

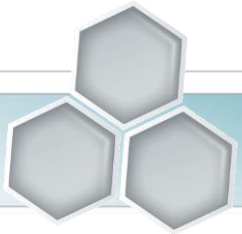
Muehlbauer personalization solutions for banking – update 2025

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Embossing is NOT state-of-the-art



Embossing is NOT state-of-the-art

History:

- cards continued to be embossed in case a transaction needs to be processed manually

Now:

- No longer in practice of such payment transactions worldwide



- zip-zap machine - mechanical version of the modern POS machine



- 2008 **VISA** announced freedom of choice for the banks in terms of perso technology
 - the embossing process has increasingly lost this technical purpose because of electronic payment processes
 - embossing now serves more as a **visual enhancement** than as a security feature
 - Limited Security
 - Cost and complexity
 - Aesthetic considerations



Embossing is NOT state-of-the-art

➤ Released Alternatives for “optical” card personalization:

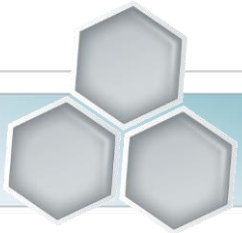
- **DOD Inkjet printing**
- **Laser Engraving**
- **D2T2 printing**
- **Retransfer printing**

-> **Innovative: Card Refinement Functionality**

-> **Innovative: Metal Cards**



Card Personalization Systems - Overview



PRODUCTION VOLUME / THROUGHPUT



CLP 60



NEW: CLP 60 E



SCP 501/801/1501



SCP 4000



SCP 6000 DOD



SCP 60 NOVUS



SCP 300

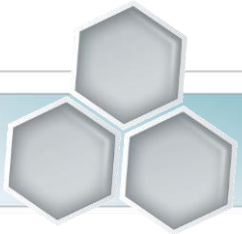


SCP 2000 DOD

Banking / ID Cards & others



NEWS in Desktop Laser Personalization





CLP 60

Enhanced version



NEW: CLP 60 E

Desktop Laser Personalization System:

- Processes:
 - Chip Encoding
 - Print Alignment
 - Laser Engraving

Additional Functions:

- Card Serial number detection by camera
- Chip Encoding contact / contactless
- **Data Verification unit:**
 - Optical check
 - Electrical check





Card Identification Unit

Card Verification Unit (QA)

Features for QA:

- Integrated camera system for both card sides
- Contactless chip reader
- only 1 card in the verification unit

-> 100% card check, fully automated

-> Data Matching of all personalized information

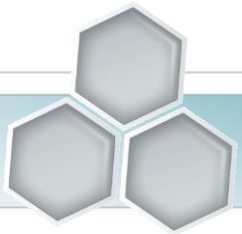


Advantages:

- Reading of an already present card serial number (before chip processing)
-> match with released production batch; white list etc.
- Laser engraving alignment by vision system in laser unit
-> for very accurate laser engraving process
- **Fully automated card quality assurance**
 - > ensures the proper encoding of the chip as well as the correct laser engraving of the card data by the machine
 - > recognize mistakes and manipulations caused by human interferences
 - > quality level of the production becomes significantly increased and highly secured



NEWS in Inkjet Technology



- New version of WHITE ink personalization
 - Enhanced process for banking cards
 - New version of print head and WHITE ink
 - Print resolution 360dpi with excellent ink coverage on card substrate



Pictures: silver / golden card body with white + black ink prints



New „Feeling“ of a valuable (banking) card:



