DIE SORTING

PRODUCT OVERVIEW

CONTENTS

OVERVIEW

MACHINE SPECIFICATIONS

		DS ECO-LINE	DS MERLIN	DS LASER	ALBATROSS
UPH (UP TO)		6.000	30.000/45.000/55.000	12.000	10.000
FLEXIBILITY	Flip	√	√	√	√
	Non-Flip	√	(√)	X	(√)
INPUT	Wafer	√	√	√	√
	T&R	√	(√)	X	X
	JEDEC Tray / Custom Tray	√	X	√	√
	Hoop ring	√	X	√	√
OUTPUT	T&R	√	√	√	√
	Wafer	√ (12")	√ (24")	X	√
	Waffle Pack / Gel-Pak®	√	√	X	√
	JEDEC Tray / Custom Tray	√	(√)	X	√
	Combination of 2 outputs in 1 machine	√	X	√	X
VISION / AOI	Front Side	√	√	√	√
	Back Side	√	√+ IR*+ LG**	√	√
	Sidewall	√ + IR*	√ + IR*	√ + IR*	√
	Place	√	√	√	√
	After sealing	√	√ + IR*	√ + IR*	√
WAFER SIZE (6"/8"/12")		√	√	√	√
DIE SIZE RANGE (in mm)	Minimum	0.25 x 0.25	0.2 x 0.4	0.4 x 0.4	0.7 x 0.7
	Maximum	Flip 15 x 15 / Non flip 25 x 25	Standard 7 x 7 / Option Flip Chip 9 x 9 Non flip 12 x 12	10 x 10	35 x 35 / Option 45 x 45
ELECTRICAL DIE TEST		X	X	X	X

*IR- Infrared inspection
**LG-Laser groove inspection

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 Solution Related Products and TECURITY® Solutions. With around 3,500 employees, technology centers in Germany, Malaysia, Slovakia, the U.S.A. and Serbia and 35 sales and service locations worldwide, Mühlbauer created a strong competence network around the globe.

We continuously invest in the latest technologies and innovative processes to enhance our competences and provide you with optimized solutions. Our in-house precision part production MPS – Mühlbauer 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 provides matching software solutions for the production process of Document and Solution Related Products. Vision inspection technologies as well as semiconductor and RFID applications complete our comprehensive portfolio.

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.

Service Hub Russia
Service Hub Sweden
Service Hub United Kingdom
HQ Germany
Production Center Germany
Production Center Slovakia
Production Center Serbia
Production Center Bosnia & Herzegovina
Service Hub Spain
Service Hub Italy
Service Hub Bulgaria
Service Hub Georgia
Service Hub Iraq
Service Hub Turkey
Production Center China
Service Hub Taiwan
Service Hub United Arab Emirates
Service Hub India
Production Center USA
Production Center Malaysia
Service Hub Mexico
Service Hub Guatelama
Service Hub El Salvador
Service Hub South Sudan
Service Hub Uganda
Service Hub Mozambique
Service Hub South Africa
Service Hub Brazil
Service Hub Argentina
Service Hub Australia
Service Hub New Zealand

Mühlbauer
Bosnia & Herzegovina

Mühlbauer
China

Mühlbauer
Germany

Mühlbauer
Malaysia

Mühlbauer
Serbia

Mühlbauer
Slovakia

Mühlbauer
USA

MPS
Precision Parts & Surface Engineering

AUTOMATION
Production Equipment & Systems

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, is developed for card, tag or booklet productions, personalization factories and semiconductor backend shop floors to set and collect process data to monitor and improve the efficiency of production and personalization for later processing, visualization and statistical analysis.

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.

- 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.

DS VARIATION ECO-LINE

MOST FLEXIBLE AND COST-EFFICIENT HANDLING SYSTEM

Mühlbauer's overall goal with the DS VARIATION ECO-LINE is to significantly lower the initial investment cost while, at the same time, guaranteeing maximum functionality in one platform. Accordingly, the DS VARIATION ECO-LINE excels especially through its cost efficient design and highly accurate AOI vision inspection capability. With the integrated high accuracy mode for the chip placement, a value of 20μm can be reached.

