



CARD PERSONALIZATION & MAILING

PRODUCT OVERVIEW



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MÜHLBAUER GROUP AT A GLANCE

MÜHLBAUER'S BUSINESS UNITS AND SITES

Founded in 1981 in the heart of Bavaria, the Mühlbauer Group has ever since grown to a leading global player in the fields of Parts & Systems, Semiconductor Related Products, Document Solutions & Equipment for Security Systems, and innovative Technologies for Electromobility and Flexible Solar Solutions. With around 4,000 employees, technology centers in Germany, Malaysia, Slovakia, the U.S. and Serbia, and 35 sales and service locations worldwide, Mühlbauer created a strong competence network around the globe.

Our global corporation continuously invests in the most modern innovations and creative ideas in order to enhance our competences and to provide you with optimized solutions. We aim to protect the environment with our advanced technologies and make life easier for countless people.

Our in-house precision part production **MPS** – Muehlbauer Parts & Systems - guarantees unlimited flexibility and highest customer satisfaction.

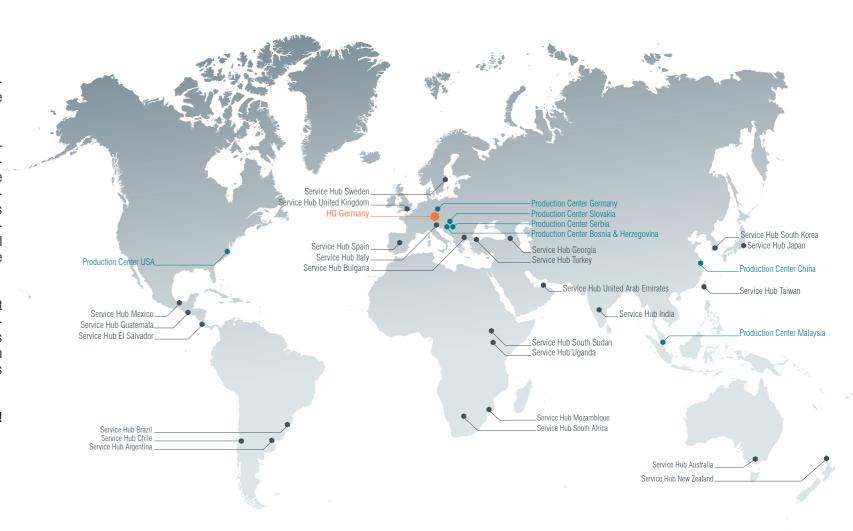
Our business unit AUTOMATION does not only develop and assemble individually customized production systems, but also offers intelligent software solutions for production automation

(Industry 4.0). Vision inspection technologies as well as semiconductor and RFID applications complete our comprehensive portfolio.

Our youngest and currently most dynamic division ATECH -Advanced Energy Technologies – brings unique machinery requirements to series production. For the eMobility industry, we have been offering highly efficient production lines for the manufacture of pouch- and prismatic cells for lithium-ion batteries, as well as MEA's & stacks for fuel cells since 2022. Another promising area in this business field is our expertise in precise reel to reel material handling, which enables us to provide innovative production concepts for flexible solar cells and panels.

Our business unit TECURITY® is established as a competent partner for the implementation of security systems for identifying and verifying both documents and individuals. Our clients benefit from more than three decades experiential value which we have gained during the realization of over 300 ID projects worldwide.

There is no "can't do" at Muehlbauer. We tailor your solution!

























AUTOMATION



MB ATECH Battery & Fuel Cell Technologies



WORLD OF TECURITY®



MANUFACTURING EXECUTION SYSTEMS



MB MCES is a personalization management software, which integrates incoming data with product definitions and controls the associated physical and electrical personalization processes. MB MCES handles personalization data from a variety of different input methods and formats.



MB INCAPE is Mühlbauer's Production Management Software for the production and personalization of electronic cards and documents (e.g. ID cards, ePassports, Driver's Licenses, EMV or GSM cards). Combining data management, production control and material management, the system allows for highly automated processes. It processes customer- and application-specific production, personalization, quality control and document delivery scenarios with highest solution flexibility.



MB PALAMAX®, Mühlbauer's Smart Factory solution, supports various applications from ID and document production over personalization to semiconductor backend and eMobility shop floors. It helps to monitor production data and makes it available for later processing, visualization and statistical analysis. This helps to uncover and realize efficiency boosts in your production system.



MB TOOL LEADER is a software package which consists of several applications and serves as a reliable link between the individual systems involved in the production process. By means of MB TOOL LEADER, the entire process chain – from the incoming order to the final precision part – can easily be monitored and controlled. This real-time machine monitoring guarantees an automated production process. Production errors can be detected and solved at an early stage. Thus, MB TOOL LEADER reduces the machine downtimes, which in turn leads to an increase of the machine's productivity by up to 20 percent.

FEATURES & ADVANTAGES



Configurable workflow steps regarding personalization, quality assurance & issuance



Fully-automated processing & production management



Scalability regarding different documents, machines & personalization locations



Flawless integration of Mühlbauer's material management system (MB INCAPE WAREHOUSE)



Connection to card / document management systems via web service, database, file-based interface



Standard interface to personalization machines with integration of third-party machines possible



Integration of MB USER MANAGEMENT



Full coverage of production control requirements (security industry & EMV standards)



Seamless connection to MB PALAMAX® & MB DATA PREPARATION



Simplified administration due to web-based operator clients



Monitoring of real-time performance of the production



Seamless tracking of documents from point of production to issuance



Statistical tool analyze collected data & deliver customized statistics on OEE



Tool which enables the remote operation of machines on the shop floor from a control centre



Tool which increases effectiveness & efficiency so that production becomes more profitable



Enables production engineering to prepare & test a repeatable factory set-up. Factories can switch between products within minutes.



