



SONDERHOFF **DM 80** STATIC MIX

Mixing and dosing machine for semi and fully automatic application processes for highly filled, abrasive and **highly viscous 2K structural adhesives**



COMPACT AND HANDY

The mobile workstation for processing and dispensing of highly filled, abrasive and highly viscous LOCTITE 2K epoxy structural adhesives

The SONDERHOFF **DM 80** STATIC MIX is a low pressure mixing and dosing machine for processing and dispensing of highly filled, abrasive and highly viscous LOCTITE 2K epoxy structural adhesives.



RELIABLE AND EASY TO OPERATE

For consistently meeting your high quality requirements

The **DM 80** STATIC MIX is designed to be used in various industrial sectors, such as aircraft construction, car body construction, commercial and special vehicles, agricultural machinery, defense, railway and mobile homes, to name a few.

Flexible today and tomorrow

The compact design of the **DM 80** STATIC MIX fulfills all the technical and quality requirements of suppliers for aircraft construction and other industrial applications, where precise processing and dispensing of 2K materials, automation of manual processes as well as traceability of process sequences are crucial to the quality of component bonding.

Guaranteed quality

With the launch of the **DM 80** STATIC MIX, we guarantee the quality you require.

The **DM 80** STATIC MIX enables efficient material consumption and shorter production times, as well as higher quality, consistency and reliability in mixing and dosing. Additionally, it incorporates Industry 4.0 functionalities, a worldwide service network, and offers the possibility of integrating into your automation systems.

Simple processing and space-saving use

The **DM 80** STATIC MIX is designed so that the operating personnel can fulfill the most diverse tasks easily and safely. Operation and visualization are carried out via a 15.6" touchscreen.

A further feature is the process data logging, in which material pressures, pump torques, weighing data, correction factors and alarm data are recorded and saved. In addition parameters for the discharge quantity, mixing ratio and the dosing time can be set. Particularly noteworthy is the interactive, menu-guided calibration and dosing process, which is permanently monitored and checked by a precision scale.

The dosing machine is mounted on a rollable chassis. Spare mixing elements, separator for calibration, gloves and filling cups are within easy reach. The easy accessibility of the machine makes it quick and easy to carry out maintenance and servicing work.

DM 80 STATIC MIX OVERVIEW



Touchscreen

Visualization and operation via 15.6" touchscreen with interactive menu-guided calibration and dosing process

Precision eccentric screw pump

in sizes 8.2 ccm/rev (A comp.) / 1.8 ccm/rev (B comp.), with servo drives and automatic pressure control

2K precision mixing head with static mixing

with servo drives, for discharge rates infinitely variable from 1.0 to 2.5 g/s and mixing ratios from 10:1 to 1:1 (depending on pump size and material viscosity)

Process data logging

of material discharge quantities, mixing ratios, material pressures, pump torques, weighing data, correction factors and alarm data

Integrated precision scale

for permanent weighing check for calibration and dosing

Operating mode control panel

with warning lights, key switch for preselecting the operating mode and EMERGENCY STOP shutdown

Accessories

such as spare mixing elements, separator for calibration, gloves and filling cups are immediately available

Rollable chassis

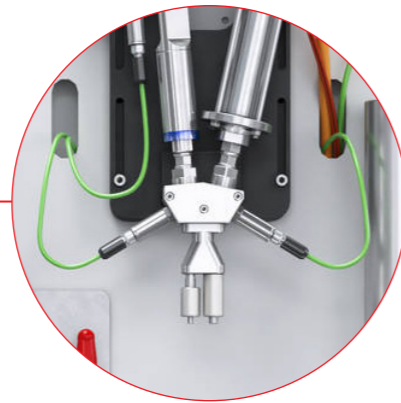
Dosing machine mounted on rollable chassis

DM 80 STATIC MIX

SPECIAL FEATURES

Pressure-controlled separator

for interactive, menu-driven calibration function



Compressed air connection

with filter pressure reducer and maintenance unit for supplying the pneumatic consumers



Material tempering

Four individually controllable heating circuits: Scoop piston pump, hose package, dosing pump and mixing head incl. support tube (only for A-component)

Cartridge filling

in 230 ml Semco cartridges (optional)



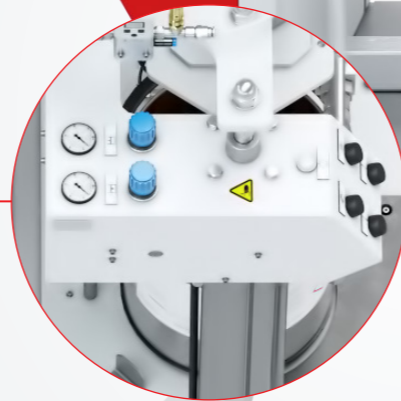
Safety ram press

for conveying material from 20 liter pails and functions for automatic (de-)aeration



Pressure gauge

Setting and pressure display by means of pressure gauge for barrel pressing and aeration pressure



Pail change

easy to implement, with little material loss

MIXING HEAD WITH **PRESSURE MONITORING** AND **FLOW-OPTIMIZED MATERIAL DOSING**



The servomotor-driven **precision mixing head MK 34** in stainless steel design and with integrated heating function is intended for pressure-monitored, static mixing of the material components for discharge rates from 1.0 to 2.5 g/s, although other discharge rates can also be configured. The mixing head has an optimized installation space which ensures flow-optimized material dosing.

