



CARD PERSONALIZATION & MAILING

PRODUCT OVERVIEW



CONTENTS

MÜHLBAUER GROUP AT A GLANCE 4

MANUFACTURING EXECUTION SYSTEMS 6

SHEET PERSONALIZATION

ASP 280 / ASP 2800 8

CARD PERSONALIZATION – SMALL-VOLUME

CLP 60 10

SCP 60 12

SCP 60 NOVUS..... 14

CARD PERSONALIZATION – MID-VOLUME

SCP 300 16

SCP 501/801/1501 18

CARD PERSONALIZATION – HIGH-VOLUME

SCP 2000 20

SCP 4000 22

SCP 6000 DOD 24

CCT 6000 26

CARD SORTING

CS 8000 28

MAILING

INLINEMAIL 30

Cardmailing Systems 32

SCP CARDPACK 34

LASER OVERVIEW 36

PERSONALIZATION & QUALITY ASSURANCE 38

PRODUCT PORTFOLIO 39



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.

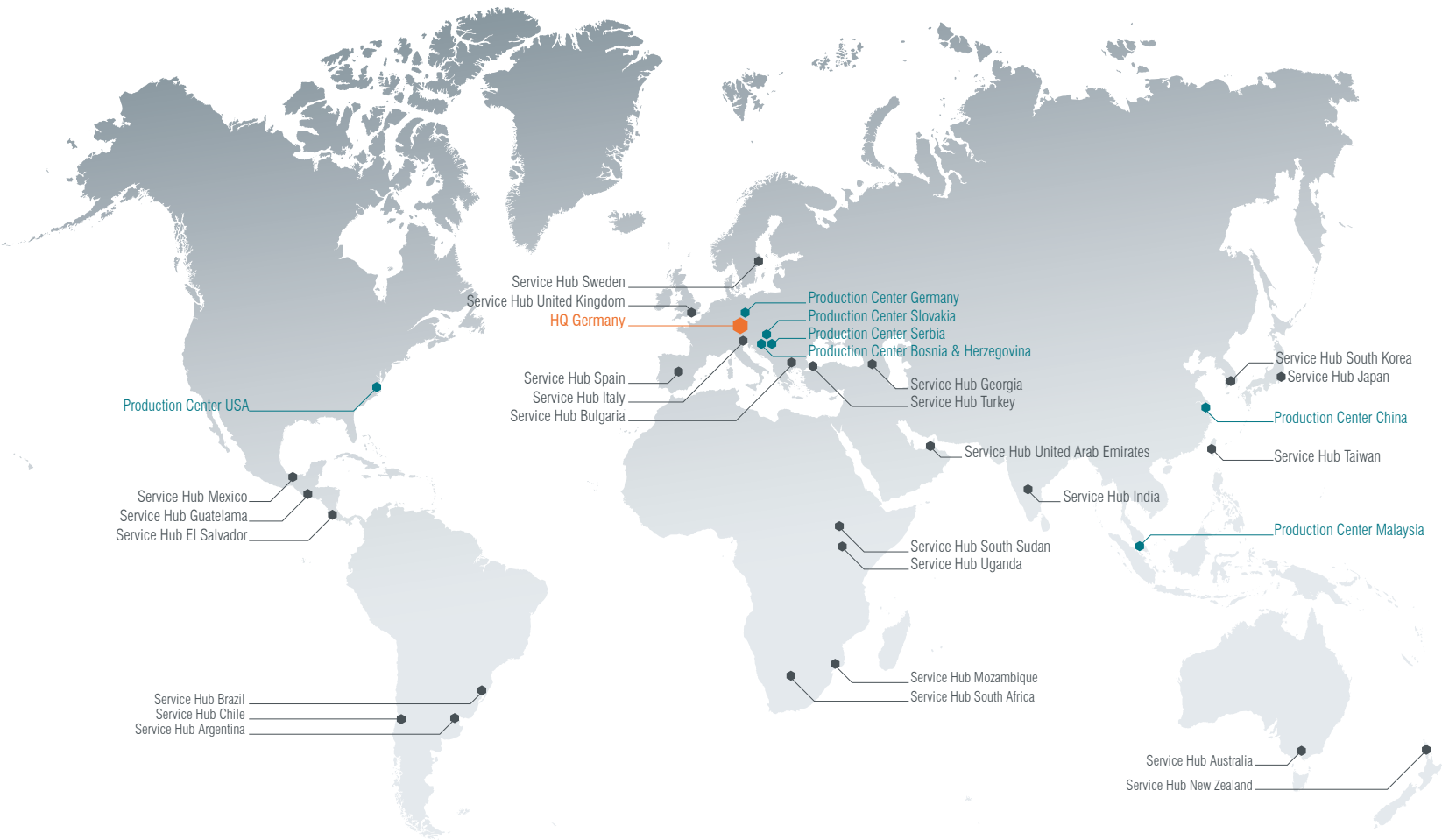
Our business unit **AUTOMATION** does not only develop and assemble individually customized production systems, but also offers intelligent software solutions for production automation