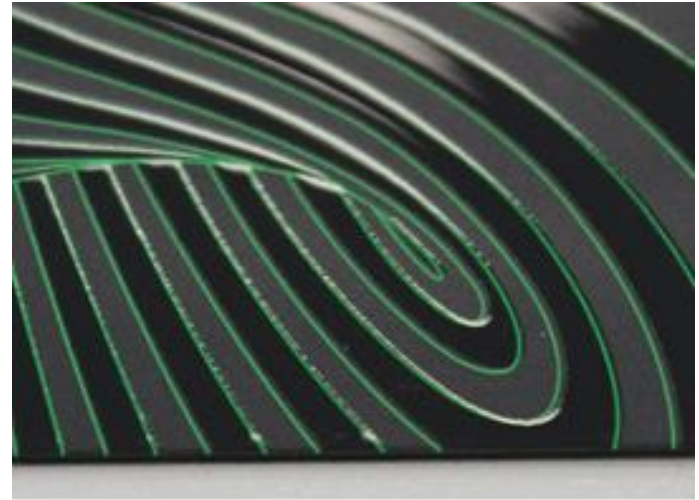
Haptic structure on card surface – exactly matching to offset print!



- Comparison:



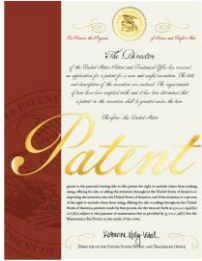
Card using generic varnish design without adaption




Card with individually adapted varnish design



■ Patent granted:





US 2024/0078662 A1

(19) **United States**
 (12) **Patent Application Publication** (10) **Pub. No.:** US 2024/0078662 A1
 (21) **Applicant:** Mühlbauer GmbH & Co. KG, Rodding (DE)
 (43) **Pub. Date:** Mar. 7, 2024

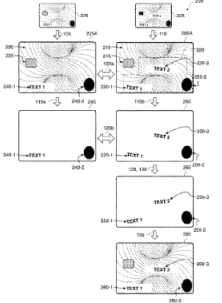
(54) **CONTROL METHOD AND SYSTEM FOR SURFACE-SELECTIVE COATING OF AN INDIVIDUAL PHYSICAL DOCUMENT WITH A LIQUID COATING.**
 (52) **U.S. CL.:** *G06T 7001* (2013.01); *G06K 15/022* (2013.01); *G06K 15/02* (2013.01); *G06K 15/08* (2013.01); *G06T 750* (2017.01); *G06T 760* (2013.01); *G06T 790* (2013.01); *G06F 36/001* (2002.01); *G06T 2207/2004* (2013.01); *G06T 2207/2006* (2013.01); *G06T 2207/2014* (2013.01); *G06T 2207/30176* (2013.01)

(71) Applicant: Mühlbauer GmbH & Co. KG, Rodding (DE)
 (72) Inventors: **Rend Heidner**, Flaxen (DE); **Martin Dümpfl**, Lam (DE)

(21) Appl. No: **18459,496**
 (22) Filed: **Sep. 1, 2023**
 (30) **Foreign Application Priority Data**
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Publication Classification
 (51) **Int. Cl.:** *G06T 790* (2006.01); *G06K 15/02* (2006.01); *G06T 750* (2006.01); *G06T 760* (2006.01); *G06T 790* (2006.01); *G06F 36/00* (2006.01)

(57) **ABSTRACT**
 A method is provided for surface-selective coating of a surface of an individual physical document, in particular a card-like document, with a liquid coating. The method includes receiving or generating an actual image information by image sensors, which represents an actual image of the surface, and comparing the actual image information with reference image information, which represents a reference image of a reference surface corresponding to the surface, to determine, based on possible deviations between the actual image and the reference image, any deformation of the surface compared to the reference surface and to generate deformation information representing said deformation or alternatively the absence thereof. A coating device is then controlled based on coating information determined based on the deformation information and on geometry information that defines a target shape of a partial surface of the surface to be provided with the liquid coating.



- **Functionality available for**
 - SCP 300, SCP 2000 and SCP 6000 DOD machines
 - as upgrade





Midrange Volumes

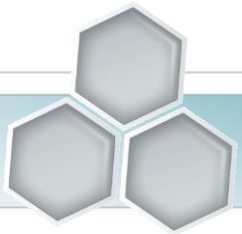


Features:

- PC card processing & PVC card processing
- Full edge-to-edge printing
- Color Picture Personalization DOD+Laser:
 - MB ALFRESCO Color Picture
 - Liquid Coating (LQC)
- Inline QA-Module
 - all processes, incl. LQC data!