The mixing ratio is infinitely variable from 10 : 1 to 1 : 1, but this depends on the pump size and material viscosity. Mixing is carried out by the ME 13/24 static mixer with low back pressure and high flow rate.

The automatic, pressure-controlled material feed to the mixing head is carried out by servo-driven precision eccentric screw pumps in sizes of 8.2 (A-comp.) and 1.8 (B-comp.) ccm/rev. For this purpose, pressure sensors are installed for process monitoring with reduced interference contours.

General description

- › Pressure-monitored and servomotor-driven mixing head (in stainless steel design) for static mixing
- › Designed for flow-optimized material dosing
- › With integrated heating function
- › Pressure sensors before and after the eccentric screw pumps for controlling the material feed of the scoop piston pumps of the RAM press
- › Mixing by the ME 13/24 static mixer with low back pressure and high flow rate

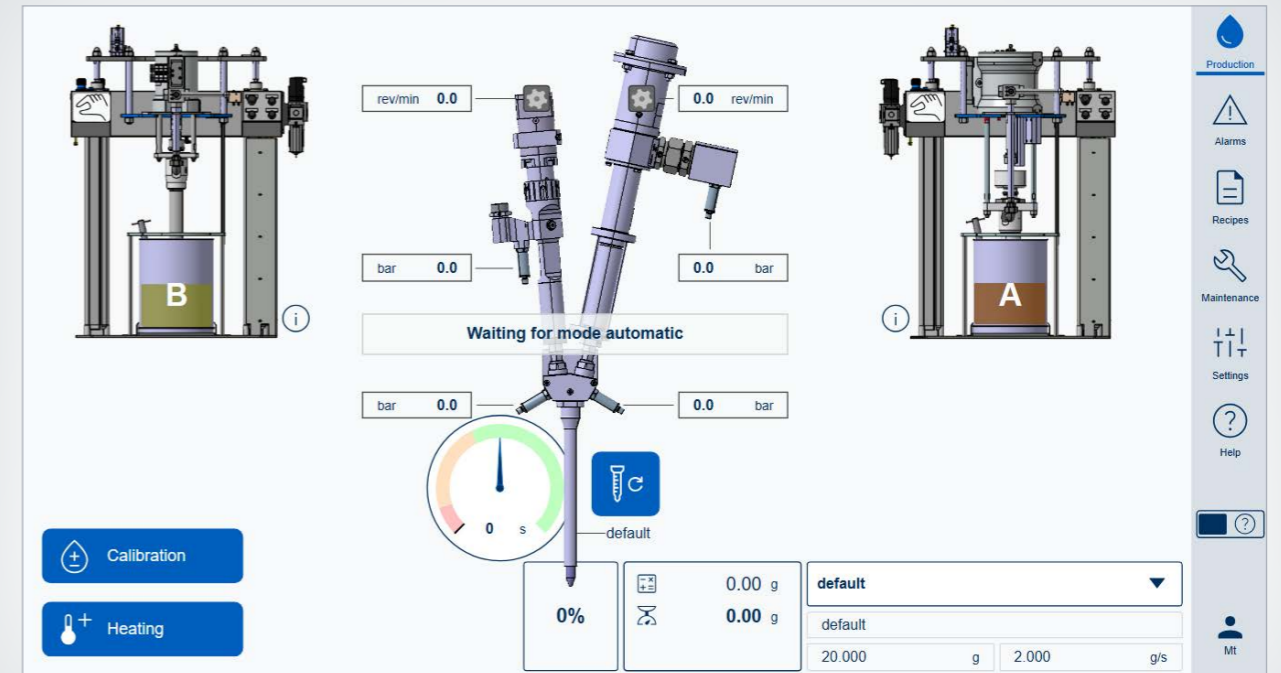
- › Additional support tube for pressure safety and prevention of a pulsing ME 13/24 static mixer
- › Min. dosing volume: 20 g
- › Max. dosing volume: container quantity for A and B material component
- › Pressure-controlled separator for interactive, menu-guided calibration function

Technical data

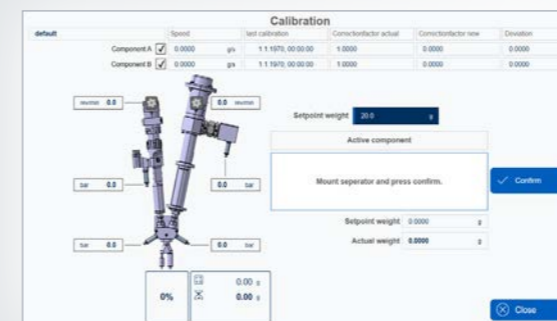
2K Precision Mixing Head MK 34

Dimensions (H x W)	1,113 x 413 mm
Operating pressure	max 30 bar
Application rate	from 1.0 to 2.5 g/s, other application rates on request
Dosing accuracy	approx. +/- 3 %
Mixing ratio	10 : 1 to 1 : 1 infinitely variable (depending on pump size and material viscosity)
Viscosity processing range	from 10,000 to 1,000,000 mPas, other viscosities on request