(Industry 4.0). Vision inspection technologies as well as semi-conductor 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!





Mühlbauer
Bosnia & Herzegovina



Mühlbauer
China



Mühlbauer
Germany



Mühlbauer
Malaysia



Mühlbauer
Serbia



Mühlbauer
Slovakia



Mühlbauer
USA



MPS
Precision Parts & Surface Engineering



AUTOMATION
Production Equipment & Systems



MB ATECH
Battery & Fuel Cell Technologies



WORLD OF TECURITY®
Government & Technology Solutions



MANUFACTURING EXECUTION SYSTEMS



MB MCES

PERSONALIZATION MANAGEMENT SYSTEM

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

PRODUCTION MANAGEMENT SOFTWARE

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®

TOTAL PROCESS TRANSPARENCY

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

CONNECTOR BETWEEN SYSTEMS

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 single foil layers in a reel-to-sheet production process. The systems are part of the MÜHLBAUER COLOR FAMILY for MB EMBEDDED PICTURE technology and especially suited for the production of polycarbonate based ID cards or passport holderpages. The ASP is the result of successful customer-proven compo-

nents and systems. The special ink cartridge system uses two ink cartridges that automatically switch between ink tanks, allowing for a continuous production. The ASP 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 ASP 280

- Reel input
- Solvent injekt printer
- Standard cutting unit
- Sheet output

KEY MODULES ASP 2800

- Reel input
- Solvent injekt printer
- High accuracy cutting unit
- Separate reject bin
- Vision inspection
- 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 ready

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



SHEETS PER HOUR



SHEET PERSONALIZATION

CARD PERSONALIZATION

CARD SORTING

MAILING

CLP 60

CARD PERSONALIZATION SYSTEM

Mühlbauer's CLP 60 is a desktop card personalization system of the latest generation. The throughput is up to 150 cards per hour. With more than 100 systems installed and more than 20,000 documents produced, the CLP series is successfully customer proven. This system is the best solution for decentralized laser engraving for ID cards, driver's licences and other Smart Cards based on ID-1 format. It provides the same quality

as high volume systems. The small size, low weight and the compact design makes it easy to handle and to move. Now even more, thanks to the new CLP 60X variant for more easy transport. The machine has an intuitive user interface and can be operated by a touchscreen. The CLP 60' personalization tasks are suitable for all contact, contactless and dual interface cards.



CLP 60 X – OFFROAD VERSION

KEY MODULES

- Card input stacker
- Vision inspection
- Auto Alignment
- Chip encoding (contact and / or contactless)
- Laser engraving
- Card output stacker
- Offroad variant

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® ready

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

MAILING

SCP 60










DESKTOP CARD PERSONALIZATION SYSTEM

Mühlbauer's SCP 60 is a desktop card personalization system of the latest generation. It is the result of successful custom-proven components and systems. The throughput is up to 200 cards per hour. This system excels with cost-efficient sub-systems and technologies, while providing highest operator and service convenience as well as perfected quality. The absolute highlight of the SCP 60 is its fully modular design. This design allows for tailor-made solutions with Mühlbauer's

standard modules and is easily expandable and interchangeable to support different applications. All known processes can be integrated to customer requirements. The SCP 60 is upgradable on-site which is unique in the desktop card personalization market. Although being a desktop system, the SCP 60 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 |  Laser engraving |  Lamination unit (reel-to-reel for patches) |
|  Magstripe encoding (ISO HiCo, LoCo) |  Card cleaning (integrated in D2T2 station) |  Vision inspection |
|  Chip encoding (contact and / or contactless) |  Dye sublimation color print |  Card output stacker |

