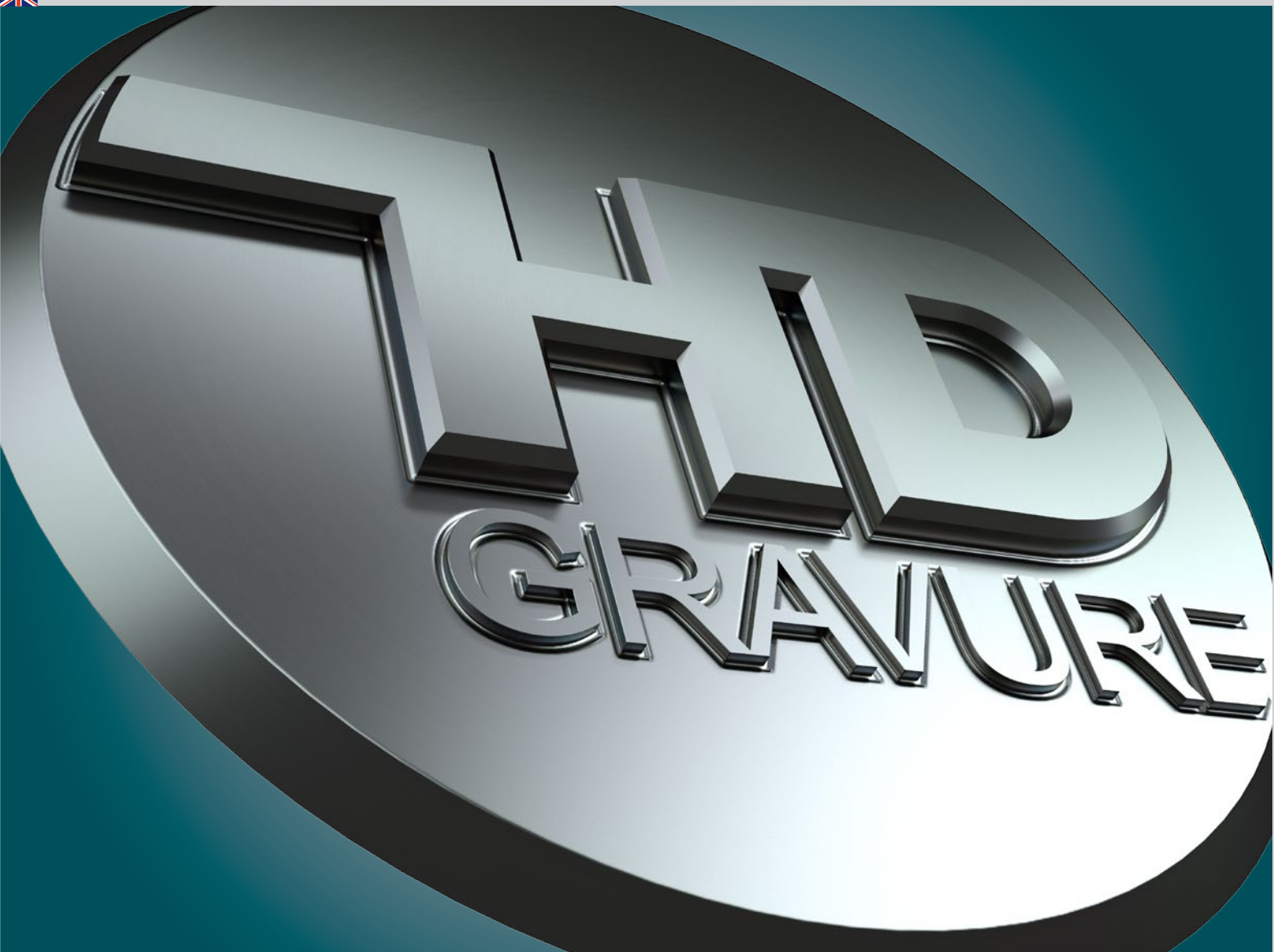


HD Gravure

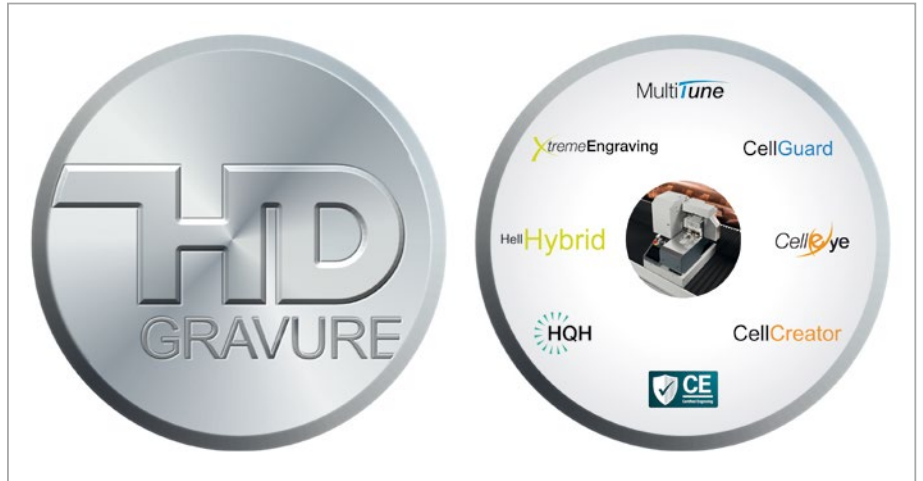
THE NEW QUALITY STANDARD FOR TODAY'S PACKAGING GRAVURE



HD Gravure is the perfect combination of tried-and-tested engraving technology and intelligent algorithms

Color brilliance and excellent run stability are just two of the advantages gravure printing has over other printing methods. It also boasts soft vignettes down to 0 percent and ultrafine screens.

Contour sharpness on linework, however, is less pronounced in gravure printing, as is detail reproduction on fine graphical elements. This can have a detrimental effect on the legibility of small text. In addition, the proof prints that are generally required are very costly.



HD Gravure addresses these issues in a number of ways. Its ideal combination of innovative technologies achieves high-quality, economical results that previously required a huge amount of time and effort.