OPERATION AND VISUALIZATION



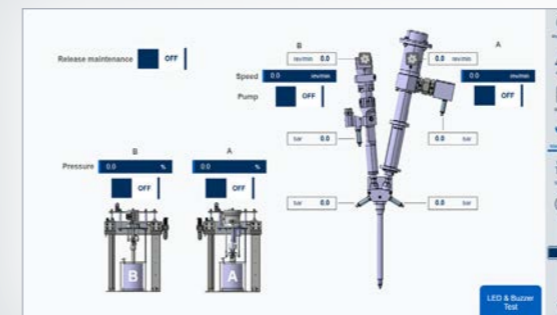
Production Menu



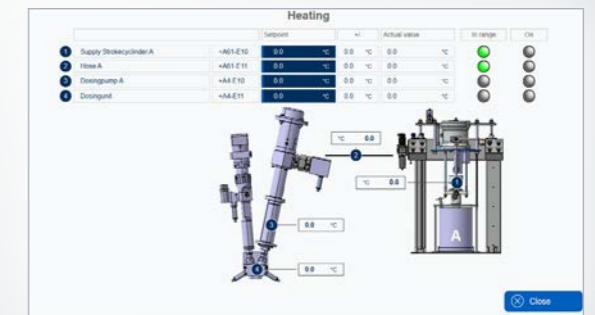
Calibration Menu



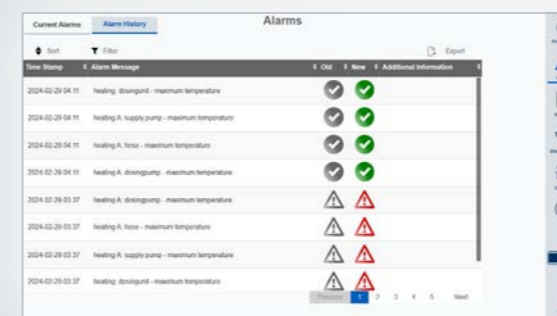
Recipe Setting



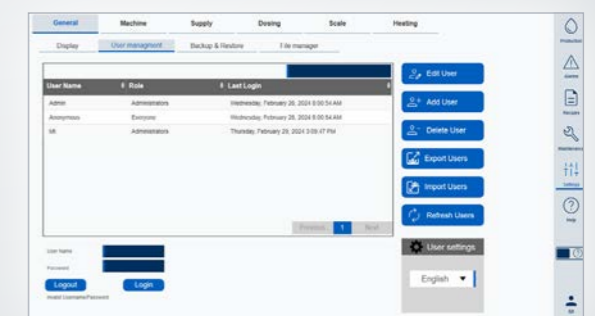
Maintenance Menu



Tempering



Alarm Messages



User Administration

AIRCRAFT CON- STRUCTION

The new **DM 80** STATIC MIX for the precise processing and dosing of 2K structural adhesives is usable for aircraft construction for spar bonding, gap filling between spar/rib and wing cover, interior and structural bonding.

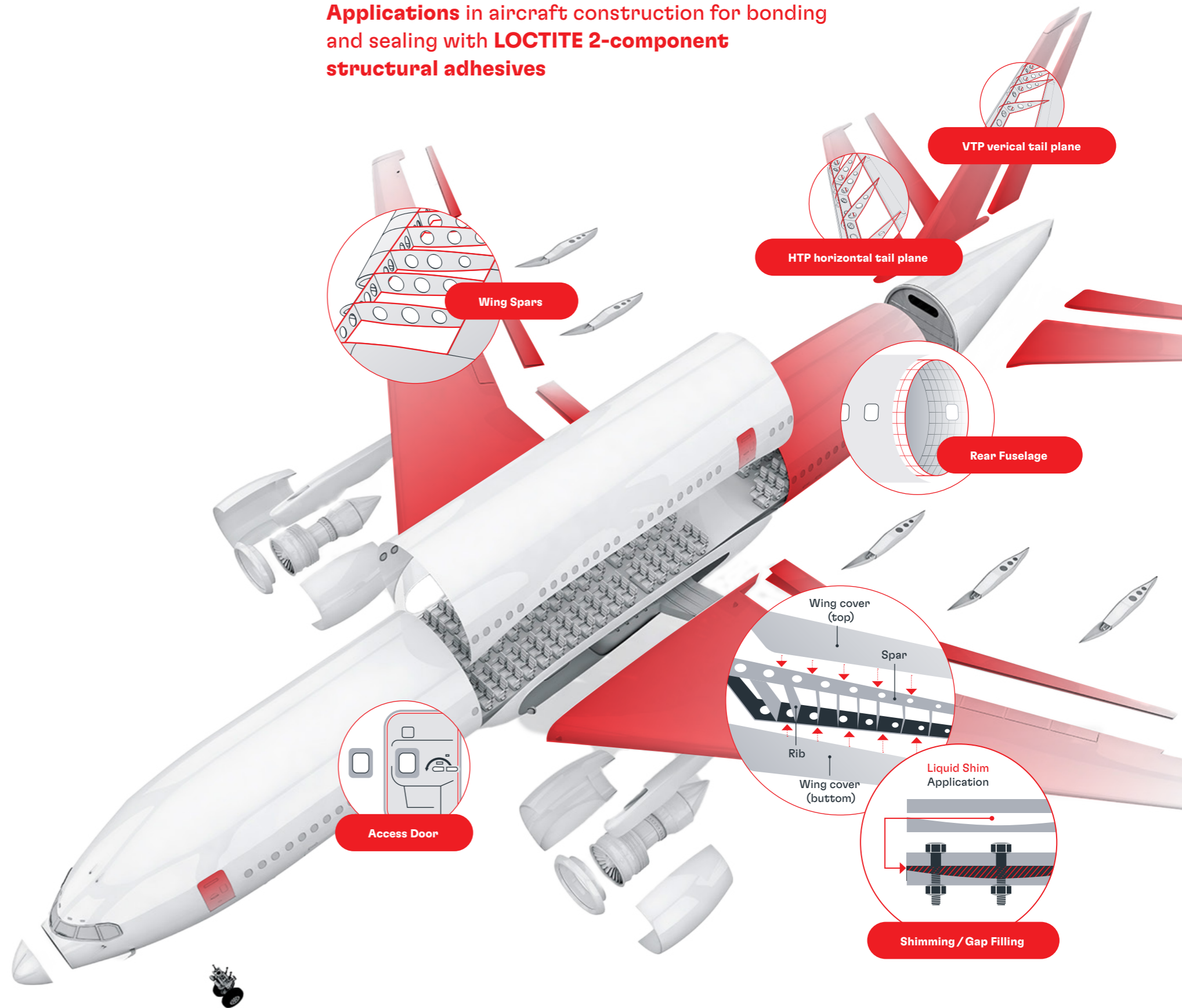
Many manufacturing steps in the production of airplanes are still carried out manually today. By using modern mixing and dosing systems, important bonding processes can be implemented faster, more precisely and with lower error rates. This leads to shorter throughput times, reduced costs and an overall improvement in quality and productivity.