FEATURES & ADVANTAGES

KEY FEATURES

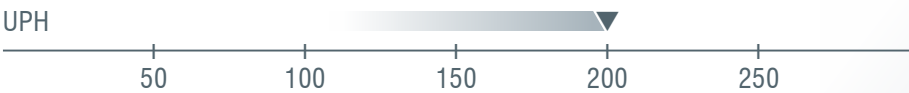
- Desktop personalization system for personalization tasks, technologies & processes
- Suitable for customized personalization requirements
- Fully modular design
- New generation of color print option with ICC color profile
- Option of metal card processing
- MB MCES or MB MCES including MB PRODUCT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

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



SHEET
PERSONALIZATION

CARD
PERSONALIZATION

CARD SORTING

MAILING



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 and high-performance components. The system's throughput is up to 120 cards per hour. SCP 60 NOVUS stands out with cost-efficient sub-systems and technologies, while providing highest operator and service convenience, as well as superior quality. Furthermore, the system's fully modular design allows 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 NOVUS is upgradable on-site – a unique feature in the desktop 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 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

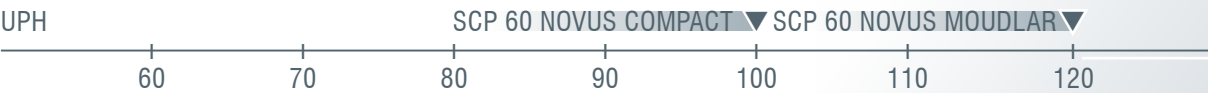
- Desktop personalization system for personalization tasks, technologies & processes
- Suitable for customized personalization requirements
- Fully modular design
- New generation of color print option with ICC color profile / MB ALFRESCO®
- MB MCES or MB MCES including MB PRODUCT DESIGNER
- Ready for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

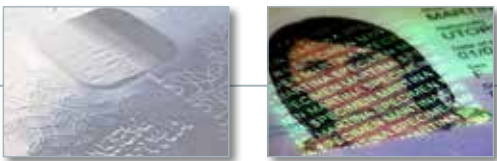


SHEET
PERSONALIZATION

CARD
PERSONALIZATION

CARD SORTING

MAILING



SCP 300












MID-VOLUME PERSONALIZATION SYSTEM FOR ID CARDS

Mühlbauer's SCP 300 is a card personalization system of the latest generation. It is the result of years of intensive technical and technological development efforts. The machine excel with a cost-efficient design, but nevertheless provides highest operator 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

solution is Mühlbauer's COLOR personalization functionality - already proven in several personalization solutions and projects around the world. The SCP 300 machine series offers modules for quality check, magnetic stripe and chip encoding, color picture 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

- | | | |
|---|--|--|
|  Card input stacker |  Chip encoding (contact and / or contactless) |  Liquid coating |
|  Vision inspection |  Card cleaning |  Patch Lamination (partial or full patches) |
|  Magstripe encoding (ISO HiCo, LoCo) |  Inkjet colorprint (single pass or multipass) |  Vision inspection / Verification |
| |  Laser engraving |  Card output stacker |

FEATURES & ADVANTAGES

KEY FEATURES

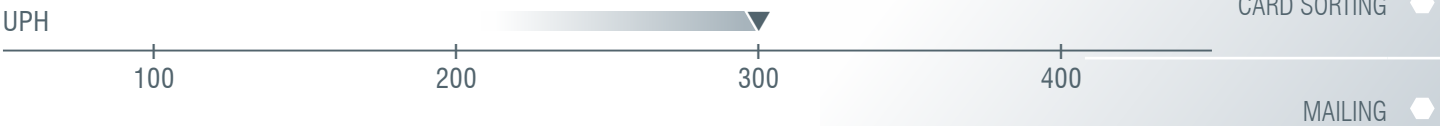
- Highly modular industrial system design for customized personalization requirements
- New generation of color print option
- Option for metal card processing
- MB INCAPE & MB PALAMAX® ready

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)
- 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)
- 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