ASP 280 & ASP 2800

SHEET PERSONALIZATION SYSTEM

Mühlbauer's ASP series is designed for the individual printing of nents and systems. The special ink cartridge system uses two tems are part of the MÜHLBAUER COLOR FAMILY for MB EMBEDof polycarbonate based ID cards or passport holderpages. The ASP is the result of successful customer-proven compotem such as MB INCAPE.

single foil layers in a reel-to-sheet production process. The sys- ink cartridges that automatically switch between ink tanks, allowing for a continuous production. The ASP is equipped with DED PICTURE technology and especially suited for the production the proven personalization platform MB MCES and can be integrated into a production and personalization management sys-





KEY MODULES ASP 280

Reel input



Solvent injekt printer



Standard cutting unit



Sheet output

KEY MODULES ASP 2800



Reel input



Vision inspection



Solvent injekt printer



High accuracy cutting unit



Separate reject bin





Pick and placer



Sheet output









FEATURES & ADVANTAGES

KEY FEATURES

- · High accuracy cutting unit
- · Fully automatic quality monitoring
- Fully automatic output stacking
- The sheet personalization line is a system for the individual printing of core / overlay layers for card / passport production or other similar applications
- Latest technology and know-how standards
- Online support available
- MB MCES / MB INCAPE readv

PRODUCTIVITY / PROCESS UNITS

- Reel-to-sheet process
- Environmental conditions:
- » Room temperature: 23°C; +/-3°C
- » Humidity: 50%; +/-10%

TECHNICAL DATA

• Foil materials: PC, PVC, PVCA ABS, PET, PETG; others on request

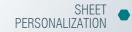
10

12

14

- Foil width: From 250 mm to 600 mm
- Foil thickness: From 100 μ m to 500 μ m
- Print resolution: up to 1,440 dpi
- Inks: Yellow, Magenta, Cyan, Black
- Interface: Ethernet

SHEETS PER HOUR









CLP 60

CARD PERSONALIZATION SYSTEM

system with a throughput of up to 150 cards per hour. With over 100 installations and more than 20,000 documents produced, the CLP series is a proven solution for decentralized laser ensmart cards. Despite its small size and low weight, it delivers the same quality as high-volume systems. The intuitive touchscreen interface ensures easy operation, and the system supports personalization of contact, contactless, and dual-interface cards.

Mühlbauer's CLP 60 is a compact desktop card personalization The special CLP 60 E version can be configured with a camera system for card identification and serial number reading. For this purpose, a dedicated card position is integrated into the model. This new generation desktop machine also features a separate graving of ID cards, driver's licenses, and other ID-1 format verification unit, positioned after all personalization stations. The unit ensures correct chip encoding and precise laser engraving, while detecting errors or manipulations caused by human interference. As a result, production quality is significantly enhanced and highly secured.



CLP 60 X - OFFROAD VERSION



CLP 60 E - DESKTOP VERSION

KFY MODULES



Card input stacker



Chip encoding (contact and / or contactless)



Vision inspection



Auto Alignment



Laser engraving



Card output stacker



Data verification Unit (CLP 60 E)



Offroad variant (CLP 60 X)







FEATURES & ADVANTAGES

KEY FEATURES

- Compact industrial designed desktop personalization system
- Suitable for customized personalization requirements
- Offers the same personalization quality as mid and high volume Mühlbauer personalization machines
- Direct service and quick reaction time (no third party laser supplier involved)
- Optimized silent cooling system
- Integrated laser suction unit with active carbon fibers
- MB MCES or MB MCES including MB PRODUCT DESIGNER
- Data connection to network and other external data bases
- MB INCAPE & MB PALAMAX® readv

PRODUCTIVITY / PROCESS UNITS / FEATURES

- Card feeding from input stacker with long autonomy time with up to 200 cards
- Additional manual card feeder for fast track production requirement
- Lockable input/output with viewing window for easy card volume monitoring
- Chip coding contact / contactless / dual interface
- · Laser engraving system incl. viewing window
- Vision control systems with LED-flashlight system for both card sides
- Turning station for front- and backside laser engraving incl. swivel unit in y-direction
- Cards swivel unit in x- and y- axis for security laser applications (CLI, MLI) and laser alignment
- Color touch screen display with Mühlbauer GUI
- Retractable handles for easy system movement/ transport
- Auto-Alignment functionality
- Offroad version for fast and frequent system transport
- Offroad capability due to stronger base plate and multiple dampers

TECHNICAL DATA

- Card types: format / materials: ID-1 cards / PC, PVC, ABS, PET, PETG, metal cards; others on request
- IC Module types: Processor modules: T=0 / T=1
- Memory modules: I2C bus / 2;3-wire
- Contactless: ISO 14443 / 15693
- Interface: Ethernet
- Throughput: up to 150 cards per hour; depending on process
- Operator access control
- Auto alignment function
- · Guarantees constant laser personalization result on all installed equipment
- Ideal for decentralized solution with quality consistency on all sites

SHEET **PERSONALIZATION**

CARD PERSONALIZATION

CARD SORTING UPH 25 50 75 100 150 175 125

MAILING

10 | 11

SCP 60

DESKTOP CARD PERSONALIZATION SYSTEM

Mühlbauer's SCP 60 is a desktop card personalization sys- standard modules and is easily expandable and interchangetem of the latest generation. It is the result of successful cus- able to support different applications. All known processes can tom-proven components and systems. The throughput is up be integrated to customer requirements. The SCP 60 is upto 200 cards per hour. This system excels with cost-efficient gradable on-site which is unique in the desktop card personasub-systems and technologies, while providing highest opera-lization market. Although being a desktop system, the SCP 60 tor and service convenience as well as perfected quality. The is equipped with the proven personalization platform MB MCES absolute highlight of the SCP 60 is its fully modular design. and can be integrated into a production and personalization This design allows for tailor-made solutions with Mühlbauer's management system such as MB INCAPE.