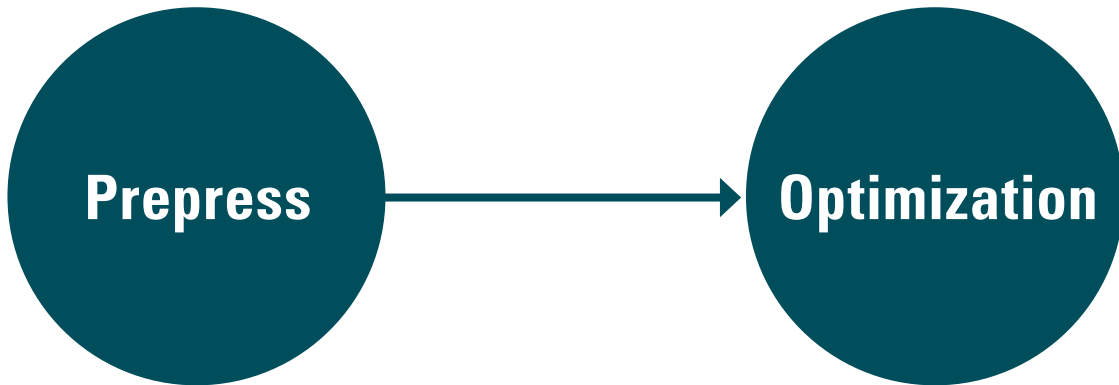
HD Gravure improves contour sharpness and the reproduction of fine details. What's more, narrow engraving tolerances simplify color matching in print and result in better reproducibility. Certified engraving enhances process reliability

in gravure cylinder manufacturing. It also reduces the need for proof prints and thus the costs of printing cylinders.

	Ideal	Standard	* HD Gravure	*** HD Gravure	***** HD Gravure	***** HD Gravure
Contour sharpness <i>(symbolic)</i>						
Detail reproduction <i>(symbolic)</i>						
Reproducibility <i>(symbolic)</i>						

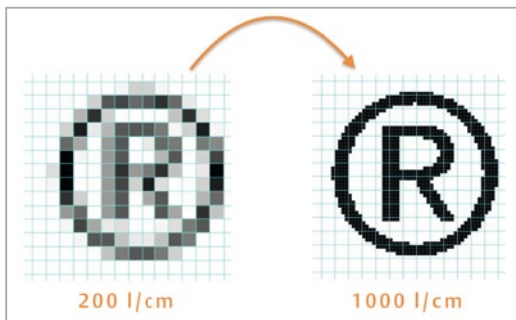
HD Gravure gives cylinder engravers the freedom to decide the quality level of production operations for themselves.

