

TECHNOLOGY DISPENSING



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TECHNOLOGY DISPENSING

- Specialist in processing single and multicomponent reactive resins, sealing materials, glues and thermally conductive pastes
- Optimal dispensing and system technology from material preparation to application of liquid or paste-like materials
- Static and dynamic mixing systems for your dispensing application
- mini-dis micro-dispensing applications



DISPENSING APPLICATIONS

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Potting

- Fan controllers
- Cable glands
- Sensors and controllers
- Onboard chargers (OBC)



Thermal Interface Materials

- Gap filler and thermal grease
- Battery systems in hybrid and electric vehicles
- Electronic Control Units (ECU)



DISPENSING

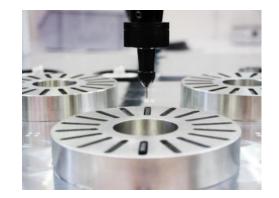
Sealing, gasketing FIPG (formed in-place gasket) CIPG (cured in-place gasket)

- Housings, housing covers
- Radars and cameras (autonomous driving)
- Inverters/converters



Bonding

- Rotor magnets
- Battery cells
- Infotainment: displays and touch panels





DISPENSING PRINCIPLES







Time-pressure system

Material is kept under pressure to supply the system

Stroke-pressure system

Material is delivered through the movement of a piston

Positive-continuous

Material is delivered at a constant flow rate

DISPENSING

BASIC STRUCTURE FOR EVERY DISPENSING PROCESS

- 1. Material preparation
- Low-viscosity to mediumviscosity media
- High-viscosity to paste-like media
- Cartridges
- Transfer pumping station



- 2. Dispensing pumps
- Progressive cavity pump
- Hose pump
- Internal gear pump
- External gear pump

3. Mixing systems

- Single-component
- Static & Duplex⁺ MULTI-STRING[©]
- Dynamic





1. MATERIAL PREPARATION VISCOSITIES

Low viscosity

- Low- to medium-viscosity and self-leveling media: Viscosity up to 50,000 mPas
- Consistent and reliable material supply to the dispensing unit with the 1C/2C Material Preparation System (MPS or *mini-MPS*) or traditional material pressure tanks

→ Material preparation depends on viscosity!





1. MATERIAL PREPARATION VISCOSITES

High viscosity

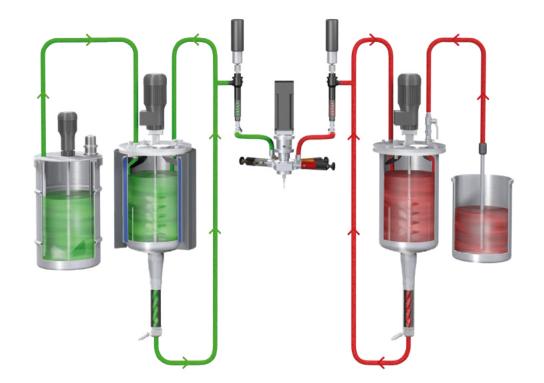
- Higher-viscosity media and pastes: Viscosity between 30,000 mPas and 2,000,000 mPas
- Material delivered via the 1K/2K Pail Preparation
 System (PPS) or Drum Preparation System
 (DPS) for high dispensing volumes
- → Material preparation depends on viscosity!





1. MATERIAL PREPARATION BASIC PRINCIPLE FOR LOW-VISCOSITY MEDIA





1. MATERIAL PREPARATON LOW-VISCOSITY MEDIA

Cartridges

- Very small quantities
- Quick-change system
- Short downtimes

*mini-*MPS

- Small quantities
 - Fullyautomated, no downtimes

MPS

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- Fullyautomated, no downtimes
- Bubble-free potting

- Transfer pumping station
- Pumping from delivery containers
- Complete unit for refilling

IBC tank emptying 1,000I



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1. MATERIAL PREPARATION BASIC PRINCIPLE FOR HIGH-VISCOSITY MEDIA







1. MATERIAL PREPARATION HIGH-VISCOSITY MEDIA

Cartridges

- Very small quantities
- Quick-change system
- Short downtimes



CPS

- Small quantities
 - Double cartridge
 - system
- Automatic cartridge change



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- Preparation from hobbocks
- Degassing with follower plate pump