KEY MODULES



Card input stacker



Magstripe encoding (ISO HiCo, LoCo)



Chip encoding (contact and / or contactless)



Laser engraving



Card cleaning (integrated in D2T2 station)



Dye sublimation color print



Lamination unit (reel-to-reel for patches)



Vision inspection



Card output stacker

FEATURES & ADVANTAGES

KEY FEATURES

- Desktop personalization system for personalization tasks, technologies & processes
- Suitable for customized personalization requirements
- Fully modular design
- New generation of color print option with ICC color profile
- Option of metal card processing
- MB MCES or MB MCES including MB PRODUCT DESIGNER
- MB INCAPE & MB PALAMAX® readv

PRODUCTIVITY / PROCESS UNITS

- Card feeding from input stacker (single or multiple units)
- Card output stacker (single or multiple units) with separate reject card bin
- Magnetic stripe encoding
- Chip coding contact / contactless / dual interface
- Laser engraving system
- Dye diffusion thermal transfer print; optional UV printing unit, card cleaning & turning station
- Inkjet printing
- Lamination / patch applying
- Vision control systems with LED-flashlight system for both card sides
- Operator identification by biometric verification on request
- MB MCES offline development workstation (SDK) (optional)
- Environmental conditions:
- » Room temperature: 23°C; +/-3°C
- » Humidity: 50%; +/-10%

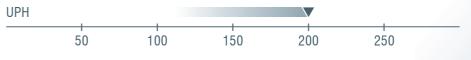
TECHNICAL DATA

- Card types: format / materials: ID-1 cards / PC, PVC, ABS, PET, PETG, metal cards; others on request
- Magstripe coding: write / read modules, HiCo, LoCo
- IC Module types: Processor modules: T=0 / T=1
- Memory modules: I2C bus / 2;3-wire
- Contactless: ISO 14443 / 15693
- Interface: Ethernet
- Throughput: up to 200 cards per hour; depending on process



CARD PERSONALIZATION

CARD SORTING











SCP 60 NOVUS

DESKTOP CARD PERSONALIZATION SYSTEM

Mühlbauer's SCP 60 NOVUS is a desktop card personalization system of the latest generation which consists of reliable cost-efficient sub-systems and technologies, while providing highest operator and service convenience, as well as superior for tailor-made solutions by combining different Mühlbauer standard modules according to individual customer require-

ments. The system's modules are easily expandable and interchangeable to support different applications. The SCP 60 and high-performance components. The system's throughput NOVUS is upgradable on-site – a unique feature in the desktop is up to 120 cards per hour. SCP 60 NOVUS stands out with card personalization market. The desktop system excels with compact dimensions and a small footprint, but is still equipped with Mühlbauer's proven personalization platform MB MCES quality. Furthermore, the system's fully modular design allows and thus can seamlessly be integrated into a production and personalization management system such as MB INCAPE.

KEY MODULES



Card input stacker



Magstripe Encoding



Chip encoding (contact and / or contactless)



Card cleaning



Inkjet colorprint



Liquid coating



Laser engraving



Patch Lamination (partial or full patches)



Vision inspection / Verification



Card output stacker



SCP 60 NOVUS Modular



SCP 60 NOVUS Compact

	SCP 60 NOVUS COMPACT VERSION	SCP 60 NOVUS MODULAR VERSION
Input	•	•
Magstripe Encoding		
Chip Encoding		
Inkjet Printing		
Liquid Coating	•	
Patch Applying	-	
Laser Engraving		
Data Verification		
Output	•	•

■ Standard □ Option - Not available

FEATURES & ADVANTAGES

KEY FEATURES

- Desktop personalization system for personalization tasks, technologies & processes
- Suitable for customized personalization requirements
- Fully modular design
- New generation of color print option with ICC color profile / MB ALFRESCO®
- MB MCES or MB MCES including MB PRODUCT DESIGNER
- Ready for MB INCAPE & MB PALAMAX®

PRODUCTIVITY / PROCESS UNITS

- Card feeding from input stacker
- Card output stacker (single or multiple units) with separate reject card bin
- Chip coding contact / contactless / dual interface
- Laser engraving system
- Inkjet printing
- Lamination / patch application
- Liquid Coating
- Vision control systems with LED-flashlight system for both card sides
- Operator identification by biometric verification (optional)
- MB MCES offline development workstation (SDK) (optional)

TECHNICAL DATA

Card types:

UPH

- » Format: ID-1 cards
- » Materials: Polycarbonate
- IC Module types: Processor modules: T=0 / T=1
- Memory modules: I2C bus / 2;3-wire
- Contactless: ISO 14443 / 15693
- Interface: Ethernet
- Throughput: up to 120 cards per hour; depending on process
- · Environmental conditions:
- » Room temperature: 23°C; +/-3°C
- » Humidity: 50%; +/-10%



70

80

60



100

90

PERSONALIZATION CARD

PERSONALIZATION

SHEET

CARD SORTING SCP 60 NOVUS COMPACT ▼ SCP 60 NOVUS MOUDI AR ▼

110

120









SCP 300

MID-VOLUME PERSONALIZATION SYSTEM FOR ID CARDS

Mühlbauer's SCP 300 is a card personalization system of the solution is Mühlbauer's COLOR personalization functionality latest generation. It is the result of years of intensive technical and technological development efforts. The machine excel with a around the world. The SCP 300 machine series offers modules for cost-efficient design, but nevertheless provides highest operator quality check, magnetic stripe and chip encoding, color picture and service friendliness as well as perfect personalization quality. SCP 300 combines innovative Mühlbauer technologies and is an ideal solution for midrange personalization while having a throughput of up to 300 cards per hour. The core of the ID

already proven in several personalization solutions and projects personalization with card surface protection as well as laser engraving processing. The completely newly designed graphical user interface supports the operator in the best possible way.



KEY MODULES









Chip encoding (contact and / or contactless)



Card cleaning



Inkjet colorprint (single pass or multipass)



Laser engraving



Liquid coating



Patch Lamination (partial or full patches)



Vision inspection / Verification



Card output stacker

FEATURES & ADVANTAGES

KEY FEATURES

- Highly modular industrial system design for customized personalization requirements
- New generation of color print option
- Option for metal card processing
- MB INCAPE & MB PALAMAX® ready

PRODUCTIVITY / PROCESS UNITS

- Card feeding from input stacker or magazine (single unit)
- Friction and scratch free card separation with integrated double card detection system
- Card output stacker (single unit) with separate reject card bin
- Magnetic stripe encoding HiCo, LoCo
- Chip coding contact / contactless / dual interface (multiple units)
- Inkiet printing
- Lamination / patch application
- Liquid coating
- Vision control systems with LED-flashlight system for both card sides
- · Operator identification by biometric verification (optional)
- MB MCES offline development workstation (SDK) (optional)
- Environmental conditions:
- » Room temperature: 23°C; +/-3°C
- » Humidity: 50%; +/-10%

TECHNICAL DATA

- Card types:
- » Format: ID-1 cards
- » Materials: Polycarbonate
- IC Module types:
- » Processor modules: T=0 / T=1
- » Memory modules: I2C bus / 2;3-wire
- » Contactless: ISO 14443 / 15693
- Interface: Ethernet
- Throughput: up to 300 cards per hour, depending on process

SHEET PERSONALIZATION





300

CARD PERSONALIZATION

UPH

100

200

400

CARD SORTING









SCP 501 / 801 / 1501

MID-VOLUME PERSONALIZATION SYSTEM FOR ID CARDS AND EMV CARDS

different ID and banking card applications. The machines boast a cost-efficient design, while providing highest operator and Mühlbauer technology, featuring for instance the combination integrated into existing personalization environments.

