools are shown on a digital indicator – this shortens each make-ready process by several minutes.

The new Diana Inspector can inspect a wide range of substrates, including difficult materials such as metalized cardboard, holograms, or hot foil applications for printing defects and color consistency. The Diana Inspector features a PDF comparison function, which increases user-friendliness and significantly reduces the setup time, as many settings can already be prepared in Prepress. The Diana Inspector is available for the Diana Smart and Diana Easy series.

A folder gluer can only run as fast as cartons can be packed. The digital integration of the new Diana Packer 4.0 helps during automated packing in outer cartons. For the first time, communication between the folder gluer and the Diana Packer 4.0 ensures that carton geometries only have to be entered once – the second entry on the packer previously required is no longer necessary. This shortens overall setup times. New options include an automated tie-sheet inserter and integration of a carton erector. Once a case is filled with cartons it has to be closed, labeled and palletized – all processes that can now be supplied from Heidelberg and MK Masterwork.

The successful partnership between Heidelberg and MK Masterwork offers a complete portfolio for folding carton production. Heidelberg has already sold more than 500 MK machines since the start of the partnership in 2016. The relationship was further strengthened in 2019, with MK Masterwork becoming a long-term, strategic anchor shareholder in Heidelberg with a shareholding of around 8.5 percent.

"The packaging market will continue to grow in importance for Heidelberg. Folding carton manufacturing requires peak performance of our machines and solutions. Thanks to digital integration, we unlock completely new optimization potential along the entire process chain – for the benefit of our folding carton customers worldwide," sums up Jörg Dähnhardt.

See also press release dated March 31, 2020: "Heidelberg showcasing innovative solutions for greater productivity and user-friendliness in postpress"

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Photo 1: The Speedmaster XL 75 Anicolor with Multicolor technology offers an interesting package for packaging printers.

Photo 2: World premiere: the new Mastermatrix 106 CSB high-performance die cutter, which represents top performance in postpress with a production speed of up to 9,000 sheets per hour.

Photo 3: The new Promatrix 145 CSB die cutter was launched in spring of this year. It features pallet logistics, the automatic non-stop feeder, MasterSet, and also a sample sheet delivery, a novelty in this format class.

Image material as well as further information about the company can be found in the Heidelberger Druckmaschinen AG press portal at www.heidelberg.com or in the Media Library.

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