2-component structural adhesives such as the highly filled, abrasive and highly viscous LOCTITE 2K epoxy systems are used for bonding and sealing applications in aircraft construction.

Applications in aircraft construction include spar bonding (wing spars, vertical and horizontal tail planes, rear fuselage, access door), gap filling between spar/rib and skin (so-called „shimming“) as well as for interior and structural bonding.



Applications in aircraft construction for bonding and sealing with **LOCTITE 2-component structural adhesives**

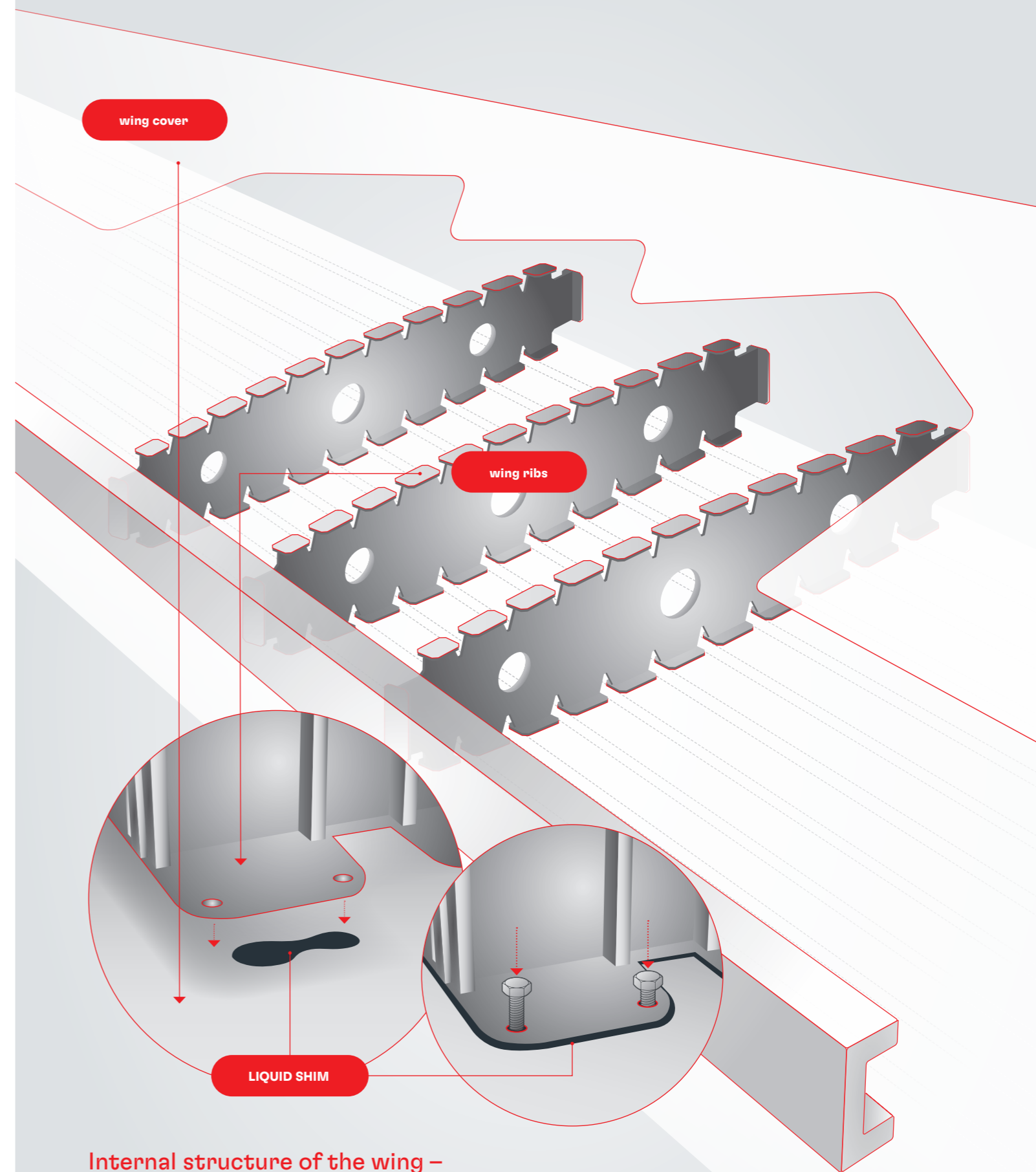
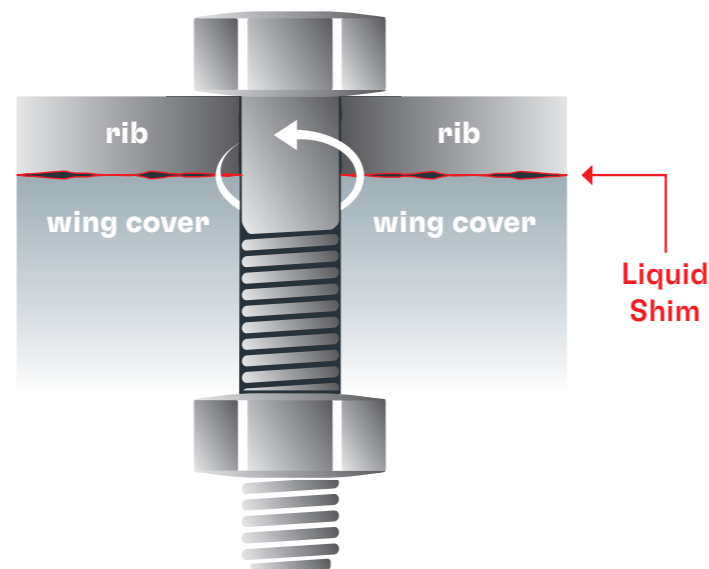