Mühlbauer's SCP series is a card personalization system for of laser engraving and dye sublimation color printing with an integrated lamination unit, or the unique Mühlbauer matrix embossing system. In addition, the SCP series includes modules service friendliness as well as impeccable quality. The SCP for contact based and / or contactless chip encoding. All series is available with an optionally wireless operated panel machines are built on an identical basis and are available with a made according to the latest contactless network industry different throughput from 500 to 1.500 cards /hour.upgradeable standards. The operator gains free moving space, unknown in the on-site. Equipped with the proven personalization platform card business to date. The modular machines combine current MB MCES software and hardware can easily be adapted and



KEY MODULES



Card input stacker



Barcode reader



Magstripe encoding (ISO HiCo, LoCo)



Chip encoding (contact and / or contactless)



Card cleaning



Thermo-transfer print



Dye sublimation color print



Overlay lamination (clear overlay and patch)



Braille



Card turning



Laser engraving



Card output stacker (conveyor, stacker or magazine)

Vision inspection

Data verification

Label application

Card sorting

FEATURES & ADVANTAGES

KEY FEATURES

- · Highly modular industrial system design for customized personalization requirements
- New generation of color print option
- Option for metal card processing
- MB INCAPE & MB PALAMAX® ready

PRODUCTIVITY / PROCESS UNITS

- · Card feeding from input and output stacker or magazine (single or multiple units)
- Friction and scratch free card separation with integrated double card detection system
- Magnetic stripe encoding HiCo. LoCo
- Chip coding contact / contactless / dual interface - up to 24 fold
- Thermo-transfer printing / dye diffusion UV printing unit
- Laser engraving (single or multiple stations possible)
- In-line vision control systems with LED-flashlight
- · Security locks on all module doors
- Labeling unit to apply labels
- Card sorting module
- MB MCES offline development workstation (SDK) (optional)
- In-line mailing system available
- Environmental conditions:
- » Room temperature: 23°C: +/-3°C
- » Humidity: 50%; +/-10%

TECHNICAL DATA

- Card types: format / materials: ID-1 cards / PC, PVC, ABS, PET, PETG, metal cards; others on request
- Magstripe coding: write / read modules. HiCo. LoCo
- IC Module types:
- » Processor modules: T=0/T=1
- » Memory modules: I2C bus / 2;3-wire
- » Contactless: ISO 14443 / 15693
- Interface: Ethernet
- Throughput: SCP 501 – up to 500 cards per hour, SCP 801 – up to 800 cards per hour, SCP 1501 – up to 1,500 cards per hour; depending on process

SHEET **PERSONALIZATION**

CARD PERSONALIZATION

CARD SORTING

UPH 1250 250 500 750 1000 1500









SCP 2000

HIGH-VOLUME PERSONALIZATION SYSTEM FOR ID CARDS OR BANKING CARDS

Mühlbauer's high volume personalization system, the SCP by offering modules for quality check, magnetic stripe and All in all, the machine combines latest Mühlbauer technologies is also a given.

2000, is the result of years of intensive technological and chip encoding as well as color personalization, laser engraving software development efforts. Exceeding with cost-efficient processing (MB ALFRESCO®) and labelling. In addition, but operator friendly design and technologies, the machine still the system is still equipped with the proven personalization provides superior personalization results. The SCP 2000 offers platform MB MCES II and thus can be integrated seamlessly an optional wireless operator panel that has been designed into a production and personalization management system according to the latest contactless network industry standards. such as MB INCAPE. Compatibility with our MB SMART TOOLS



KEY MODULES



Card input stacker



Vision inspection



Magstripe encoding (ISO HiCo, LoCo)



Chip encoding (contact and / or contactless)



Card cleaning



Plasma Treatment



Inkjet colorprint (single pass or multipass)



Liquid coating



Laser engraving



Card output stacker

Label application

Braille embossing

Vision inspection

Data Verification









FEATURES & ADVANTAGES

KEY FEATURES

- Highly modular industrial system design for customized personalization requirements
- New generation of color print option
- MB INCAPE & MB PALAMAX® ready

PRODUCTIVITY / PROCESS UNITS

- Card feeding from input stacker or magazine
- Friction and scratch free card separation with integrated double card detection system
- Card output stacker (or magazine)
- Magnetic stripe encoding HiCo, LoCo
- Chip coding contact / contactless / dual interface (multiple units)
- Inkjet printing (available option: 2-sided DOD-inkjet printing)
- Liquid Coating as an card refinement feature and for enhanced document security
- Laser engraving
- Braille embossing
- Vision control systems with LED-flashlight system for both card sides
- Label application
- Operator identification by biometric verification (optional)
- MB MCES offline development workstation (SDK) (optional)
- Environmental conditions:
- » Room temperature: 23°C; +/-3°C
- » Humidity: 50%; +/-10%

TECHNICAL DATA

- Card types:
- » Format: ID-1 cards
- » Materials: Polycarbonate or PVC
- IC Module types:
- » Processor modules: T=0 / T=1
- » Memory modules: I2C bus / 2;3-wire
- » Contactless: ISO 14443 / 15693
- Interface: Ethernet
- Throughput: up to 2000 cards per hour, depending on process







CARD PERSONALIZATION

UPH 500 1500 2500 1000 2000

MAILING

CARD SORTING

SCP 4000

HIGH-VOLUME PERSONALIZATION SYSTEM

Mühlbauer's SCP 4000 is the result of years of intensive technical and software development efforts. The machine boasts a cost-efficient design, while providing highest operator and service friendliness as well as impeccable quality. The SCP 4000 offers an optional wireless operator panel that has been designed according to the latest contactless network industry standards. The operator gains free moving space, unknown in the card business to date. The machine combines current Mühlbauer technology. One of the main highlights is the addi-

tional flexibility provided by the different input / output systems for highest autonomous running time (for up to eight magazines). In addition, they include modules for contact based and / or contactless chip encoding. The completely new designed graphical user interface supports the operator in the best possible way. Of course the machine is equipped with the proven personalization platform MB MCES and can be integrated into a production and personalization management system such as MB INCAPE.