SCP 501 / 801 / 1501

















MID-VOLUME PERSONALIZATION SYSTEM FOR ID CARDS AND EMV CARDS

Mühlbauer's SCP series is a card personalization system for different ID and banking card applications. The machines boast a cost-efficient design, while providing highest operator and service friendliness as well as impeccable quality. The SCP series is available with an optionally wireless operated panel made according to the latest contactless network industry standards. The operator gains free moving space, unknown in the card business to date. The modular machines combine current Mühlbauer technology, featuring for instance the combination

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 for contact based and / or contactless chip encoding. All machines are built on an identical basis and are available with a different throughput from 500 to 1,500 cards /hour, upgradeable on-site. Equipped with the proven personalization platform MB MCES software and hardware can easily be adapted and integrated into existing personalization environments.



KEY MODULES

- | | | |
|--|--|---|
|  Card input stacker |  Dye sublimation color print |  Vision inspection |
|  Barcode reader |  Overlay lamination (clear overlay and patch) |  Data verification |
|  Magstripe encoding (ISO HiCo, LoCo) |  Braille |  Label application |
|  Chip encoding (contact and / or contactless) |  Card turning |  Card sorting |
|  Card cleaning |  Laser engraving |  Card output stacker (conveyor, stacker or magazine) |
|  Thermo-transfer print | | |

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 system
- 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

MAILING

SCP 2000















HIGH-VOLUME PERSONALIZATION SYSTEM FOR ID CARDS OR BANKING CARDS

Mühlbauer's high volume personalization system, the SCP 2000, is the result of years of intensive technological and software development efforts. Exceeding with cost-efficient but operator friendly design and technologies, the machine still provides superior personalization results. The SCP 2000 offers an optional wireless operator panel that has been designed according to the latest contactless network industry standards. All in all, the machine combines latest Mühlbauer technologies

by offering modules for quality check, magnetic stripe and chip encoding as well as color personalization, laser engraving processing (MB ALFRESCO®) and labelling. In addition, the system is still equipped with the proven personalization platform MB MCES II and thus can be integrated seamlessly into a production and personalization management system such as MB INCAPE. Compatibility with our MB SMART TOOLS is also a given.



KEY MODULES

- | | | |
|--|--|---|
|  Card input stacker |  Card cleaning |  Braille embossing |
|  Vision inspection |  Plasma Treatment |  Vision inspection |
|  Magstripe encoding (ISO HiCo, LoCo) |  Inkjet colorprint (single pass or multipass) |  Data Verification |
|  Chip encoding (contact and / or contactless) |  Liquid coating |  Label application |
| |  Laser engraving |  Card output stacker |

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



SHEET
PERSONALIZATION

CARD
PERSONALIZATION

CARD SORTING

MAILING



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 |  Chip encoding (contact and / or contactless) |  Data verification |
|  Barcode reader |  Laser engraving |  Label application |
|  Magstripe encoding (ISO HiCo, LoCo) |  Card turning |  Card sorting |
|  Card cleaning |  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® 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
- 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
- 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 4,000 cards per hour; depending on process



SHEET
PERSONALIZATION

CARD
PERSONALIZATION

CARD SORTING

MAILING



SCP 6000 DOD













HIGH-VOLUME PERSONALIZATION SYSTEM

Mühlbauer's SCP 6000 DOD 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 6000 DOD 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 additional flexibility provided by the different input 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

- | | | |
|--|--|---|
|  Multi card input (stacker or magazine) |  Chip encoding (contact and / or contactless) |  Card turning |
|  Barcode reader |  Laser engraving |  Vision inspection |
|  Magstripe encoding (ISO HiCo, LoCo) |  Inkjet printing |  Label application |
|  Card cleaning |  Liquid coating |  Multi card output (stacker or magazine) |

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® 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
- 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
 - » Inkjet 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
- Throughput: up to 6,000 cards per hour; depending on process



ID Card with LIQUID COATING - MB Perso-screen®

SHEET
PERSONALIZATION

CARD
PERSONALIZATION

CARD SORTING

MAILING



CCT 6000

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

With the CCT 6000 Mühlbauer offers a milestone in card personalization solutions: A highly flexible development basis for customized card applications. Input and output are the only fixed modules. And even here you can choose between standard magazine feeders or volume magazine changers for high autonomy times. All other process stations can be freely configured

by the customer, whether they are set up onto existing process units or have to be completely developed. Seven free stations per module provide a flexibility never realized in the card industry before. CCT 6000 is the best platform to realize your ideas. Thereby, it reaches a maximum mechanical throughput of 6,000 cards per hour.