HD Gravure impacts the entire value chain



Prepress is where the packaging design is converted into a printable original. In the past, data resolution has typically been 200 l/cm. In HD Gravure, data resolution is up to 1000 l/cm in electromechanical engraving and up to 2000 l/cm (5080 dpi) in direct laser engraving, which makes it possible to achieve improved edge sharpness and detail reproduction.

Every printing process has specific requirements that need to be factored in during prepress. Gravure printing requires that fine texts and line elements be spread out to improve the legibility and appearance of the end result. At present, this adjustment is done manually in prepress. However, High Quality Hinting (HQH) is an intelligent solution that completes this process on a fully automated basis immediately prior to engraving.

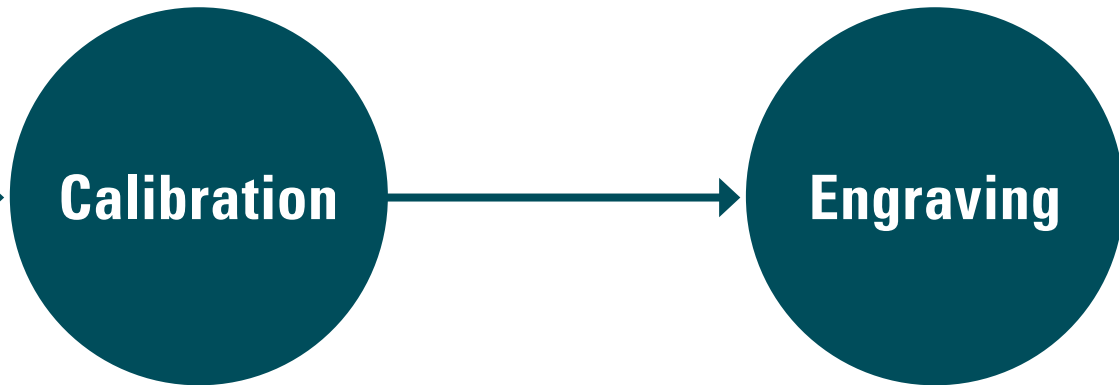


Electromechanical engraving: 3Pt font



Process doc





In electromechanical engraving, it is essential to calibrate the engraving system prior to each engraving process. The more precise the calibration, the easier it is to match colors when printing. CellGuard is an automatic 2D calibration process. CellEye offers unique, volume-based 3D calibration.

Electromechanical engraving is the standard method used in cylinder engraving. Multitune, HellHybrid, and Xtreme-Engraving take electromechanical engraving to a new level in terms of edge sharpness for line elements. Direct laser engraving is flexible, precise, high-resolution (max. 5080 dpi) and yet also 100% compatible with electromechanical engraving. Moreover, thanks to intelligent algorithms (Cell Creator), cell geometries can be adjusted on a job-dependent basis.

CellGuard

CellEye

Multitune XtremeEngraving

HellHybrid CellCreator

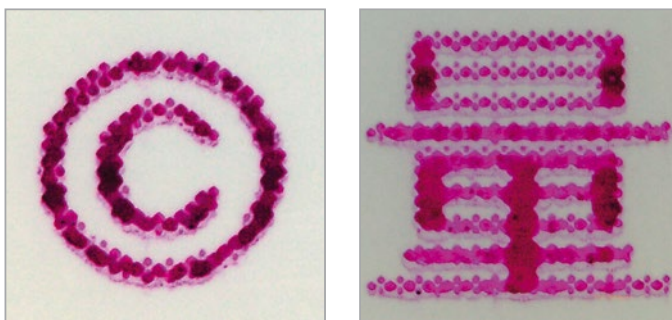
umentation

Process parameters are currently often documented manually and locally on production resources. Certified Engraving integrates separate measurement steps and creates automatic functions. In the final functionality stage, Certified Engraving can reduce the necessity for print proofs.