KEY MODULES



Card input stacker



Barcode reader



Magstripe encoding (ISO HiCo, LoCo)



Card cleaning



Chip encoding (contact and / or contactless)





Label application

Card sorting

Data verification



Card turning



Vision inspection



Multi card output (stacker or magazine)









FEATURES & ADVANTAGES

KEY FEATURES

- High-speed personalization system for personalization tasks, technologies and processes
- Highly modular and flexible system design for ID or banking card production
- · Parallel processing concept to ensure highest throughput and flexibility
- Latest technology and know-how standards
- Suitable for customized personalization requirements
- Option for metal card processing
- Easily upgradeable / switching of process modules
- MB MCES or MB MCES including MB PRODUCT DESIGNER
- MB INCAPE & MB PALAMAX® readv

PRODUCTIVITY / PROCESS UNITS

- Card feeding from input stacker or magazine (single or multiple units)
- Friction and scratch free card separation with integrated double card detection system
- Card output stacker or magazine (single or multiple units) with separate reject card bin
- Automatic magazine changer, -buffer or multi-job systems (optional)
- Available process modules:
- » Magnetic stripe encoding up to 2-lanes in parallel
- » Chip coding contact / contactless / dual interface; up to 128 stations
- » Laser engraving system parallel laser system up to 8-fold
- » In-line vision control systems with LED-flashlight system for both card sides
- » Label applying of card activation labels
- · Security locks on all module doors
- Operator / service / administrator identification by biometric verification on request
- Customized process modules on request
- Environmental conditions:
- » Room temperature: 23°C; ±3°C
- » Humidity: 50%; ±10%

TECHNICAL DATA

• Card types: format / materials: ID-1 cards / PC, PVC, ABS, PET, PETG, metal cards; others on request

4000

3000

5000

- Magstripe coding: write / read modules, HiCo, LoCo
- IC Module types:
- » Processor modules: T=0 / T=1 » Memory modules: I2C bus / 2;3-wire
- » Contactless: ISO 14443 / 15693
- Interface: Ethernet

1000

UPH

• Throughput: up to 4,000 cards per hour; depending on process

2000

SHEET PERSONALIZATION

CARD PERSONALIZATION

CARD SORTING

SCP 6000 D0D

HIGH-VOLUME PERSONALIZATION SYSTEM

Mühlbauer's SCP 6000 DOD is the result of years of intenthe additional flexibility provided by the different input systems current Mühlbauer technology. One of the main highlights is MB INCAPE.

sive technical and software development efforts. The machine for highest autonomous running time (for up to eight magaboasts a cost-efficient design, while providing highest opera-zines). In addition, they include modules for contact based and tor and service friendliness as well as impeccable quality. The / or contactless chip encoding. The completely new designed SCP 6000 DOD offers an optional wireless operator panel that graphical user interface supports the operator in the best poshas been designed according to the latest contactless network sible way. Of course the machine is equipped with the proven industry standards. The operator gains free moving space, unknown in the card business to date. The machine combines a production and personalization management system such as



KEY MODULES



Multi card input (stacker or magazine)



Barcode reader



Magstripe encoding (ISO HiCo, LoCo)



Card cleaning



Chip encoding (contact and / or contactless)



Laser engraving



Inkjet printing





Multi card output (stacker or magazine)

Card turning

Vision inspection

Label application









FEATURES & ADVANTAGES

KEY FEATURES

- Industrial designed high-speed personalization system for flat debit and credit cards
- Highly modular and flexible system design for ID or banking card production
- · Parallel processing concept to ensure highest throughput and flexibility
- Latest technology and know-how standards
- Suitable for customized personalization requirements
- High-quality industrial inkjet printing
- Front and backside processing in one pass
- MB MCES or MB MCES including MB PRODUCT DESIGNER
- MB INCAPE & MB PALAMAX® readv

PRODUCTIVITY / PROCESS UNITS

- Card feeding from input stacker or magazine (single or multiple units)
- Friction and scratch free card separation with integrated double card detection system
- Card output stacker or magazine (single or multiple units) with separate reject card bin » Automatic magazine changer, buffer or multi-job systems (optional)
- · Available process modules:
- » Magnetic stripe encoding
- » Chip coding contact / contactless / dual interface; up to 128 stations
- » Inkiet printing monochrome colors black and white
- » In-line vision control systems with LED-flashlight system
- » Label applying of card activation labels
- Liquid Coating as an card refinement feature and for enhanced document security
- Security locks on all module doors
- Operator / service / administrator identification by biometric verification on request
- Customized process modules on request
- Environmental conditions:
- » Room temperature: 23°C; ±3°C
- » Humidity: 50%; ±10%

TECHNICAL DATA

- Card types: format / materials: ID-1 cards / PC, PVC, ABS, PET, PETG,
- Magstripe coding: write / read modules, HiCo, LoCo
- IC Module types:
- » Processor modules: T=0 / T=1 » Memory modules: I2C bus / 2;3-wire
- » Contactless: ISO 14443 / 15693
- Interface: Ethernet

1000

UPH

• Throughput: up to 6,000 cards per hour; depending on process

2000

3000

4000

5000

6000

SHEET **PERSONALIZATION**

REPUBLIC OF TECURITY | MÜHLBAUER GROUP

M10123456

ID Card with colored photo and MBLIQUID COATING

M. Specimen 12345

CARD PERSONALIZATION

CARD SORTING

MAILING

24 | 25







CCT 6000

HIGH-VOLUME PRE-PERSONALIZATION AND QUALITY ASSURANCE SYSTEM FOR CUSTOMIZED CARD APPLICATIONS

With the CCT 6000 Mühlbauer offers a milestone in card per- by the customer, whether they are set up onto existing process sonalization solutions: A highly flexible development basis for units or have to be completely developed. Seven free stations customized card applications. Input and output are the only fixed per module provide a flexibility never realized in the card indusmodules. And even here you can choose between standard try before. CCT 6000 is the best platform to realize your ideas. magazine feeders or volume magazine changers for high autonomy times. All other process stations can be freely configured

Thereby, it reaches a maximum mechanical throughput of 6,000 cards per hour.