HENKEL LIQUID SHIM SOLUTIONS APPLICATION

The liquid shim process is a technique used in aircraft construction in the manufacture of airplane structures such as wings or fuselage panels to compensate for unevenness or irregularities in surfaces and to ensure that no deformations can occur due to component stresses.

Assembly connections with LIQUID SHIM

- › Low flow behavior and high bond strength
- › Fast drilling time and high compressive strength
- › Suitable for automatic dosing and manual applications



Internal structure of the wing – connection of rib and wing skin

- › Structural gap filler
- › For joints up to 2.5 mm or for large-area shim applications
- › Commonly used for rib-to-wing skin assemblies
 - compensates for misalignment between components and bridges the gap to enable bolted assembly

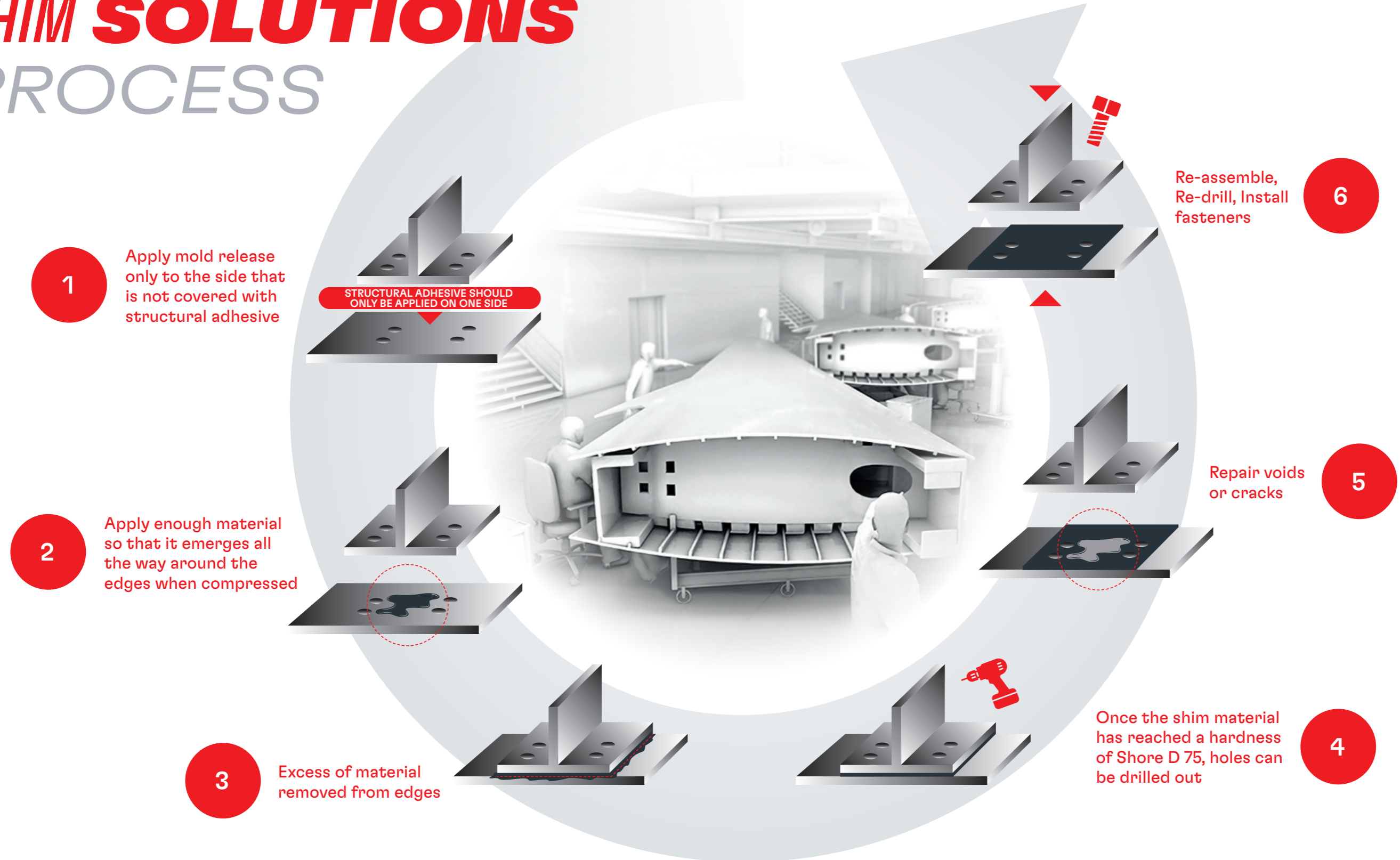


HENKEL LIQUID SHIM SOLUTIONS MATERIAL

Properties cured at RT	LOCTITE® EA 9394™	LOCTITE® EA 9394.2™	LOCTITE® EA 9377™
TLS at 55 °C	22 MPa	18 MPa	17 MPa
TLS at -55 °C	31 MPa	33 MPa	16 MPa
TLS at 90 °C	20 MPa	20 MPa	14,5 MPa
Compression modulus at -55 °C	4,0 GPa	2,3 GPa	10 GPa
Compression modulus at 25 °C	2,8 GPa	3,1 GPa	6,9 GPa
Compression modulus at 90 °C	2,5 GPa at 80 °C	2,2 GPa at 80 °C	4,5 GPa
Compression modulus at 120 °C Hot/Wet Aging 1000 hr at 70 °C/85 % RH	1,4 GPa	1,6 GPa	2,5 GPa
Compression Strength, 2 % offset at -55°C	168 MPa	190 MPa	230 MPa
Compression Strength, 2 % offset at 25°C	68 MPa	70 MPa	130 MPa
Compression Strength, 2 % offset at 90°C	42 MPa at 80 °C	36 MPa at 71 °C	75 MPa