- PPS 2K
 - Preparation from hobbocks
 - Degassing with follower plate pump



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For large drums (100-200I)

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Bubble-free drum change





2. DISPENSING PUMPS ECCENTRIC SREW PUMP

- Suitable for low-viscosity to paste-like materials, highly filled, highly abrasive and aggressive reactive casting resins
- Low and high dispensing performance available:
 - mini-dis application up to 1µg possible
 - Typical applications between 0.1g/s 40g/s*

* Dispensing speed depending on application and mixing system





2. DISPENSING PUMPS ALTERNATIVE DISPENSING PUMPS

External gear pump

- Low to medium viscosity media
- Unfilled media
- Precise with small dispensing quantities

Internal gear pump

- Medium viscosity to pasty materials
- Filled, non-abrasive media
- High dispensing quantities

Peristaltic pump

- Low to medium viscosity media
- Highly filled and abrasive media





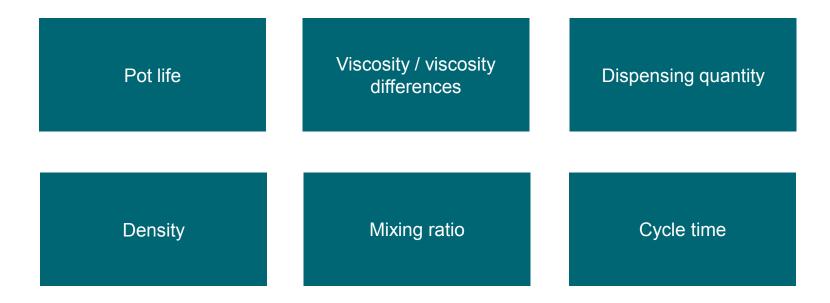




3. MIXING SYSTEMS SELECTION CRITERIA

Criteria for selecting the right mixing and dispensing system:





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3. MIXING SYSTEMS STATIC MIXING

Advantages

- No cleaning process required
- Suitable for medium to long pot lives
- Minimum space and weight required
- Mixing low-viscosity to paste-like media

Duplex⁺ MULTI-STRING[©]



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3. MIXING SYSTEMS DYNAMIC MIXING

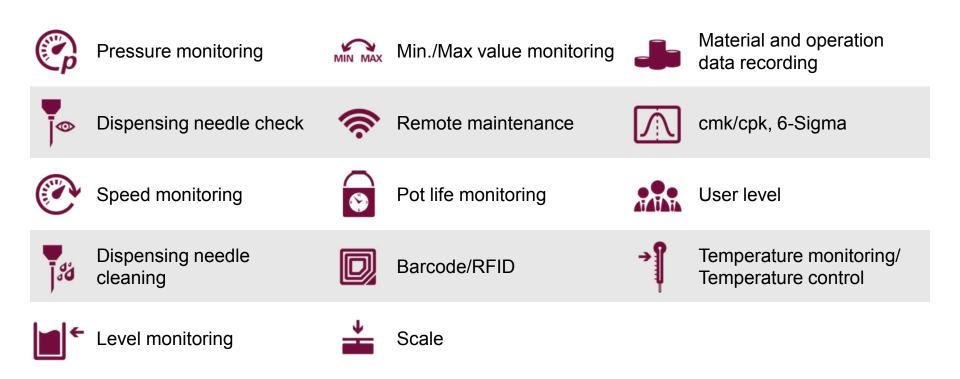
Advantages

- High mixing quality
- Suitable for short pot lives
- Difficult mixing ratios and different viscosities
- Direct influence on the degree of mixing