All standard inspection features, especially the top, backside and sidewall inspection result in 100% six-side chip control. Our latest IR inspection for sidewall and backside detection helps to reach an even higher output quality. THE DS VARIATION ECO-LINE can process a whole range of niche applications such as T&R, De-Taping, Tray & Waffle packs, as well as reconstructed wafers up to 12".

ADVANTAGES

- Low investment cost for maximal flexibility
- Up to 12" (300 mm) reconstructed wafer
- Fast conversion time between different products
- Flexible output configuration with 2 indexer (2-in-1)
- Advanced high speed mode – run up to 7.000 UPH

BENEFITS

- Combined process capability 4-in-1
  - » Tape and reel
  - » Waffle pack and JEDEC tray sorting
  - » Reconstructed wafer or hoop ring
  - » Wafer, tray and de-taping capability
- Including flip chip and 100% 6-side inspection
  - » Defect detection down to 7μm defects and 5μm on sidewall
  - » Infrared: Sidewall inspection
- Highest placement accuracy
  - » ±30μ with DOT ±20μm

FEATURES & ADVANTAGES

INPUT
- Standard: Wafer
- Optional: Tape & Reel / de-taping, waffle pack, JEDEC Tray / Custom Tray, hoop ring

OUTPUT
- Tape & Reel / De-taping
- Waffle Pack / Gel-Pak®
- JEDEC Tray / Custom Tray
- Wafer (reconstructed wafer 12") + Hoop ring
- Combination of 2 outputs in 1 machine

WAFER
- Mapping: wafer mapping software incl. barcode scanner MAP-host PC for data conversion into SCES/GEM format
- Size: Up to 12"

SPECIAL FEATURE
- 8/12/16/24/optional 32 mm Carrier tape cassettes
- Input tray adapter
- Input Carrier Tape feeder » De-taping
- High resolution AOI with 4, 9,12 or 25 Megapixel camera

DIE HANDLING
- Flip chip
- Direct pick & place
- Single bond head

QUALITY REQUIREMENTS
- Placement accuracy: ±20 μm / ±30 μm
- Rotation: ±1.5° rotation tolerance

QUALITY INSPECTION (AOI)
- Die front-side inspection
  - » Die position using pattern matching or die edge detection
  - » Die surface inspection
  - » Chip-out inspection
  - » Bump quality Inspection (bump presence, bump size (2,5D), bump position, bump bridging, bump height / co-planarity measurement
- Die back-side inspection
  - » Die position using edge detection
  - » Chip out inspection
  - » Laser mark position & inspection
  - » Surface inspection

Sidewall inspection
- Sidewall inspection
  - » All 6 chip sides can be inspected with full speed
  - » Visible light: SIDEWALL defect detection down to 10μm without speed loss
  - » Visible light and infrared light: SIDEWALL defect detection down to 5μm with IR capability
- Place inspection
- Tilted die inspection
- Post place inspection
- After sealing inspection

AVAILABLE OPTIONS
- IR inspection
- Integration possible of MB PALAMAX®
- multi bin sorting

DIE SIZES
- Minimum: 0.25 x 0.25 mm
- Maximum
  - » Flip
    Standard: 15.0 x 15.0 mm
    Optional: 20.0 x 20.0 mm
  - » Non flip
    Standard: 25.0 x 25.0 mm

FACILITIES
- Power: 400 V, 16 A, 50/60 Hz
- Air: 6 bar, oil-/waterfree
- Vacuum (absolute): 0,2 bar

ENVIRONMENTAL CONDITIONS
- Room temperature: 23°C±3°C
- Humidity: 50% ±10%
- Clean room class: ISO 7

THROUGHPUT
- Flip: Up to 6,000 dies/hour
- None-flip: Up to 5,000 dies/hour

MACHINE DIMENSIONS
- Height: ~2000 mm
- Length: ~2550 mm
- Depth: ~2000 mm
- Weight: ~2300 kg

DS VARIATION ECO-LINE

DS MERLIN 60000

DS MERLIN W2W / PANEL

MB ALBATROSS

SYNERGIES WITH CARRIER TAPE

UPH

1000 2000 3000 4000 5000 6000

Combined solution   Carrier Tape   Waffle Pack/Gel-Pak®   Reconstructed wafer   JEDEC tape

DS MERLIN 60000

NEW

THE WORLD'S BENCHMARK IN DIE SORTING

Mühlbauer has taken the next step in high speed die sorting, the DS MERLIN 60000, with a new record throughput of up to 55.000 UPH – and full 6 side inspection.