Contour sharpness on linework and text

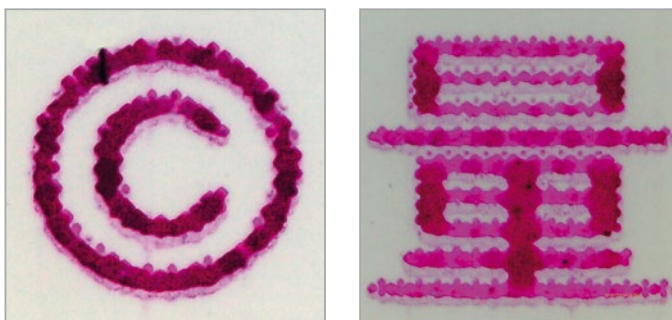
Standard engraving

Traditional engraving is characterized by a sawtooth effect. This is because screen definition and write resolution cannot be selected independently of each other. With the usual screen definitions of 70 l/cm, gradations are visible with the naked eye – even at a normal viewing distance. That is why linework and text are usually engraved with a 100 l/cm screen when excellent contour definition is needed. This has the effect of doubling the resolution. The images on the right show 5 pt fonts.



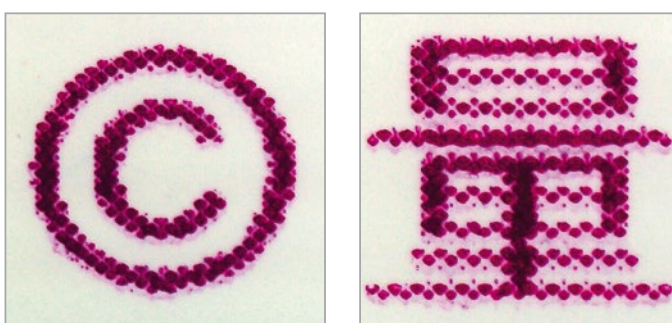
MultiTune

The new MultiTune adjustment process provides a far more definitive fingerprint of the engraving system than was previously possible. This enables the system to be adapted more precisely to the relevant screen / screen angle for sharper contours as well as less dragging and ringing during engraving. The images on the right show 5 pt fonts with a 70 l/cm screen, angle 4, engraved with a MultiTune engraving system.



HellHybrid

HybridEngraving is an engraving method that combines excellent contour definition with high productivity. Hybrid Engraving works on linework and halftone elements. The principle involves superimposing an offset engraving on the standard engraving, which creates very fine edge cells with double the resolution. The total engraving time is twice that of standard engraving. The images on the right show 5 pt fonts with a 70 l/cm screen, angle 4, engraved with HybridEngraving.



XtremeEngraving

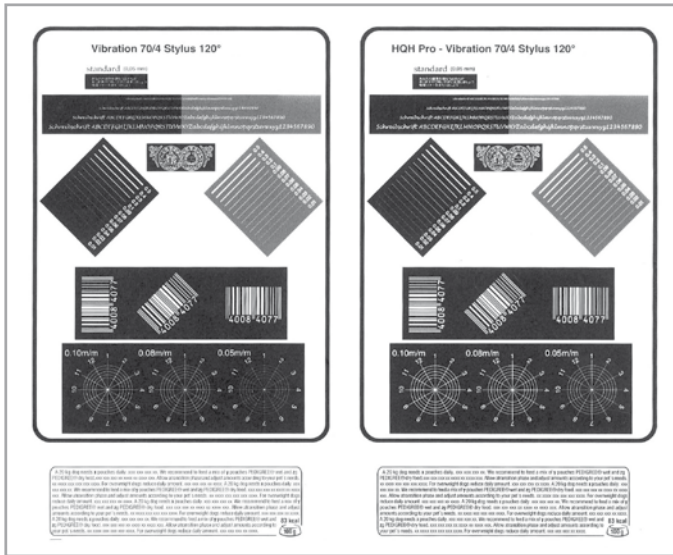
XtremeEngraving is an engraving process aimed at combining excellent contour definition with high print density. With a write resolution of up to 540 l/cm, XtremeEngraving achieves results of laser engraving quality while also supporting coarse screens with cross-diagonals of over 900 µm and engraving depths of up to 110 µm. The images on the right show 5 pt fonts engraved with XtremeEngraving with a resolution of 230 l/cm.