KEY 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

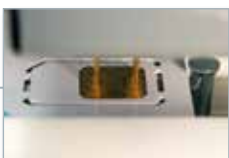
- High-speed pre-/personalization system, technologies and / or special test processes
- Wide range of customization possible
- Most flexible individual process module development and integration
- Easy upgradeable / switching of process modules
- MB MCES or MB MCES including MB PRODUCT DESIGNER
- MB 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:
 - » 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
- Throughput: up to 6,000 cards per hour; depending on process



UPH

1000 2000 3000 4000 5000 6000

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CARD
PERSONALIZATION

CARD SORTING

MAILING

CS 8000

CARD SORTING SYSTEM

The CS 8000 is an automatic card inspection / verification and sorting system, adaptable to individual customer requirements. By an automatic self-learning vision process for unknown / new product designs, a user-friendly operation without additional specialist trainings is feasible. Additional and individual configurable processes allow a flexible inspection / verification of already personalized and / or blank card bodies, to sort these into different output trays. These machines can be placed in government as

well as in industrial production areas. Own developed Software allows the protocolling of the inspected / verified products either without or with connection to MB MCES (personalization management system) and customer database. With an UPH of up to 8000 cards per hour, the CS 8000 is the basic, for a solid process flow in your production / personalization area and supports to reduce human influences.



KEY MODULES



Card input



Chip verification / test



Vision inspection



Magnetic stripe verification



Card turning



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® ready

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:
 - » Contact according ISO/IEC 7816-3 and ISO7816-4
 - » Contactless according ISO14443 A/B, ISO15693, Mifare ...
- Magstripe verification: Reader module, HiCo, LoCo according ISO 7811-2 and -6
- Interface: Ethernet (optional)



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CARD
PERSONALIZATION

CARD SORTING

MAILING



INLINEMAIL

CARD PERSONALIZATION AND MAILING IN-LINE SYSTEM

With the process unit INLINEMAIL, Mühlbauer presents a revolutionary concept for more efficient mailing of cards. This machine extension concept for SCP 501 / 801 / 1501 is based on many years of experience with systems in production. It is the result of years of intensive technical and software development efforts.

The modules boast a cost-efficient design, but nevertheless provide highest operator friendly service as well as excellent quality. With a throughput of up to 1,500 envelopes per hour, the extension process unit INLINEMAIL is an ideal solution for mid volume in-line mailing.



KEY MODULES

- | | | |
|--|--|---|
| Carrier printer | Enclosure stations | Label application (hot melt process optionally available) |
| Carrier buffer, sheet separation and alignment | Carrier sheet collecting | Multifolding |
| Barcode reader 1D, 2D for online carrier-card-matching | Envelope inserting, humidification & closing | Check weigher (optional) |
| Card affixing | Reject bin | Output conveyor (optional) |
| Cards-on-carrier verification (sensoric system or vision inspection) | | |

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

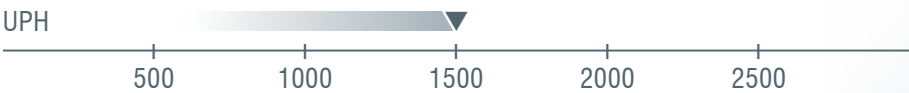
PRODUCTIVITY / PROCESS UNITS

- 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

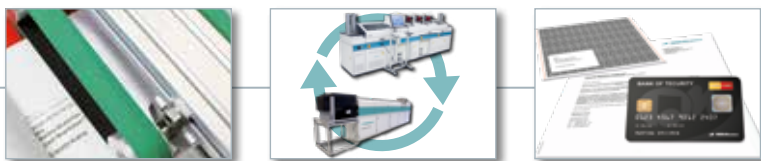


SHEET PERSONALIZATION

CARD PERSONALIZATION

CARD SORTING

MAILING



CARDMAILING SYSTEMS

STANDALONE MAILING SYSTEMS

Mühlbauer's CARDMAIL series enables personalized cards to 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

guarantees the quality levels you have come to expect from 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: mag-stripe, chip readers, vision inspection)
- Card affixing
- Cards-on-carrier verification (sensoric system or vision inspection)
- Turning stations
- Enclosure stations
- Reject bin
- Envelope inserting, humidification & closing
- Envelope inspection
- Check weigher (optional)
- Job separation
- Output conveyor (optional)
- Envelope sorting
- 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 reject
- 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

