

# The new flexibility in the production of gravure cylinders

*Hell Gravure Systems offers a state-of-the-art range of entry-level to fully automatic machines for the engraving of gravure cylinders and/or application and coating rollers*

### Ansgar Wessendorf

*During Drupa 2024, German company Hell Gravure Systems presented the new K5 platform, a modular concept with exceptional flexibility for the electro-mechanical engraving of gravure cylinders. The HelioKlischograph (K) engraving system can be customised precisely and at any time to the specific requirements, needs and wishes of the respective user. For this purpose, different expansion stages from manual to fully automatic are available.*

*“The K5 Basic can be gradually upgraded at any time to the K5 Smart or K5 Auto, which offers the customer a high level of investment security and flexibility.”*

Similar to the Lego principle, users can quickly and almost effortlessly integrate additional components or modules into their HelioKlischograph in order to expand its functionality as required,” says Jan Breiholdt, Product Manager at Hell Gravure Systems, explaining the new, modular K5 platform concept. “This new principal approach results in changes to our product range. This means that we will no longer offer the compact and manually operated entry-level model K2, as it will be incorporated into the K5 platform. However, our extremely successful HelioKlischograph K500 high-end engraving system for fully automatic electro-mechanical cylinder engraving remains part of our portfolio. This means that we now have two product lines in the field of electro-mechanical cylinder engraving. These are the K500, e.g. in the final expansion stage ‘Twain’, and the platform-based K5 with its three

configuration options. In addition, all HelioKlischographs are now provided with a linear drive system.”

### Two sizes to choose from

The K5 Basic can be gradually upgraded to the K5 Smart or K5 Auto at any time, thus offering the customer a high level of investment security and flexibility. “The engraving system grows with the tasks and challenges of the company using it,” explains Jan Breiholdt. All three versions are available in two sizes: the standard version is suitable for hollow or shaft cylinders with an overall length of up to 1400 mm, while the XL version is suitable for cylinders with an overall length of up to 2350 mm. The entire K5 platform is designed for cylinder circumferences from 200 mm to 1300 mm and cylinder weights up to a maximum of 300 kg.

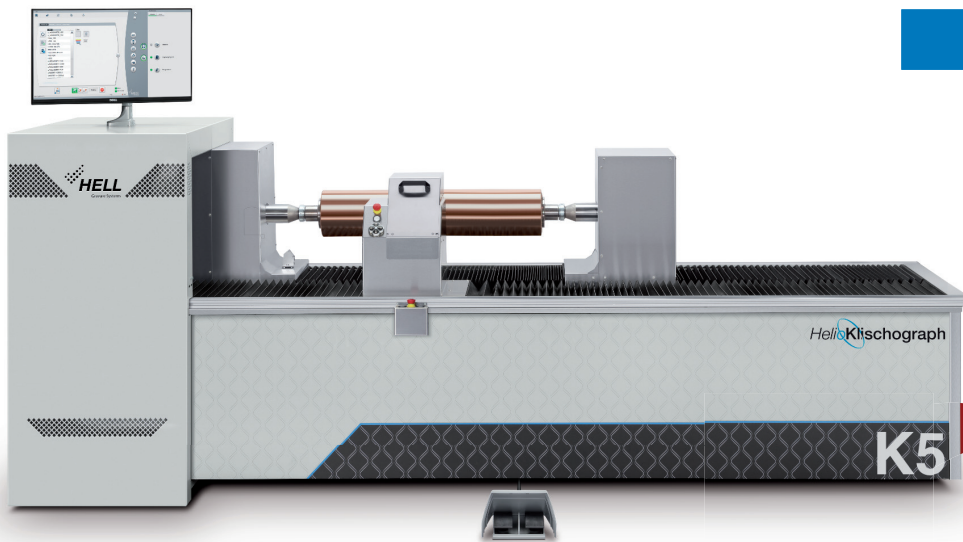
### An ideal entry-level model

With the HelioKlischograph K5 Basic, Hell Gravure Systems offers a low-threshold solution for all those who are considering getting into the engraving of gravure cylinders and/or application and coating rollers. Even the Basic version is provided with extensive hardware equipment that makes entry into engraving even easier for users and enables fast, high-quality and repeatable results in HD quality with just a few manual preparation steps. The K5 Basic is equipped with the universal HelioSprint 2 wide-band engraving system.