(All images: Press proof in copper)

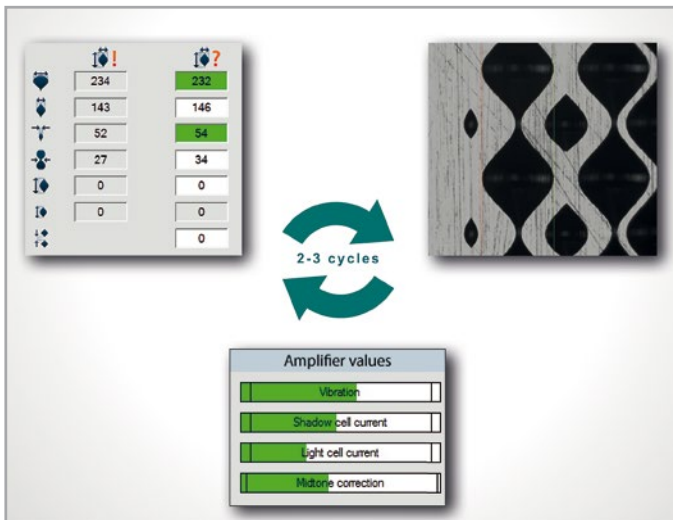


Precise detail reproduction, excellent legibility, reprodu



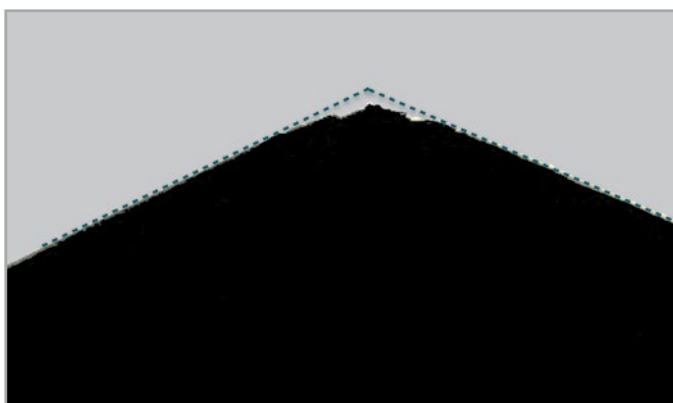
High Quality Hinting

HQH (High Quality Hinting) improves the legibility and the appearance of fine text and graphics in print. Prepress data is generally prepared using manual correction in line with specific engraving requirements. HQH automates this process by examining engraving data for fine lines and text and automatically optimizing these elements according to preset criteria. The intelligent character recognition function ensures the characteristics of letters and symbols stay the same. Fine text thus remains legible and small graphics do not disappear in print.



CellGuard

CellGuard is the 2D calibration process for HelioKlischograph systems. CellGuard comprises the integrated camera of the HelioKlischograph and the algorithm that performs the calibration. CellGuard logs target and actual values and all camera images, thus ensuring they are always available for quality control purposes.



CellEye

Conventional calibration systems for engraving utilize 2D measurements and do not factor in geometric distortions of cells or the level of wear on the engraving diamond. CellEye, on the other hand, uses volume-based 3D measurement, which is not subject to the same limitations. The picture on the left shows an engraving diamond. The wear during engraving leads to a change of the stylus angle.

able results, comprehensive process documentation

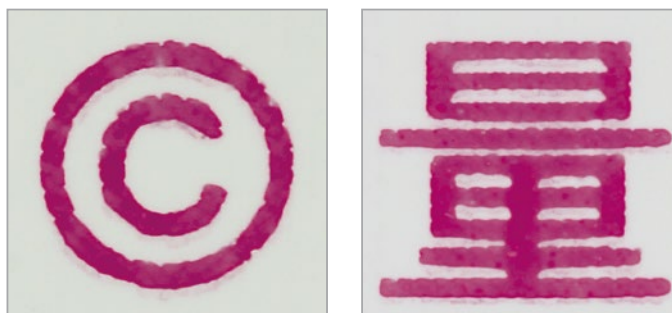
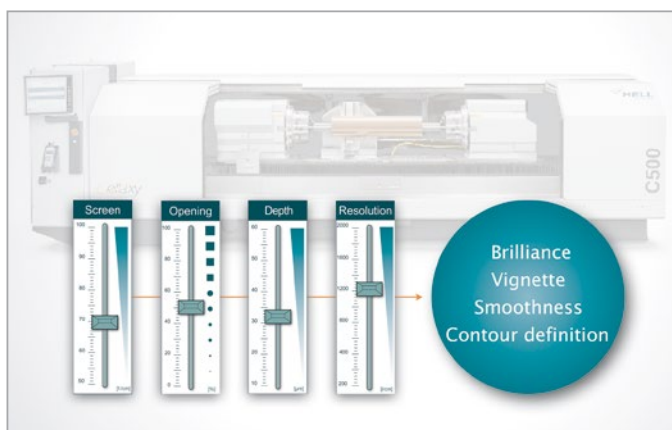
CellCreator