KFY MODULES



Multi card input



Barcode reader



Chip encoding (contact and / or contactless)



Laser engraving



Card turning



Vision inspection





Data verification



Multi card output







FEATURES & ADVANTAGES

KEY FEATURES

- High-speed pre-/personalization system, technologies and / or special test processes
- Wide range of customization possible
- Most flexible individual process module development and integration
- Easy upgradeable / switching of process modules
- MB MCES or MB MCES including MB PRODUCT DESIGNER
- MB INCAPE & MB PALAMAX® ready

PRODUCTIVITY / PROCESS UNITS

- · Card feeding from input stacker or magazine (single multiple units)
- Friction and scratch free card separation with integrated double card detection system
- Card output stacker or magazine (single or multiple units) with separate reject bin)
- Automatic magazine changer and buffer systems (optional)
- Project / client depending integration of necessary process units for:
- Chip pre-personalization / personalization, special tests etc.
- » Printing on card surface by laser technology
- » Contact and / or contactless
- » Optical, mechanical, electrical control and processing units
- » Card sorting functionality
- » Customized processing units
- Security locks on all module doors
- Operator / service / administrator identification by biometric verification on request
- Environmental conditions:
- » Room temperature: 23°C; ±3°C
- » Humidity: 50%; ±10%

TECHNICAL DATA

- Card types: format / materials: ID-1 cards / PC, PVC, ABS, PET, PETG,
- IC Module types:
- » Processor modules: T=0/T=1
- » Memory modules: I2C bus / 2;3-wire
- » Contactless: ISO 14443 / 15693
- Customized processing units: up to 7 positions
- Interface: Ethernet

UPH

• Throughput: up to 6,000 cards per hour; depending on process

SHEET **PERSONALIZATION**

CARD PERSONALIZATION

CARD SORTING

1000 2000 3000 4000 5000 6000

MAILING

26 | 27

CS 8000

CARD SORTING SYSTEM

The CS 8000 is an automatic card inspection / verification and well as in industrial production areas. Own developed Software sorting system, adaptable to individual customer requirements. allows the protocolling of the inspected / verified products ei-By an automatic self-learning vision process for unknown / new ther without or with connection to MB MCES (personalization product designs, a user-friendly operation without additional spe-management system) and customer database. With an UPH of cialist trainings is feasible. Additional and individual configurable—up to 8000 cards per hour, the CS 8000 is the basic, for a solid processes allow a flexible inspection / verification of already per-process flow in your production / personalization area and supsonalized and / or blank card bodies, to sort these into different ports to reduce human influences. output trays. These machines can be placed in government as



KFY MODULES



Card input



Magnetic stripe verification



Chip verification / test



Card turning

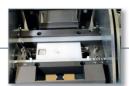


Vision inspection



Card output sorting









FEATURES & ADVANTAGES

KEY FEATURES

- Vision Inspection with self-learning process (operator friendly)
- Protocolling function (e.g. quality control, tractability, ...)
- 100% control of blank cards and/or personalized cards
- Flexible sorting of cards into different output units, adaptable to customer requirements
- Extendable machine concept
- Card verification / test via chip (optional)
- Card verification via magstripe reader (optional)
- Machine operation with or without (external) database connection possible
- MB INCAPE & MB PALAMAX® readv

PRODUCTIVITY / PROCESS UNITS

- Variable card input configuration (1 n units)
- Vision Inspection
- » Card quality check (print, punch accuracy, magstripe positioning,..)
- » Automatic card type recognition
- » Self-learning functionality for unknown / new products
- » Individual card identification (e.g. by serial number)
- » Barcode reading
- Note: Additional functions on request.
- Card turning device
- Card verification / test via chip (single, parallel) (optional)
- » Contact
- » Contactless
- » Combined
- Card verification via magnetic stripe (optional)
- Card output sorting (5 n units)

TECHNICAL DATA

- Throughput: up to 8000 cards/hour
- Card format: ID 1 (CR80)
- Card material: PC, PVC, ABS, PET, PETG, Carton, others on request
- Chip reader:

UPH

- » Contact according ISO/IEC 7816-3 and ISO7816-4
- » Contactless according ISO14443 A/B, ISO15693, Mifare ...

4000

• Magstripe verification: Reader module, HiCo, LoCo according ISO 7811-2 and -6

6000

8000

10000

Interface: Ethernet (optional)

2000

SHEET **PERSONALIZATION**

CARD PERSONALIZATION

CARD SORTING

INLINEMAIL

CARD PERSONALIZATION AND MAILING IN-LINE SYSTEM

With the process unit INLINEMAIL, Mühlbauer presents a revolu- The modules boast a cost-efficient design, but nevertheless protionary concept for more efficient mailing of cards. This machine vide highest operator friendly service as well as excellent quality. extension concept for SCP 501 / 801 / 1501 is based on many With a throughput of up to 1,500 envelopes per hour, the extenyears of experience with systems in production. It is the result of sion process unit INLINEMAIL is an ideal solution for mid volume vears of intensive technical and software development efforts. in-line mailing.



KEY MODULES



Carrier printer



Carrier buffer, sheet separation and alignment



Barcode reader 1D, 2D for online carrier-card-matching



Card affixing



Cards-on-carrier verification (sensoric system or vision inspection)



Enclosure stations



Carrier sheet collecting



Envelope inserting, humidification & closing



Reject bin



Label application (hot melt process optionally available)



Multifolding



Check weigher (optional)



Output conveyor (optional)

FEATURES & ADVANTAGES

KEY FEATURES

- In-line mailing system for card mailing and finishing
- Suitable for in-line mailing attached to SCP series
- Latest technology and know-how standards
- Various integration of in-line quality control features
- MB MCES or MB MCES including MB PRODUCT DESIGNER
- MB INCAPE & MB PALAMAX® ready