The engraving frequency of the HelioSprint 2 system offers up to 9 kHz, which corresponds to about 9000 engraved cells per second. The MultiTune adjustment process makes a decisive contribution to the consistently high engraving quality without impairing the productivity of the K5 Basic. It provides a more meaningful fingerprint of the engraving system, allowing a more precise adaptation to the respective screen and screen angles. This results in sharper contours and less dragging and ringing during engraving.

HelioSprint 2 can be optionally equipped with two additional features: The XtremeEngraving process makes the writing resolution independent of the required screen, allowing engraving to be carried out almost like an imagesetter. This enables the realization of very large cell volumes and thus the transfer of large ink quantities, which at the same time significantly improves the print density.

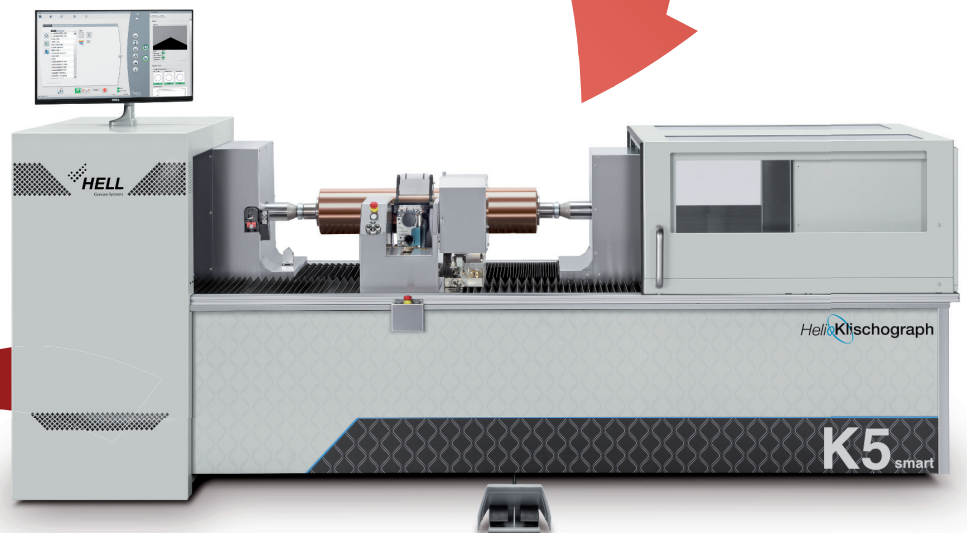
In addition, XtremeEngraving can be used to achieve maximum contour sharpness. HelioSprint 2 can also be upgraded with the “coarse screen” function, which covers an extended effective screen range of 32 L/cm (81 lpi) to 144 L/cm (366 lpi) instead of the previous 44 L/cm (112 lpi) to 144 L/cm 366 lpi).



The K5 can be upgraded to the K5 Smart or K5 Auto at any time. Even the basic version of the K5 has extensive hardware equipment