CellCreator is an exclusive tool for direct laser engraving of gravure cylinders. It generates Helio-compatible screens as a basis for imaging linework and contone cylinders that can easily be combined with electromechanically engraved cylinders. The option of assigning a separate cell description to each density value is unique. It means a screen can be structured on a more conventional (depth-modulated) or autotypical (area-modulated) basis, depending on the job. Different cell geometries (e.g. hexagon or diamond shapes) are possible as well. This paves the way for smooth vignettes on aluminum surfaces and perfect ink layers when printing metallic colors.

CellCreator runs on the Cellaxy direct laser platform, which also means the quality features available extend far beyond electro-mechanical engraving. Examples include algorithm-controlled variation of cell geometries to improve vignettes (Supercell), shaping laser pulses for better depth control (PulseShaping), automatic compensation of specific weaknesses in the cylinder geometry, and resolutions of up to 5,080 dpi, see images on the right.

Certified Engraving

Certified engraving improves process reliability in cylinder manufacturing and will significantly reduce the need for proof prints. The critical production parameters for cylinder and engraving are measured automatically in the engraving machine for this purpose. One particular highlight is automatic documentation of pre-determined measuring points on the cylinder surface. All measurements are included in a report that can be structured in line with a customer template. Certified engraving will be available from January 2020.



The product line-up with HD Gravure

Mastering every challenge

The wide-ranging, highly flexible product portfolio offered by HELL meets every current requirement on the market. Customers can choose between a wide variety of models to suit a multitude of needs in both performance and convenience.

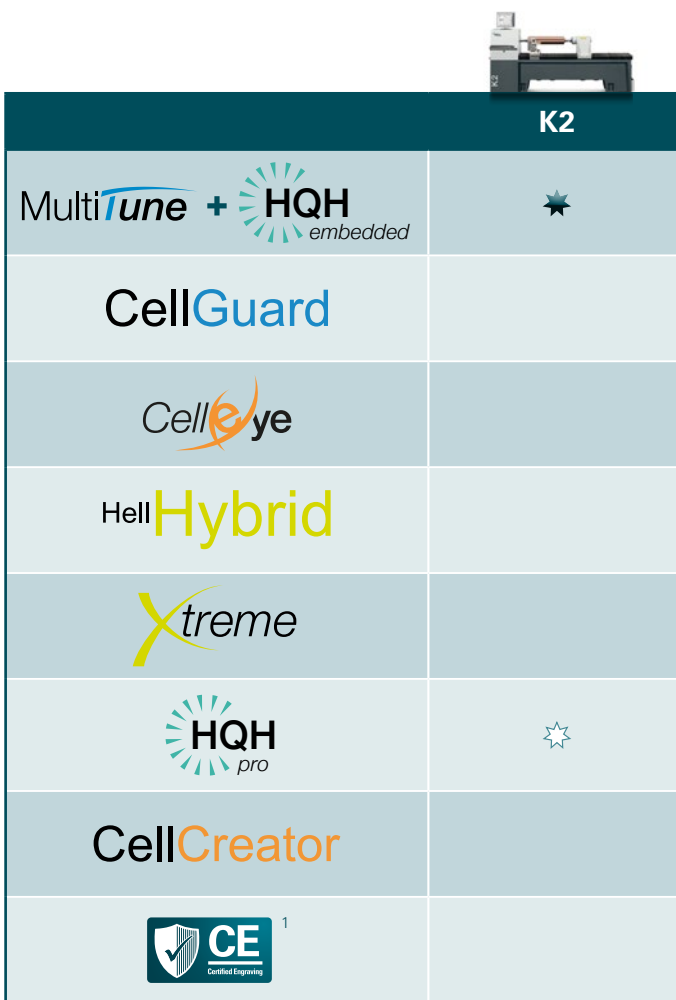
Beyond that, HD Gravure from HELL now offers the perfect combination of tried-and-tested engraving technology and intelligent algorithms that enhance quality. MultiTune and HQH make it easy to get started with HD Gravure while maintaining the full productivity of engraving systems. The modularity and combination options of all the various methods and processes give cylinder engravers the freedom to decide the quality level of production operations for themselves. Many older systems can also be retrofitted with HD Gravure.