MB Laser Personalization Technology



- DPSS Lasers – for „premium“ marking qualities
- Fiber Laser – for „economic“ investments & long term usage (life span of the laser light source)
- CO₂ Lasers – for „special“ applications



FIBER LASERS



GREYSCALE LASER - LES 20 FP



GREYSCALE LASER - LES 22 FP



FIBER LASER - LES 31 F



FIBER LASER - LES 32 FP

DPSS LASERS



DPSS LASER - LES 16



DPSS LASER - LES 25

CO₂ LASERS



LES 30 C



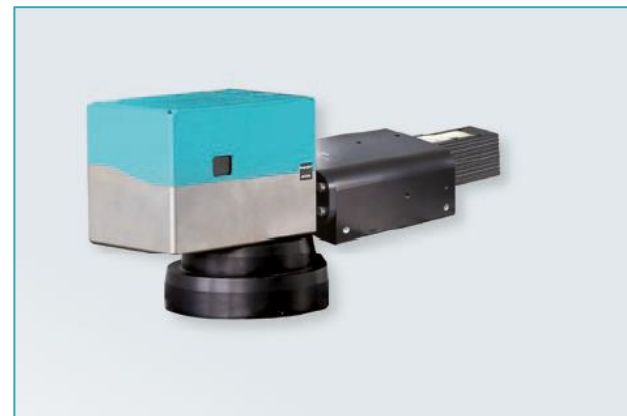
LES 30 C-SC



LPS 150



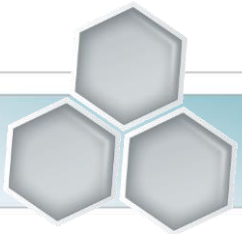
- Most suitable system for laser engraving using high power fiber laser (30W)
- Economic versions possible, e.g. 20W but might have limitations for some card products and impact on productivity

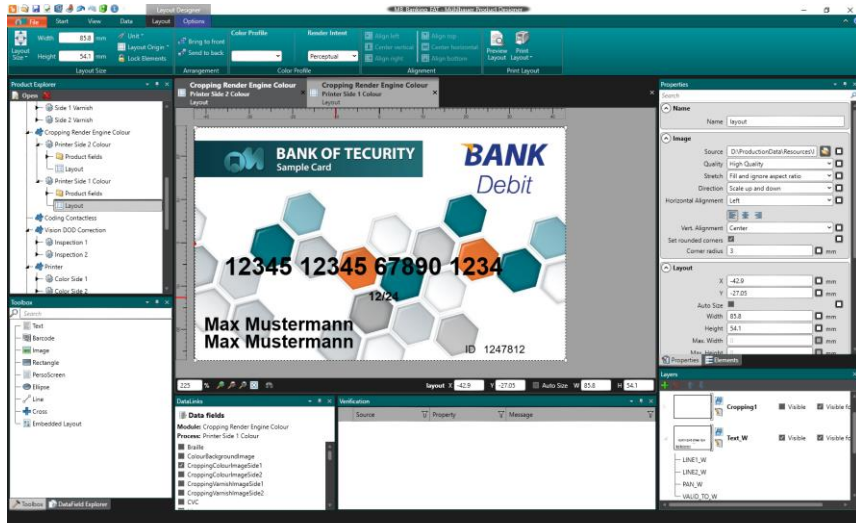


Picture: 30W laser



MB Personalization Software on Machine





- Modern UI and Windows-based Look&Feel:
 - Simple ribbons
 - Just a few clicks away..
 - Easy to learn for that familiar with Windows tools
- All in one place for easy design of the product
 - Drag&Drop
 - Different objects for successful card design
 - Customize fonts and multimedia
 - Multiple layouts
- Reuse of other layouts and templates



Thank you for your attention

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