Compression Strength, 2 % offset at high T °C	36 MPa at 108 °C	13,6 MPa at 108 °C	56 MPa at 120 °C 37 MPa at 163 °C
Compression Strength, 2 % offset at 120 °C Hot/Wet Aging 1000 hr at 70 °C/85 % RH	25 MPa	19 MPa	48 MPa
Pot life	60-90 min	20-30 min	60 min
Drill Time	9 h	4 h	6 h
Shelf life	12 months from date of shipment at RT	12 months from date of shipment at RT	6 months from date of shipment below 4 °C
Application	Bonding or shimming	Bonding or shimming	Shimming < 2,5 mm
Packaging	20 kg pail	20 kg pail	20 kg pail

EA 9394, EA 9394.2 and EA 9377 offer higher operating temperatures (up to 120 °C) than the Liquid Shim products of the market competitors

HENKEL LIQUID SHIM SOLUTIONS PROCESS



TECHNICAL DATA AND DIMENSION

DM 80 DOSING SYSTEM CONTROL CONCEPT

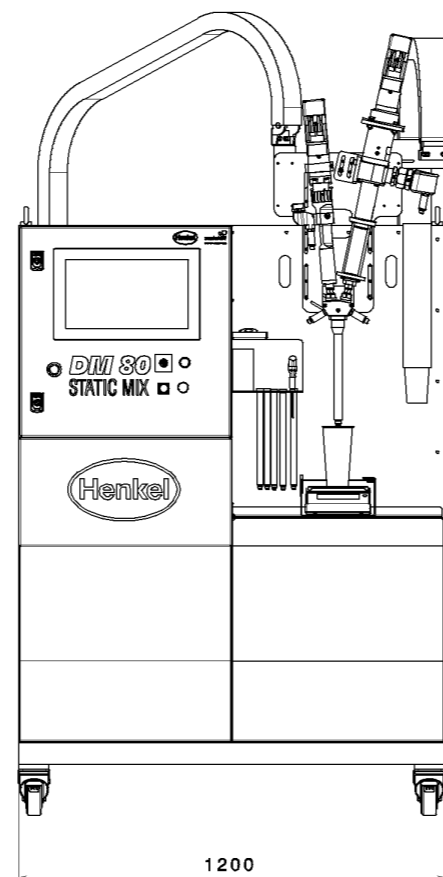
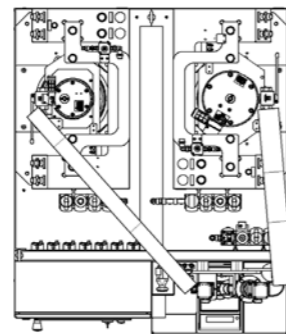
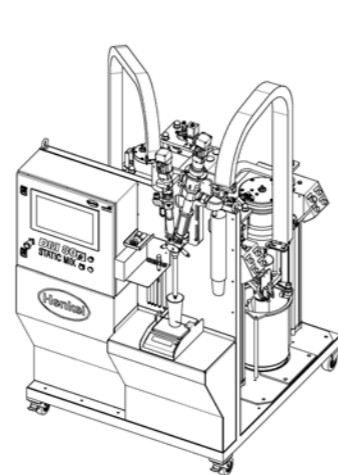
- › Modular B&R IPC controller with operation and visualization via 15.6" touchscreen, integrated in the control cabinet. Preparation of an interface for control by a 6-axis robot
- › EMERGENCY STOP function
- › Recipe management
- › Programmable pot life monitoring and dosing quantity preselection
- › Spontaneously available delivery rate adjustment by means of servo drives (depending on the material conveyed)
- › Pressure monitoring of the material components
- › Operator management with password level
- › Digital component working pressure display
- › VPN router for remote services
- › Display language switching German, English, French, Spanish, Italian
- › Wire identification in the control cabinet
- › Voltage adjustment to external voltages, 60 Hz version (optional)