With this newest launch to the DS MERLIN family, the system is able to reach unknown speed with an additional 20% in throughput compared to the previous MERLIN 50000.

The new MERLIN system comes with all the features which are already implemented on its predecessor. It has been thoroughly tested and gained the trust of our customers with over 450 machines installed all over the world.

The machine includes the patented pick and place system using two rotary wheels combined with the completely automatic self-alignment system to only name two.

The Vision inspection is updated to the latest state of the art with minimum of 4MP resolution and highest quality for visible and IR defect detection with a detection capability down to 5-10 μm. Now also capable of using different IR wavelengths as well as Laser Groove IR inspection.

The substantial improvement in UPH is a result of the perfect alignment of the different hardware components to communicate as efficiently as possible. This saves a lot of time and directly increases the UPH.

The DS 60000 optionally comes with our MB PALAMAX® for equipment smartification and with our ARC to eliminate down time due to Carrier Tape changes. With these additions, the operator need is greatly reduced to maximize the tool efficiency.

ARC 501   DS MERLIN 60000

ADVANTAGES

- 8th generation of Mühlbauer Flip Chip Tape & Reel Die Sorter
- Lower cost of ownership » no bond heads anymore
- Simple Process Tape & Reel
  » Beating the 55.000 UPH incl. vision inspection
  » Ready for ultra small die handling (0.2 x 0.4 mm)
- Integrated AOI 6-side inspection
- Automatic reel changer available

BENEFITS

- Including flip chip and 100% 6-side inspection
  » Defect detection of 9μm defects and 5μm on sidewall
  » Infrared: sidewall and backside IR Inspection (down to 5 μm)
- Full speed and 100% sidewall inspection + IR capability
- 100% traceability with MB PALAMAX®

FEATURES & ADVANTAGES

INPUT
- Standard: Wafer
- Non Flip option:: Tape & Reel 6", 8", 12" (DeTaping)

OUTPUT
- Standard: Tape & Reel

WAFER
- Wafer mapping software incl. barcode scanner
- MAP-host PC for data conversion into SCES/GEM format
- Size: up to 12"

SPECIAL FEATURE
- Automatic self-alignment system for fully automatic product and machine setup (operator-independent)
- 8, 12 or 16 mm carrier tape cassettes

DIE HANDLING
- 100% Flip Chip
- 100% Non Flip
- Two Pick & Place wheels (no turret system) in a Flip Chip configuration or one Pick & Place wheel in Non Flip configuration
- Special die ejector, but standard wafer foil
- Automatic self-alignment

QUALITY REQUIREMENTS
- Placement accuracy: ±30 μm
- Rotation: ±20 μm with high accuracy and ±0.3° tolerance

QUALITY INSPECTION (AOI)
- Die front-side inspection (5m or 9μm defects)
  » Die position using pattern matching or die edge detection
  » Die surface inspection
  » Chip out inspection
  » Bump quality Inspection (bump presence, bump size (2,5D), bump position, bump bridging, bump height / co-planarity measurement
- Die backside inspection (9μm defects)
  » Die position using edge detection
  » Chip out inspection
  » Laser mark & position inspection
  » Laser groove inspection
  » Surface inspection

- Sidewall inspection (5-10 μm defects)
  » All 6 chip sides can be inspected with full speed
  » Visible light: sidewall defect detection down to 10μm without speed loss
  » Visible light and Infrared light: sidewall defect detection down to 5 μm with IR capability
- Place inspection
- Tilted die inspection (die height over the tape)
- Post place inspection
- After sealing inspection

AVAILABLE OPTIONS
- IR inspection, Die back-side at die on tool, post place, after sealing, laser groove
- Automatic reel changer
- Integration possible of MB PALAMAX®

REJECTS BY VISION
- Defect dies are directly rejected
  » higher machine uptime

DIE SIZES
- Minimum: 0.2 x 0.4 mm
- Maximum:
  » Standard: 7.0 x 7.0 mm
  » Optional: Flip: 9.0 x 9.0 mm (other sizes available) Non flip 12.0 x 12.0 mm (other die sizes upon request)