	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



SHEET PERSONALIZATION

CARD PERSONALIZATION

CARD SORTING

MAILING

SCP CARDPACK









CARD PACKAGING AND DELIVERY SYSTEM

The SCP CARDPACK offline packaging system represents a revolutionary concept ensuring the most efficient packing for the distribution of identity cards. This machine concept is based on many years of experience in the production of personalization and mailing systems. It is an optimized platform for individual processing of production orders. Thanks to the modular approach 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 reduction of maintenance requirements while being easy to operate. The SCP CARDPACK guarantees a clearly increased production output thus reducing the costs for personalization and issuance of cards. Due to the modular setup, the packaging system meets today's requirements regarding secure production and is prepared for future modifications and extensions.



KEY MODULES

- | | | |
|---|---|---|
|  Multi card input
(stacker or magazine) |  Card turning |  Card banding |
|  Barcode reader |  Vision inspection |  Label application |
|  Chip encoding
(contact and / or contactless) |  Card collecting |  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)
- Vision inspection system: For OCR and OCV of document / serial numbers; 1D or 2D barcode reading / matching
- Interface: Ethernet
- Throughput: up to 4,000 cards per hour; depending on number of cards per package



SHEET
PERSONALIZATION

CARD
PERSONALIZATION

CARD SORTING

MAILING

LASER OVERVIEW

MÜHLBAUER LASER MARKING SYSTEMS

The Mühlbauer laser series was developed to exactly meet the demand of laser personalization for Smart Card and ePassport applications. All components of the laser system as well as the software have been highly integrated and optimized for maximum power, speed and quality.

Through the 100% in-house development, we guarantee shortest service reaction times and high spare parts availability. Depending on your application and your desired production volume our experts 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

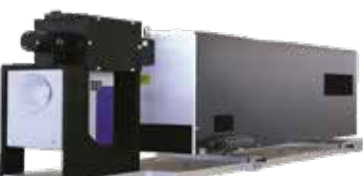
CO₂ LASERS



LES 30 C



LES 30 C-SCI



LPS 150

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

MICROTEXT WAVELINE

CLEAR WINDOW

CLI / MLI

PICTURE IN SHADOW

TACTILE MARKING

FURTHER TECHNOLOGY & SECURITY FEATURES BY LASER MARKING

CLEAR LASER MARKING

SECURE CLEAR IMAGE

MB SHIFTING WINDOW

DTLI (DATA TRANSITION LASER IMAGING)

LIQUID COATING PLACED IN CAVITY

CAVITY

DOCUMENT CONSTRUCTION

MB ALFRESCO® IMAGE (CMY)

LASER-ENGRAVED IMAGE (GREYSCALE)

LASER-ENGRAVED TEXT



PERSONALIZATION & QUALITY ASSURANCE

PERSONALIZATION & TESTING EQUIPMENT ACCORDING TO ICAO 9303 REQUIREMENTS

CHIP ENCODING – MB 1301



TECHNICAL DATA

- Dimensions: 100 x 80 mm
- Power: 24V DC ($\pm 10\%$)
- 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

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.

CARD BODY TESTING EQUIPMENT



CSG 100 / 200
Card size gauge



CTG 100 / 200
Card thickness / cavity depth gauge



DLT 500
Peel force tester

SMART CARD TESTING EQUIPMENT



SCF 2300
Flexion test system



TWT 2500
Three wheel testing system



SCT 2400
Torsion test system



MAT 1230
Module adhesion testing system

CARD PERSONALIZATION TESTING EQUIPMENT



MEASURING MICROSCOPE
Measuring of embossing distances



COLOR DENSITOMETER
Measuring of color density



UV-LIGHT CABINET
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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