CONTROL

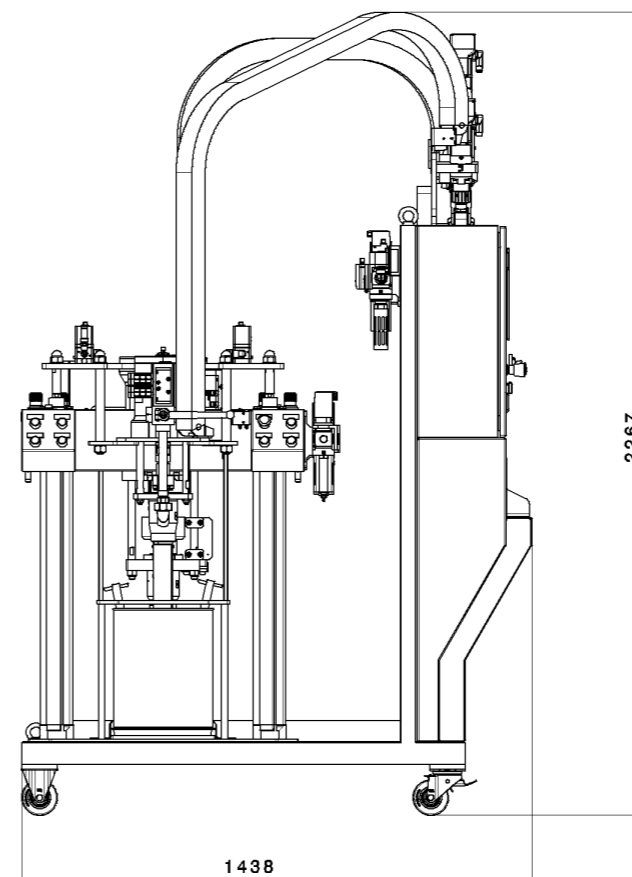
- › Speed-adjustable servo drives
- › Drive power: 0.25 kW per servo drive
- › Drive speeds: 1 - 125 rpm

MIXING HEAD

- › MK 34 - pressure-monitored and servo-driven precision mixing head in stainless steel for static mixing. Designed for flow-optimized material dosing, integrated heating function
- › Eccentric screw pump of the A comp. in ceramic design, size 8.2 ccm
- › Eccentric screw pump rotor of the B comp. is hard chrome-plated, size 1.8 ccm
- › Pressure sensors before and after the eccentric screw pumps for controlling the material feed of each of the scoop piston pumps (Ram press)
- › Mixing by the ME 13/24 static mixer with low back pressure and high flow rate



- › Additional support tube for pressure safety and prevention of a pulsing ME13/24 static mixer
- › Min. dosing volume: 20 g
- › Max. dosing volume: container quantity of A and B component
- › Pressure-controlled separator for interactive, menu-guided calibration function
- › Special pumps on request
- › Mixing ratio: 10 : 1 - 1 : 1, infinitely variable (depending on pump size and material viscosity)
- › Application rate: from 1.0 to 2.5 g/s, other application rates on request
- › Viscosity processing range: from 10,000 to 1,000,000 mPas, other viscosities on request



MATERIAL PREPARATION / CONVEYING

- › via safety two-post lifter / press (Ram) with two-hand operation
- › with scoop piston pump A comp.: 29 : 1 and B comp. 13 : 1, steel version
- › with safety pressure valve, operating pressure between 5 - 7 bar, suitable for 20 l smooth-walled containers, follower plate diameter 280 mm

HOSE PACKAGE

- › A component: steel-reinforced Teflon high-pressure hose (optionally tempered with electrical hose heating)
- › B component: steel-reinforced Teflon high-pressure hose

MATERIAL TEMPERATURE CONTROL

- › Four individually controllable heating circuits: Scoop piston pump, hose package, dosing pump and mixing head incl. support tube (only for the A component)

PNEUMATICS

- › Pneumatics with filter pressure reducer
- › Maintenance unit for supplying the pneumatic consumers

CONNECTION VALUES

- › Electrical system: Version according to EN 60 204-1
- › Mains connection: 120 - 230 V, 50 / 60 Hz
- › Rated power: approx. 1.4 kVA (fully equipped incl. heating)
- › Average consumption: approx. 0.7 kVA
- › Compressed air connection value: 100 - 550 l/min at 6 - 7 bar

QUALITY ASSURANCE

- › Maintenance unit with compressed air supply monitoring
- › Pressure monitoring of the material components
- › Integrated verifiable process scale (with its own interface)
- › Further quality assurance devices can be customer requirements

GENERAL

- › Rollable chassis in shaped tube design, bent sheet metal construction, painted RAL 7035 and RAL 3020
- › Spare parts packages
- › Option: Filling station for 230 ml Semco cartridges for dosing with pneumatic SEMCO Gun 60Z

DIMENSIONS AND WEIGHT

- › W/L/H approx. 1,200 x 1,438 x 2,267 mm
- › Total weight: approx. 600 kg

PERFECTLY COORDINATED SOLUTIONS FOR **MATERIAL, MACHINE AND CONTRACT MANUFACTURING FROM A SINGLE SOURCE**

With the Sonderhoff brand, Henkel has many years of experience in the manufacture of customized 2-component sealing systems, mixing and dosing machines, process expertise and know-how for application-specific material processing.