PRODUCTIVITY / PROCESS UNITS

- · Card feeding by card handover from personalization system
- In-line or off-line printer systems for letter printing
- Up to 4 card attachable per letter
- Up to 2 attachment inserting stations
- Weight-check and postaging unit (optional)
- Optical / electrical control systems available
- Security locks on all module doors
- Operator / service / administrator identification by biometric verification on request
- Environmental conditions:
- » Room temperature: 23°C; ±3°C
- » Humidity: 50%; ±10%

TECHNICAL DATA

- Card types: format / materials: ID-1 cards / PC, PVC, ABS, PET, PETG,
- Letter formats: A4, A5, A5 horizontal, US letter, US legal
- Envelope formats: C6, C5/6 (DIN long), C5, No. 9, No. 10, A10
- Folding types: C- / Z- / V- (half) / Double-parallel
- Card / letter matching: Chip, magnetic stripe, optical (vision or barcode reader)
- Interface: Ethernet
- Throughput: up to 1,500 envelopes per hour; depending on process

COMBINED CARD PERSONALIZATION AND MAILING



2000

2500

SHEET **PERSONALIZATION**

CARD PERSONALIZATION

CARD SORTING

MAILING -











UPH

CARDMAILING SYSTEMS

STANDALONE MAILING SYSTEMS

Mühlbauer's CARDMAIL series enables personalized cards to guarantees the quality levels you have come to expect from be sent to the card holders quickly, easily and reliably. Different quality assurance systems guarantee the exact match between cards and documents.

CARDMAIL is a fully modular system with a completely flexible and adaptable design ready for any future demands and ensuring 100% investment protection.

Complete in-house system development and manufacturing

Mühlbauer machines.

CARDMAIL works with the open and universal Mühlbauer personalization platform MB MCES as well as the production and personalization management system MB INCAPE.

A large number of CARDMAIL systems has already been installed throughout the world with the tried and tested Mühlbauer technology.



KEY MODULES



Carrier printer



Carrier buffer, sheet separation and alignment



Barcode reader 1D, 2D for online carrier-card-matching



Label application



Carrier pre- and post-folding



Carrier sheet collecting



Card input and verification (option for stand-alone-version: magstripe, chip readers, vision inspection)



Card affixing



Cards-on-carrier verification (sensoric system or vision inspection)



Turning stations



Enclosure stations



Reject bin







Envelope inserting,

Envelope inspection

humidification & closing

Check weigher (optional)











Corner module









FEATURES & ADVANTAGES

KEY FEATURES

- Complete in-house system development for highest quality levels
- Latest technology and know-how standards
- Fully modular: easy upgrade and switch of process modules
- Stand-alone card mailing system
- Letter printing: in-line and off-line printers
- Interface for various carrier printers
- Monochrome printing: color printing (optional)
- Simplex and duplex page printing
- Card feeding from input magazine; from input stacker (optional)
- Double card detection sensor
- Card identification techniques optionally available: magstripe, chip reader (contact/contactless), barcode reader, vision camera system
- Card affixing by label dispenser using pre-cutted glue stickers
- Cards per letter: up to 6
- Attachment inserting stations: up to 12
- Card & letter matching by: sensor, barcode reader (optional), vision camera system (optional)
- Envelope quality assurance optionally available: checkweigher, barcode reader, vision camera system
- Envelope sorting modules (optional)
- Card materials: PC, PVC, ABS, PET, PETG
- Card format: ID-1, other formats on request
- Security locks on all module doors
- Operator, service, administrator identification by biometric verification (optional)
- Interface: Ethernet
- MB MCES or MB MCES including MB PRODUCT DESIGNER
- MB INCAPE & MB PALAMAX® ready

1000

2000

	CARDMAIL 1500	CARDMAIL 3000
LETTER FORMATS	A4, US letter according to ISO 216	A4, US letter according to ISO 216
ENVELOPE FORMATS	C5/6 (DIN long), C6/5 (DIN long +), C5	C5/6 (DIN long), C6/5 (DIN long +), C5
FOLDING TYPES	C- / Z- / V- (half)	C- / Z- / V- (half)
PERFORMANCE	up to 1 500 envelopes/h	up to 3 000 envelopes/h

3000

4000

5000

6000

PERSONALIZATION

PERSONALIZATION

CARD SORTING

MAILING -

32 | 33

SHEET

SCP CARDPACK

CARD PACKAGING AND DELIVERY SYSTEM

The SCP CARDPACK offline packaging system represents a revproach and latest control and monitoring mechanisms, the system is well prepared for future applications. High-performance

components ensure an increase in efficiency and a considerable olutionary concept ensuring the most efficient packing for the reduction of maintenance requirements while being easy to operdistribution of identity cards. This machine concept is based on ate. The SCP CARDPACK guarantees a clearly increased producmany years of experience in the production of personalization tion output thus reducing the costs for personalization and issuand mailing systems. It is an optimized platform for individuance of cards. Due to the modular setup, the packaging system al processing of production orders. Thanks to the modular apmeets today's requirements regarding secure production and is



KFY MODULES



Multi card input (stacker or magazine)



Barcode reader



Chip encoding (contact and / or contactless)



Card turning



Vision inspection



Card collecting



Card banding



Label application



Output conveyor









FEATURES & ADVANTAGES

KEY FEATURES

- Industrial designed card packaging and delivery system
- Latest technology and know-how standards
- Various card identification and reader units selectable
- Card collection according to customized batch criteria
- MB MCES or MB MCES including MB PRODUCT DESIGNER
- MB INCAPE & MB PALAMAX® ready

PRODUCTIVITY / PROCESS UNITS

- Card feeding from input stacker or magazine (single or multiple units)
- Friction and scratch free card separation with integrated double card detection system
- Automated packaging batch selection by barcode identification and matching
- Automated card identification of each single card with dedicated reader unit(s)
- Automated counting and collecting of cards according to packaging criteria(s)
- Number of cards per package: 1 50 (standard version) or 1 100 (enhanced version)
- Automated banding of each card package
- Printing of card package data onto sticker with applying unit
- Single output conveyor belt for finished card packages
- Operator / service / administrator identification by biometric verification on request
- Environmental conditions:
- » Room temperature: 23°C; +/-3°C
- » Humidity: 50%; +/-10%

TECHNICAL DATA

- Card types: format / materials: ID-1 cards / PC, PVC, ABS, PET, PETG,
- Card identification: IC processor module contactless based and contact based
- Barcode reading: Linear barcode (1D) or matrix barcode (2D)

2000

- Vision inspection system: For OCR and OCV of document / serial numbers; 1D or 2D barcode reading / matching
- Interface: Ethernet

UPH

1000

• Throughput: up to 4,000 cards per hour; depending on number of cards per package

3000

4000

5000

6000







MAILING -



LASER OVERVIEW

MÜHLBAUER LASER MARKING SYSTEMS

The Mühlbauer laser series was developed to exactly meet the Through the 100% in-house development, we guarantee shortest demand of laser personalization for Smart Card and ePassport applications. All components of the laser system as well as the ing on your application and your desired production volume our software have been highly integrated and optimized for maximum power, speed and quality.

service reaction times and high spare parts availability. Dependexperts can provide you with the most suitable laser solution. Mühlbauer – Your Partner for Security Technologies!