FACILITIES
- Power: 400 V, 16 A, 50/60 Hz
- Air: 6 bar, oil-/waterfree
- Vacuum (absolute): 0,2 bar

ENVIRONMENTAL CONDITIONS
- Room temperature: 23°C±3°C
- Humidity: 50% ±10%
- Clean room class: ISO 7

THROUGHPUT
- Flip: up to 55,000 dies/hour
- Non Flip: up to 30,000 dies/hour

MACHINE DIMENSIONS
- Height: ~1990 mm
- Length: ~2500 mm
- Depth: ~1775 mm
- Weight: ~1800 kg

DS VARIATION ECO-LINE

DS MERLIN 60000

DS MERLIN W2W / PANEL

MB ALBATROSS

SYNERGIES WITH CARRIER TAPE

UPH	NON FLIP DS MERLIN ▼		FLIP DS MERLIN 50K ▼	FLIP DS MERLIN 60K ▼
20000 25000 30000 35000 40000 45000 50000 55000				

Visible light: only surface visible

Infra red light: inner defects visible

Carrier Tape   Surf Tape   Punched Tape   Paper Tape

DS MERLIN WAFER-TO-WAFER / WAFER-TO-PANEL

HIGH SPEED WAFER-TO-WAFER / WAFER-TO-PANEL

With the new DS MERLIN, Mühlbauer was able to achieve a new record throughput up to 30,000 UPH – already including full vision and sidewall inspection. On top of the significantly increased speed, the DS MERLIN shows 50% lower cost of ownership compared to other wafer-to-wafer solutions. The completely new construction method of the DS MERLIN's core module features a special die ejector and a pick & place wheel instead of the conventional bonding technology. The machine and product setup have also been significantly simplified. With the completely automatic self-alignment system, a complex and long-lasting operator-related changeovers and set-up times are no longer required. New products can be introduced faster and easier than ever before. Due to the new construction, the inspection system with latest IR technology on sidewall and backside inspection reaches an even higher output quality. A more intuitive software interface and an enhanced wafer handling complete this brand-new die sorting system.

FEATURES & ADVANTAGES

INPUT
- Standard: Wafer (up to 12")

OUTPUT
- Standard: panel size (150 x 300 mm)
- Optional: wafer size (up to 24"), panel size (up to 24" x 24") JEDEC tray / waffle pack

WAFER
- Wafer mapping software incl. barcode scanner
- MAP-host PC for data conversion into SCES/GEM format
- Size: up to 12"

SPECIAL FEATURE
- Automatic self-alignment system for fully automatic product and machine setup (operator independent)

DIE HANDLING
- Option A: 100% flip chip
- Option B: 100% non-flip chip

QUALITY REQUIREMENTS
- Placement accuracy: $\pm20\,\mu m$ $\pm15\mu m$ with high accuracy mode
- Rotation: $\pm1°$ rotation tolerance

QUALITY INSPECTION (AOI)
- Die front-side inspection ($9\mu m$ defects)
  » Die position using pattern matching or die edge detection
  » Die surface inspection
  » Chip out inspection
  » Bump quality Inspection (bump presence, bump size (2,5D), bump position, bump bridging, bump height / co-planarity measurement)
- Die backside inspection ($9\mu m$ defects)
  » Die position using edge detection
  » Chip out inspection
  » Laser mark position
  » Laser mark inspection
  » Surface inspection
- Sidewall inspection (5-10 μm defects)
  » All 6 chip sides can be inspected with full speed
  » Visible light: sidewall defect detection down to $10\mu m$
  » Visible light and infrared light: sidewall defect detection down to $5\mu m$ with IR capability
- Place inspection
- Tilted die inspection
- Post-place inspection (IR (optional)- 8 μm defects)
- After sealing inspection

UPH

10000	20000	30000	40000	50000	

AVAILABLE OPTIONS
- Global alignment
- NEW: Laser groove IR
- Integration possible of MB PALAMAX®
- Output map generation
- Output trace file (with accuracy per / chip)
- Panel handling at SMEMA Standard