With the Sonderhoff portfolio, we offer you the advantages of a system provider from a single source and the solutions for your technical and commercial challenges.

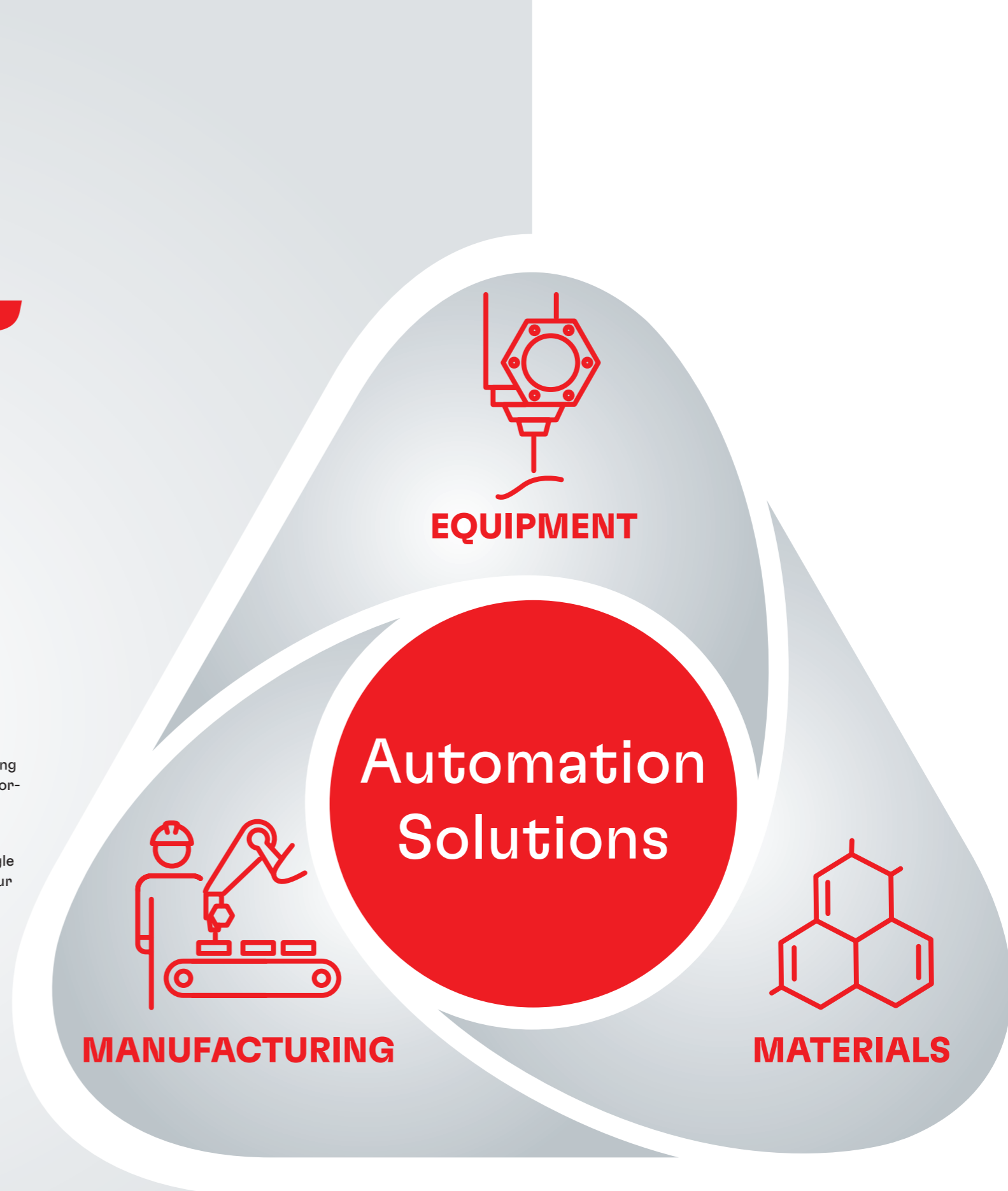
We ensure efficient production processes meeting the requirements of fully automated series production and are available to you worldwide with our service staff.

If you want to benefit from all the advantages for your production flexibly, quickly, easily and without having to invest in your own procurement, we can take over the sealing of your parts from experts at one of our contract manufacturing locations worldwide. There, the spectrum ranges from prototype sampling and small series to series production on a production scale.

The choice is yours!

You can either opt for our all-inclusive package, consisting of material, machine, and contract manufacturing, supported by application advice, sampling and training.

Or you can choose the individual solutions that suit you best. We combine our products and services from a single source to provide you with the optimum solution for your requirements profile.



CUSTOMERSPECIFIC **SOLUTIONS** – **WORLDWIDE AND FOR MANY** **INDUSTRIES**

The Henkel specialists for the Sonderhoff portfolio are available globally

At our Centers of Expertise and Regional Hubs, our specialists offer application engineering advice, e.g. on the selection of a suitable material system and the sampling of your components, as well as project management for dosing systems and automation. You will receive training from us and we will support you with the selection of spare parts and a regular service offering.

Furthermore, we will be pleased to take over parts of your production for you – from small to large series – at our subcontracting locations.

Sales staff at all other Henkel locations worldwide will also be happy to answer any questions and provide you with further information on our sealing, bonding, and potting solutions.

We look forward to hearing from you.



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