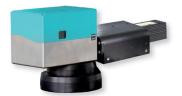
FIBER LASERS



GREYSCALE LASER - LES 20 FP



GREYSCALE LASER - LES 22 FPEM



FIBER LASER - LES 31 F



FIBER LASER - LES 32 FPEM

DPSS LASERS



DPSS LASER - LES 16

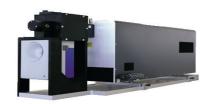


DPSS LASER - LES 25

CO₂ LASERS

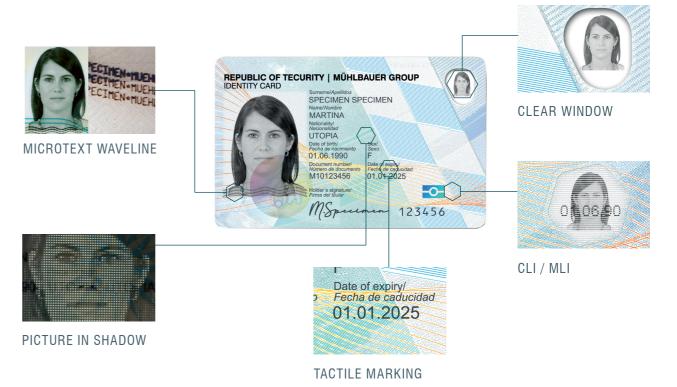






LPS 150

TYPICAL CARD APPLICATIONS FOR LASER PERSONALIZATION & SECURITY FEATURES BY LASER TECHNOLOGY

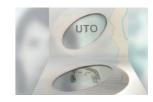


FURTHER TECHNOLOGY & SECURITY FEATURES BY LASER MARKING





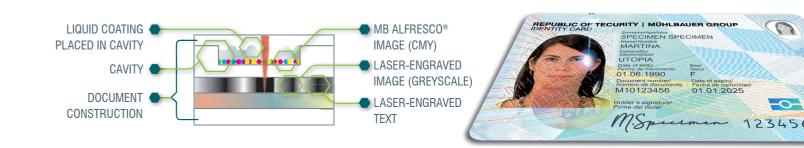
CLEAR LASER MARKING SECURE CLEAR IMAGE



MB SHIFTING WINDOW



DTLI (DATA TRANSITION LASER IMAGING)





PERSONALIZATION & QUALITY ASSURANCE

PERSONALIZATION & TESTING EQUIPMENT ACCORDING TO ICAO 9303 REQUIREMENTS

CHIP ENCODING - MB 1301



The Reader electronic based on MB1301 is a flexible architecture to feed the different needs for personalization of contact and contactless Smartcards. The basis is an ARM based main board where the user can configure different stacking boards for coding.

TECHNICAL DATA

- Dimensions: 100 x 80 mm
- Power: 24V DC (± 10 %)
- . CPU: Dual Core CPU with 300 MHz
- RAM: 128 MB
- . Flash Card Memory: 4 GB
- Network: TCP/IP: up to 10/100Mbit/sw
- Contact coding with up to 320 Kbit/s
- Advanced contact coding with up to 2 Mbit/s (1.8 V to 5.5 V)
- Contactless coding with up to 424 Kbit/s

SDK (Software Development Kit) available

CARD BODY TESTING EQUIPMENT



Card size gauge



Card thickness / cavity depth gauge



Peel force tester

SMART CARD TESTING EQUIPMENT



Flexion test system



Three wheel testing system



Torsion test system



Module adhesion testing system

CARD PERSONALIZATION TESTING EQUIPMENT



Measuring of embossing distances

Measuring of embossing distance



Measuring of color density



Inspection of various printing processes

PRODUCT PORTFOLIO

YOUR ONE-STOP-SHOP TECHNOLOGY PARTNER

MB SOFTWARE

- Enrollment & Issuance
- Identity Management
- · Process, Production & Personalization Management
- Verification
- EMV Software Solutions

AUTOMATION

CARDS & ePASSPORTS

- IC Module Production
- Card Body & Smart Card Production
- Holderpage & Booklet Production
- Card & ePassport Personalization
- Packaging & Mailing

RFID / SMART LABEL

- Antenna Production & Inlay Assembly
- Converting
- Personalization

SEMICONDUCTOR BACKEND

- IC Module Production
- Carrier Tape Production
- Die Sorting

INSPECTION SYSTEMS

- Industrial Packaging
- Industrial Metal Working
- Security Inspection for Banknotes
- Security Inspection for Coins
- Special Solutions

NEW TECHNOLOGIES

- Concentrator Solar Technology
- Flexible Solar Cell Technology
- Solar Panel Technology
- E-SIM PERSO
- LED Technology

TECURITY®

- eID Card Solution
- ePassport Solution
- MB IDVERSO® Border Management Solution
- Driver's License & Vehicle Registration Solution
- Production Facilities

PARTS & SYSTEMS

- Precision Parts
- Surface Engineering

CONSULTING

- Identification of Customer Requirements
- Planning & Design
- Implementation
- Ongoing Operations

SERVICE

- Worldwide Locations for Service & Support
- Worldwide Spare Parts Supply
- Reaction Time & Full Service Contracts
- Service & Maintenance Management
- Updates & Upgrades
- Teleservice, Remote Access & Hotline (24 hours)
- Training & Support on Different Levels
- Production & Administration Support

MB ATECH

- Battery Cell Assembly Line
- Battery Management System
- Fuel Cell Production Line



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