REJECTS BY VISION
- Defect dies with front or backside defects are rejected directly and not placed into output medium
  » higher machine uptime

DIE SIZES
- Minimum: 0.2 x 0.4 mm
- Maximum:
  » Standard: 7.0 x 7.0 mm
  » Optional: Up 9.0 x 9.0 mm (other sizes available)

FACILITIES
- Power: 400 V, 16 A, 50/60 Hz
- Air: 6 bar, oil-/waterfree
- Vacuum (absolute): 0,2 bar

ENVIRONMENTAL CONDITIONS
- Room temperature: 23°C±3°C
- Humidity: 50% ±10%
- Clean room class: ISO 7

THROUGHPUT
- Flip: up to 30.000 dies/hour with flip and sidewall (depending on configuration)
- Non Flip: up to 30.000 dies/hour with sidewall (depending on configuration)

MACHINE DIMENSIONS
- Height: ~1990 mm
- Length: ~2500 mm
- Depth: ~1775 mm
- Weight: ~1800 kg

DS VARIATION ECO-LINE

DS MERLIN 60000

DS MERLIN W2W / PANEL

MB ALBATROSS

SYNERGIES WITH CARRIER TAPE

ADVANTAGES

- High speed Wafer-to-Wafer machine (up to 25.000 to over 40.000 UPH)
- 12" wafer reconstruction or panel size up to 24" x24" (600x 600 mm)
- Flip or Non-flip capability
- 100% Vision Inspection
- Simple process Wafer-to-Wafer / Wafer-to-Panel / JEDEC tray
  » Ready for ultra small die handling 0.2 x 0.4 mm
- Best compromise between speed and accuracy improvement

BENEFITS

- Including flip chip and 100% 6-side inspection
  » Defect detection of $9\mu m$ defects and $5\mu m$ on sidewall
  » Infrared: sidewall and backside IR inspection (down to 5 μm)
- High placement accuracy $\pm20\,\mu m$ - $\pm15\,\mu m$ (optional)
- 100% traceability with MB PALAMAX®

MB ALBATROSS

BIG DIE AND MULTI BIN SORTER

The new DS ALBATROSS is the flagship of big die and multi bin sorting in one system. It is equipped with latest Industry 4.0 standards including robotic systems for material handling, automatic tool changer, cleaning stations, multifold input and output load ports and is GEM300 compliant, which is the highest level of semiconductor Software Automation. The special die sorting system includes full AOI (Automatic Optical Inspection) capability, sidewalls inspection and surface inspections to guarantee 100% high-quality output.

FEATURES & ADVANTAGES

INPUT
- Wafer (up to 12") / Hoop Ring
- JEDEC Tray

OUTPUT
- 6 x Tape & Reel
- 2 x JEDEC Tray
- 12 x Waffle Pack

WAFER
- Wafer mapping software incl. barcode scanner
- MAP-host PC for data conversion into SCES/GEM format
- Size: up to 12"

ALTERNATIVE CONTACTLESS DIE RELEASE TECHNOLOGY
- No die ejector needles
- Thermal release wafer foil thin
- Applicable for standard & THIN dies below 30μm
- FOUP handling included (robotic transport to the wafer expander)
- No frame required

DIE HANDLING
- 100% flip or non-flip process
- Dual bonding head

QUALITY REQUIREMENTS
- Placement accuracy: ±30 μm

QUALITY INSPECTION
- Die frontside inspection (30 μm defects)
  - » Die position using pattern matching or die edge detection
  - » Die surface inspection
  - » Chip out inspection
  - » Bump quality Inspection (bump presence, bump size (2,5D), bump position, bump bridging, bump height / co-planarity measurement
- Die backside inspection (30 μm defects)
  - » Die position using edge detection
  - » Chip out inspection
  - » Laser mark position & inspection
  - » Surface inspection
- Sidewall inspection (30 μm defects)
  - » 6 chip sides can be inspected with full speed
  - » G 2: sidewall defect detection down to 30 μm
- Place inspection
- Tilted die inspection (die height over the tape)
- Post-place inspection

- After sealing inspection

DIE SIZES
- Minimum: 0.7 x 0.7 mm
- Maximum:
  - » Standard: 35 x 35 mm
  - » Big die size range: 45 x 45 mm