### The next level

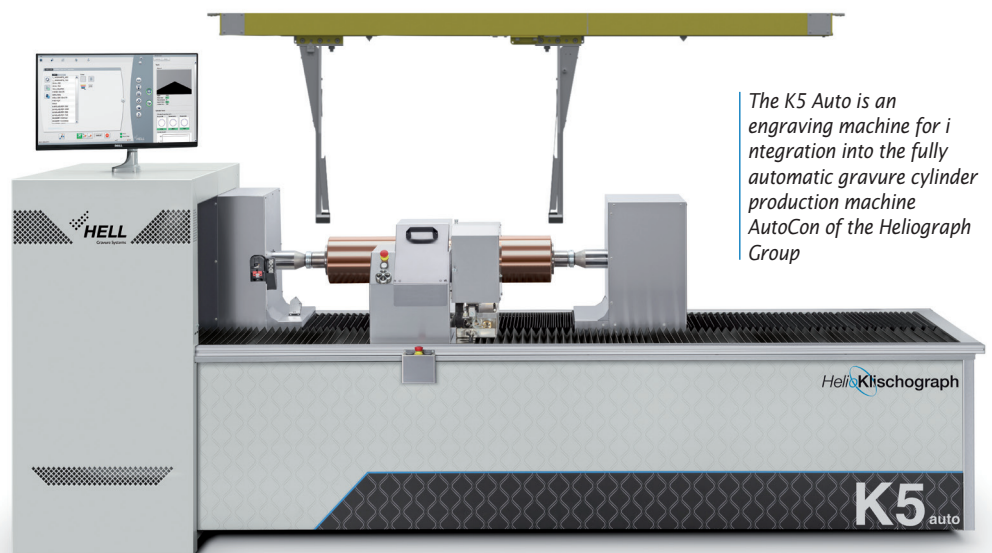
In contrast to the K5 Basic, the K5 Smart is an automated engraving machine for the production of gravure cylinders and coating rollers in highest HD quality thanks to its convenient one-button operation mode. In addition to the HelioSprint 2 (with the function options described above), the K5 Smart comes with the additional CellEye, SprintEasy and Certified Engraving modules as standard. "Thanks to the simple installation of these features, the K5 Basic can be easily upgraded to a K5 Smart and thus reach the next level in high-quality cylinder engraving", emphasizes Jan Breiholdt. The standard equipment of the engraving machine also includes a protective cover. As an option, the K5 Smart can be equipped with the 12 kHz HelioSprint 3 engraving system, which raises the productivity of cylinder engraving to an even higher level. Another option is the installation of a device for cleaning and oiling the cylinder surface.



The K5 Smart is standard equipped with the CellEye, SprintEasy and Certified Engraving modules

### SprintEasy - integrated in the engraving machine

A key requirement in gravure printing is to ensure consistent and uniform engraving quality during the whole print run. The CellEye cutting process is based on the principle of volume measurement, taking into account the actual angle of the diamond stylus, and also compensates for variations in the engraving copper. This makes it possible to determine the actual



The K5 Auto is an engraving machine for integration into the fully automatic gravure cylinder production machine AutoCon of the Heliograph Group

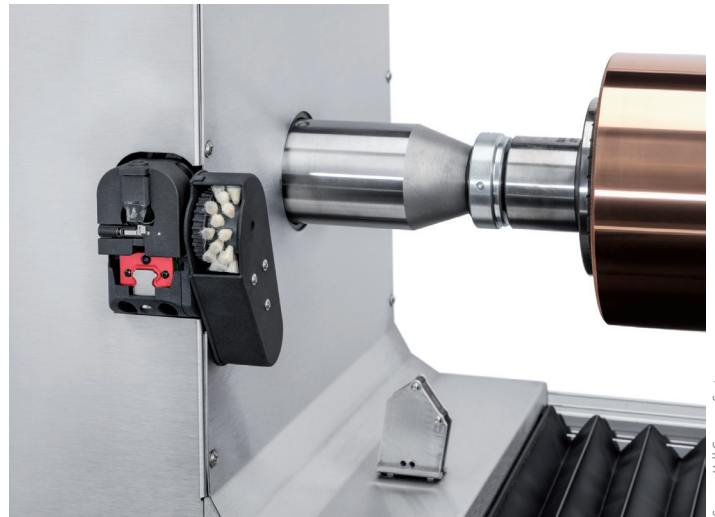
*“Overall, the K5 platform sets new standards in the engraving of gravure cylinders and/or application and coating rollers and ensures that users can respond to market and industry challenges at any time.”*

volume of a cell and draw conclusions about the amount of ink or coating that can actually be transferred from the cylinder to the substrate. The integrated SprintEasy system measures the current cutting angle of the diamond stylus, which changes over the course of its service life due to wear. “Previously, this regular measurement was carried out at an external station with all the associated risks of error. We have now integrated SprintEasy into the K5 Smart and K5 Auto engraving machines, which ensures continuous stylus control. It will also be an integral part of the engraving process in the K500.

At the same time, manual installation and removal of the engraving system for cutting angle measurement is no longer necessary”, explains Jan Breiholdt. The results of the stylus angle measurements are transmitted to the HelioSprint 2 engraving system, and CellEye takes the current cutting angle into account during the next cutting. This ensures standardized and repeatable cylinder engraving, even with high stylus wear.