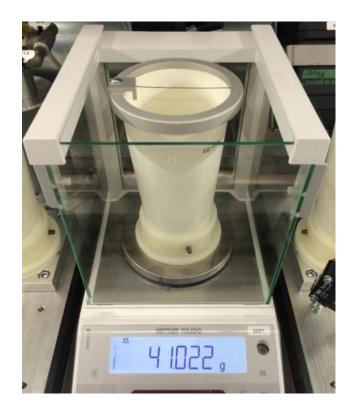






PROCESS CONTROL SCALE

- Resolution of 0.001g, repeatability 0.001g
- Online analysis via PLC
- Measured data recording with static process monitoring
- Protective stainless steel sleeve, including beaker detection system
- Wire for cutting strings
- Traceability and MES communication
- Automatic machine capability cmk calculation



PROCESS CONTROLDISPENSING NEEDLE MONITORING

- Needle control system with 2 optical sensors to check the length and position of the dispensing needle in XY
- Correction of offset in the drive program
- Routine for repositioning the needle
- Automatic periodic testing
- Option: Tactile version for checking the length of the needle in the Z direction





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Wiper system with soft sponge rollers rotating in opposite directions

Reel-to-reel wiper system



Parking position with oil and

air jets



PROCESS CONTROL NEEDLE CLEANING

– Software interface for adjusting and setting the cleaning time and frequency

DISPENSING MATERIAL DATA RECORDING BARCODE/RFID

Material data monitoring system with scanner:

- Poka Yoke: Avoiding errors when changing pails
- Material ID, batch number for traceability and MES communication
- Expiration date









DISPENSING VISUALIZATION

- Intuitive and easy to operate controller via touch panels
- Graphic user interface with color display
- Key process parameters at a glance
- Microsoft Windows®-based
- User-level function
- Driving program editor
- Recipe management
- Base positions for needle/scale, etc.





DISPENSING MANUAL WORK STATIONS



- Small series production
- Single part processing





Variation possibilities



DISPENSING INTEGRATION SYSTEMS

Process integration module B5000

- Full process module from bdtronic
- Different robot types: cantilever or gantry
- Including process monitoring such as weight scale, needle check and needle cleaning





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DISPENSING INTEGRATION SYSTEMS

Integration components B1000, PPS-D, MPS-D

- For automation companies and systems integrators







DISPENSING SEMI-AUTOMATIC MACHINES

B3000

- Manual loading/unloading
- High flexibility



B5080

- High-performance lean cell
- Space saving concept



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DISPENSING AUTOMATIC DISPENSING CELLS

B5090, B5200, B5600, B5800

- Series production
- Automation concepts with turntable, drawer or integrated conveyor
- Different sizes and robot working areas











DISPENSING VACUUM POTTING MACHINES

B5300-V

- Manual loading/unloading
- Pallet processing





B5200-V, B5600-V

- Automatic cell with integrated conveyor
- 1 or 3 vacuum chamber concept



DISPENSING REFERENCE PROJECT

ProductMagnet bondingdescription:

- Application: Dispensing machine for fully-automatic bonding of permanent magnets in rotor pockets
- Machine: B5800 with 4x *mini-dis* dispensing head
- **Description:** Integrated double-track conveyor system, workpiece carriers with RFID tracking, MES connection and process monitoring functions

Material:1-part epoxyDelo Dualbond VE402699





DISPENSING REFERENCE PROJECT

Product	Thermal paste dispensing
description:	

- Application: Dispensing machine for fully-automatic application of thermal paste on a VCU (Vehicle Control Unit)
- Machine: B5200 with Duplex⁺ MULTI-STRING[©] dispensing head
- **Description:** Turntable with light curtain, MES connection and process monitoring functions
- Material:2-part siliconeHenkel Bergquist Gap Filler TGF 3600





DISPENSING REFERENCE PROJECT

Product Potting description:

Application: Dispensing machine for potting of inverters

Machine: B5600 with dynamic mixing head

Description: Integrated conveyor with workpiece carriers, bar code scan, MES connection, process monitoring functions, pre-heating furnace, fully-automatic vacuum chamber after potting

Material:2-part polyurethaneWEVOPUR 552FL, catalyst 300





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THANK YOU VERY MUCH FOR YOUR ATTENTION.

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