FACILITIES
- Power: 400 V, 16 A, 50/60 Hz
- Air: 6 bar, oil- / water free
- Vacuum (absolute): 0,2 bar

ENVIRONMENTAL CONDITIONS
- Room temperature: 23°C ± 3°C
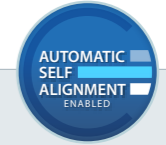- Humidity: 50% ± 10%
- Clean room class: ISO 7

THROUGHPUT
- Flip: Up to 10,000 dies/hour

MACHINE DIMENSIONS
- Length: ~4340 mm
- Width: ~4990 mm
- Height: ~2550 mm
- Weight: ~6740 kg

AVAILABLE OPTIONS
- Integration possible of MB PALAMAX®
- Automatic tool changer
- Load port compliant + OHT/AGV

ADVANTAGES

- Handling of small die such as 0.7 mm all the way up to 45 x 45mm can be placed from and into different media:
  - » Wafer or Tray to 2* Tray Output
  - » Wafer or Tray to 6* Tape and Reel
- Flip or non-flip Capability
- 30 μm placement accuracy
- Automatic Tool changer

BENEFITS

- Including flip chip and 100% 6-side inspection
  - » Defect detection of 30μm
- Gem300 compliant
- Loadport compliant + OHT/AGV » Smart factory compliant

UPH

| | 2000 | 4000 | 6000 | 8000 | 10000 | 12000 |

DS VARIATION ECO-LINE

DS MERLIN 60000

DS MERLIN W2W / PANEL

MB ALBATROSS

SYNERGIES WITH CARRIER TAPE

SYNERGIES WITH CARRIER TAPE

ONLY MÜHLBAUER OFFERS A PERFECTLY MATCHING SOLUTION FOR CARRIER TAPE & DIE SORTING

IN THE AREA OF DIE SORTING, MÜHLBAUER IS THE ONLY COMPANY WORLDWIDE

- which can supply you with Carrier Tape machines as well as Carrier Tapes
- offering CTML as an inline machine with Die sorting system or Carrier Tape system as well as standalone machine
- Barcode in Carrier tapes available for smart and unique data handling