As a result, HD Gravure provides impetus for the major developments in packaging printing – from finer text and shorter print jobs to first-time-right prints, seven-color printing, and efforts to find an alternative to proof prints.

MultiTune and **HQH** are integrated into all new HelioKlischograph systems as standard for entry-level HD Gravure and can be retrofitted on many older systems. The benefits of these processes in terms of contour sharpness and detail reproduction can be harnessed without any impact on the productivity of engraving systems.


CellGuard is the 2D calibration process for HelioKlischograph systems. It can measure engraved cells automatically and perform calibration processes. However, the **CellEye** 3D calibration process achieves the narrowest engraving tolerances.

HellHybrid and **XtremeEngraving** are capable of improving contour sharpness further still. The very easy-to-use HellHybrid doubles the engraving resolution in twice the engraving time, produces sharp edges, and works in both linework and contone applications. XtremeEngraving





K2	
MultiTune + HQH embedded	★
CellGuard	
CellEye	
HellHybrid	
Xtreme	
HQH pro	★
CellCreator	
CE ¹	

★ Standard
 ☆ Option
¹ avail. 1-2020



multiplies the engraving resolution, with the engraving time extended accordingly. XtremeEngraving is a more universal solution than HellHybrid, but it only works in solids. In addition to flexible packaging, it is also suitable for microtext and technical cylinders. **Cellaxy** engraves with a resolution of up to 5,080 dpi and maximizes contour sharpness.



K5	K5 Smart	K500		Cellaxy
★	★	★	★	SuperCell
★	★	★	★	PulseShaping
	★	★	★	Cylinder compensation
☆	★	★	★	up to 5,080 dpi
☆	☆	☆		
☆	☆	☆	☆	
			★	CellCreator
	☆	★	★	



EMBOSSING

Detail reproduction can be enhanced further still with **HQH Pro**, which can also be used in combination with XtremeEngraving and Cellaxy. HQH Pro has no impact whatsoever on the engraving machine's productivity.

CellCreator is an exclusive direct laser engraving tool and the

key to perfect linework and contone cylinders, which can easily be combined with electromechanically engraved cylinders.

Certified Engraving improves process reliability and will significantly reduce the need for proof prints. It will be available for all high-end engraving systems.

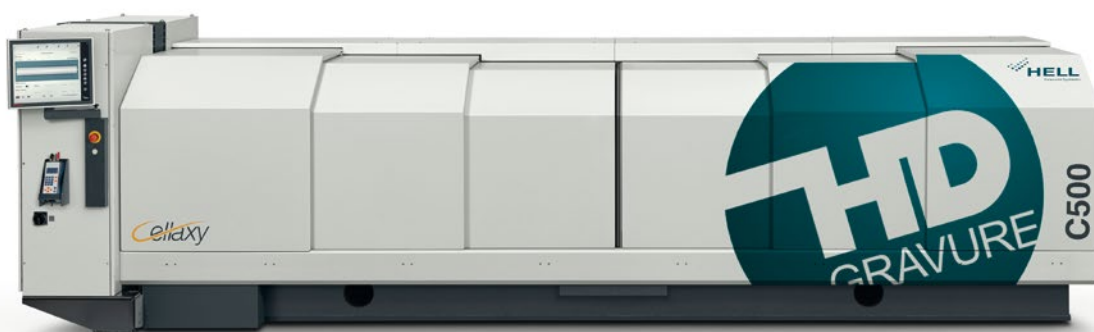
Based on Innovation. HELL

HELL solutions satisfy the toughest demands in terms of print quality, cylinder service life, and printing speeds. Printing cylinders engraved using HELL equipment benefit from simplified color matching, minimal start-up waste, and optimum engraving results with high print densities, soft vignettes, brilliant contones, and razor-sharp lines.

Your local HELL representative will be happy to provide further information and personal advice on our products and services at any time. For contact addresses and additional product information, see our website: www.hell-gravure-systems.com

Subject to design modifications. Errors excepted.

Problem-free compatibility:
HD Gravure produces top-quality linework and contone cylinders regardless of whether conventional or laser engraving is used.



Version: D9

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