### The Certified Engraving automatic process control

Certified Engraving is an automatic quality control system that makes the cylinder manufacturing process safer and reduces the need



Source: Hell Gravure Systems

The SprintEasy system is an integral part of the K5 Smart and K5 Auto engraving machines. It measures the current cutting angle of the diamond stylus, as this changes during production due to wear

for press proofs. It documents the engraving with regard to testcut, engraving check, stylus geometry and gray wedges. The engraving cylinder is measured for axial precision, concentricity and cylinder slip. In addition, the image capture function can move to selected positions in order to capture and document cells or complete characters. All measured values and camera images as well as protocols from upstream process steps are documented in the cylinder certificate. The front page of the certificate clearly summarizes the detailed results and enables inspection at a glance. For comprehensive quality

control of cylinder production, for example Certified Engraving transfers all information to the higher-level database CYON from K. Walter.

### Integration into fully automated cylinder production

The K5 Auto is an engraving machine for integration into the AutoCon fully automated gravure cylinder production line of the HelioGraph Group, of which Hell Gravure Systems is part of. AutoCon is characterized by a high degree of flexibility and enables simple and seamless expansion of production capacities. The key features of fully automated cylinder production with K5 Auto and AutoCon are:

- The small footprint enables easy integration into existing space conditions
- The fully automatic cylinder production from copper to chrome takes place in one line
- The modern safety concept ensures maximum system availability
- The modular concept makes it easy to expand production capacities
- The 1-person operating concept requires no cylinder adapters.

With the exception of the optional “XtremeEngraving” and “Coarse screen” modules, the K5 Auto is standard equipped with all the functions described above. However, it is supplied to the customer

## The K5 platform

Equipment	K5	K5 Smart	K5 Auto
Engraving system	HelioSprint 2	HelioSprint 2/ HelioSprint 3	HelioSprint 2/ HelioSprint 3
Protective cover	□	■	–
Linear drive	■	■	■
Integrated SprintEasy	–	■	■
Oiling device	–	□	■
1-button operation mode	–	■	■
Fully automatic cylinder production with AutoCon	–	–	■
CellEye (Cutting system)	–	■	■
HQH (Improved contour sharpness of fine lines and text)	■	■	■
Engraving with Certified Engraving	–	■	■
Engraving with XtremeEngraving	□	□	□
Coarse screen engraving	□	□	□

■ = Standard; □ = Optional; Source: Hell Gravure Systems



without a protective cover, as the engraving machine must remain open for the loading and unloading of the cylinder in the production line. In addition, the crane must be able to move in the z-direction, as the cylinder is arranged asymmetrically in the K5 Auto. For comparison: with the K500 high-end engraving machine for fully automatic cylinder engraving in AutoCon, the protective cover can be moved automatically and the cylinder is positioned centrally. This means that the crane does not have to be able to move in the z-direction. As with the K5 Smart, the K5 Auto also engraves with HelioSprint 2 as standard, although the customer can also use HelioSprint 3 as an option.

### **Maximum flexibility and investment security**

With the new K5 platform, Hell Gravure Systems offers a highly practical solution for the electromechanical engraving of gravure cylinders and/or application and coating rollers. This modular solution offers unprecedented flexibility and enables users to adapt their engraving system individually and gradually to changing requirements. From the cost-effective entry-level solution K5 Basic to the fully automatic high-performance machine K5 Auto, the K5 platform covers all needs for the production of gravure cylinders and/or application and coating rollers. Innovative modules such as CellEye and SprintEasy contribute to further optimize engraving quality, while automatic process control with Certified Engraving ensures stability and reliability. The option of integrating the K5 Auto into the fully automated AutoCon production line offers additional benefits in terms of efficiency and production capacity. The decision to integrate the previous entry-level K2 model into the K5 platform demonstrates Hell Gravure Systems' commitment to offer systems with maximum flexibility and investment security. The parallel continuation of the high-end K500 model underlines the company's commitment to supporting both beginners and experienced users with suitably designed solutions. ■

*“Certified Engraving offers automatic quality control, which makes the cylinder manufacturing process safer and reduces the need for press proofs.”*