TRUST IN THE MOST EXPERIENCED SUPPLIER IN TERMS OF PRECISION, SPEED AND QUALITY!
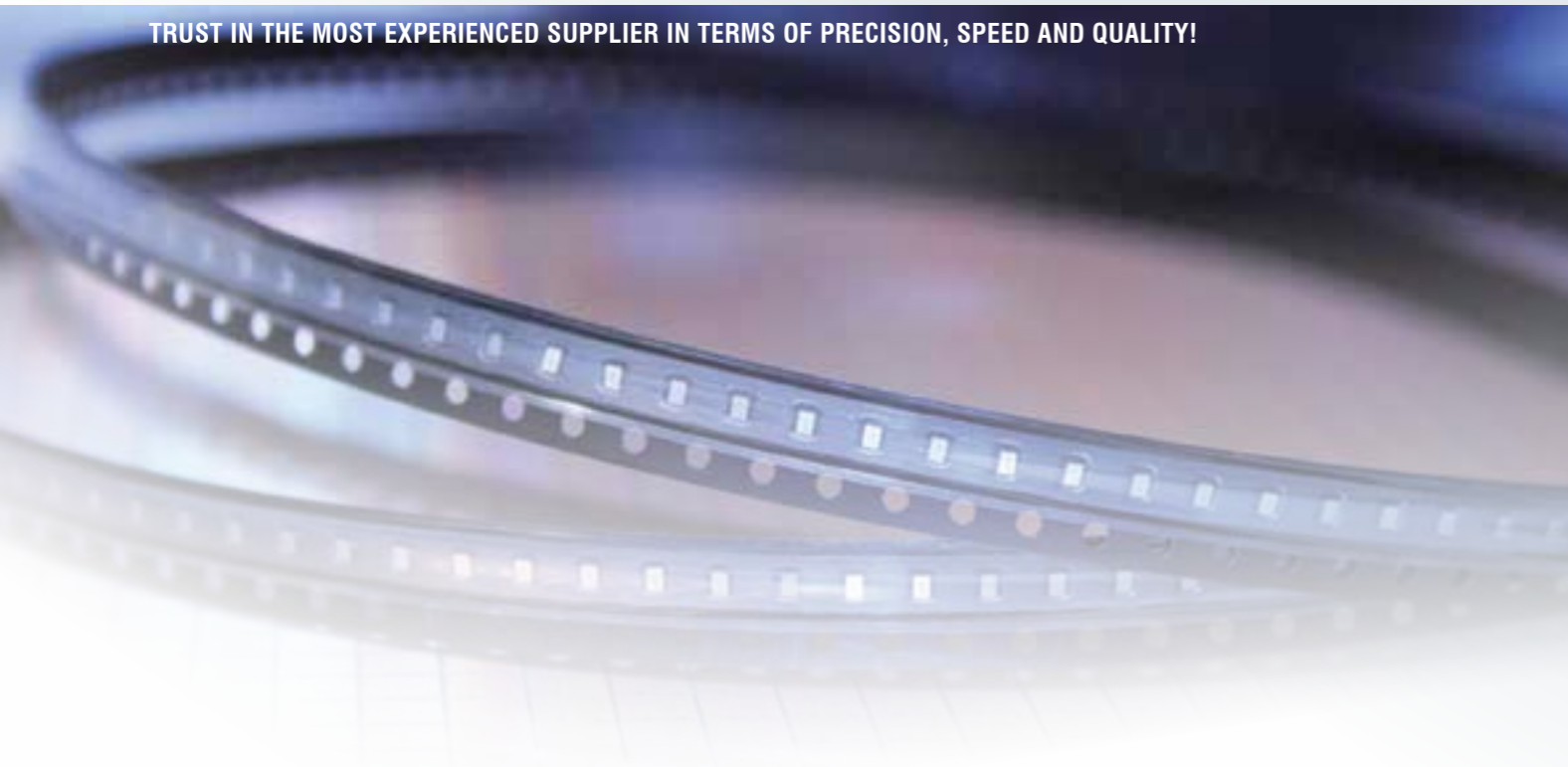
MÜHLBAUER NOW LASERS BARCODES ON CARRIER TAPE. WE INVENTED A LASER STATION TO MARK CARRIER TAPE ON DS MACHINES!

PRODUCT PORTFOLIO

YOUR ONE-STOP-SHOP TECHNOLOGY PARTNER

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

INDUSTRIAL INSPECTION SYSTEMS
- Packaging
- Metal Working
- Special Solutions

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

TECURITY®
- ID 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

100% AOI

MB PALAMAX® ENABLED

AUTOMATIC SELF ALIGNMENT ENABLED

IR INSPECTION CAPABLE

MB PALAMAX®

TOTAL PROCESS TRANSPARENCY

MB PALAMAX®, Mühlbauer's Smart Factory solution for semiconductor backend shop floors. Consisting of a NOSQL database, it is designed to set and collect process data to monitor and improve the efficiency of production. The collected process data is stored in big data sets for later processing, visualization and statistical analysis.

SMART FACTORY
INDUSTRY 4.0 ENABLED

FEATURES & ADVANTAGES

PALAMAX.MONITOR
Monitors the real-time performance of the production

PALAMAX.STATS
Statistical tool which analyzes collected data and delivers customized statistics on OEE

PALAMAX.REMOTE
Enables the remote operation of machines on the shop floor from a control centre

PALAMAX.TRACE
Allows for the auditing of single manufacturing runs

PALAMAX.MAINTAIN
Enables the implementation of maintenance on demand

PALAMAX.COST
Increases effectiveness and efficiency so that production becomes more profitable

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

KEY FEATURES

- Monitor your production in real time & generate real production statistics with your preferred KPIs (for specific chip types only)
- Improve your transparency
- Gain better data to investigate, understand & portray process flows & relationships
- Run your production with improved security & optimally employed staff
- Intuitive & easy-to-use web interface
- Responsive user interface design allows optimal presentation on any chosen device
- Data collection from the shop floor of Mühlbauer equipment & also third-party equipment
- State-of-the-art big data software architecture ensures future reliability

![Mühlbauer High Tech International]

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