

# SONDERHOFF SMART-L and SMART-M

Dosing cell in two sizes for two or three components



## SONDERHOFF SMART-L and SMART-M

Low-pressure mixing and dosing systems in cell design for two or three components

The low-pressure mixing and dosing cells SONDERHOFF SMART-L and SMART-M primarily differ in dimensions and size of the working area. They are designed for 2 or 3 components for the semi-automatic and fully automatic application of sealing foams, adhesives and potting compounds to a wide variety of parts. These dosing cells precisely process liquid, medium and high viscosity compounds such as polyurethanes, silicones, epoxy resins or other polymeric reactive materials.



In the standard version the dosing cell is equipped with a lift door. On the back side of the cell the dispensing machine mechanics cabinet is mounted, in front of which the 24 L or 44 L material pressure tanks stand on a separate pedestal.

## Quality at highest level

The dosing cells SONDERHOFF SMART-L and SMART-M process the used materials with consistently high manufacturing quality regarding reproducible material consistency and dimensional accuracy. The use of cutting-edge sensors and actuators provides further reassurance of reliable system quality and process regulation. Since all setup, system, material and process data are automatically logged, the production process can always be tracked. A comprehensive safety package has been developed as a key measure for safeguarding constantly high levels of machine availability. It is primarily based on an underlying concept of preventive and scheduled maintenance.

## Modular and flexible today and tomorrow

Whoever acquires a mixing and dosing cell from the trademark SONDERHOFF today is equipped for future tasks. This means that different components with new geometries and materials can be processed under possibly different conditions. The dosing cells SONDERHOFF SMART-L and SMART-M can be optionally fitted with the precision mixing heads SONDERHOFF MK 600 / MK 625 / MK 650 / MK 400 or MK 425. Due to their modular and compact design, the two dosing cells can be integrated into various manufacturing concepts. The modular design of the dosing cells SONDERHOFF SMART-L and SMART-M, the use of innovative technologies and reliable processes guarantee the profitability of your investment.



Standard version of the dosing cell  
(view from behind)



Machine cabinet opened, shows the installed  
dosing peripherals

# SONDERHOFF SMART-L and SMART-M

Greatest possible variability in the smallest space

## Processing with maximum comfort – teach-in-box and user interface SONDERHOFF CONTROL II

The dosing cell series SONDERHOFF SMART-L and SMART-M are designed in such a way that the operator can easily and safely perform the most varied tasks. Operation is carried out as standard via the easy-to-use, multifunctional mobile panel SONDERHOFF MP with integrated 6.5" touch screen. The optional 15" touch screen user interface SONDERHOFF CONTROL II makes it even more convenient. The use of the teach-in method via the multifunctional teach-in-box makes the contour programming of components considerably easier. All the system and process parameters can be pre-set and regulated to reliably assure fully automated production by the system.



Optionally available:  
**SONDERHOFF CONTROL II**  
user interface (15")



Basic equipment:  
multifunctional mobile panel  
**SONDERHOFF MP (6.5")**



### Mixing chamber cleaning and accurate dosing – high-pressure water rinsing and nozzle lock system SONDERHOFF STOP-DROP DVS-3

Using the dosing cell high-pressure water rinsing technology to clean the mixing chamber offers qualitative, ecological and economic advantages. The ecological high-pressure water rinsing is the essential feature of environmentally responsible processing of two-component reactive materials. The use of solvents to clean the mixing head becomes unnecessary. Precise material component dosing is assured by the pressure-regulated recirculating valve technology. The nozzle lock system SONDERHOFF STOP-DROP DVS-3 prevents dripping and enables the precisely defined output quantity and dimensional accuracy, especially in the coupling areas.

### Improved user friendliness – accessible from all sides

The large front and side doors of the dosing cells SONDERHOFF SMART-L and SMART-M improve the access to the mixing head and allow quick and easy execution of care and maintenance work. The service door is available either as a swing door or as a lift door. The containers for water rinsing and fill shots can be removed and emptied in a user-friendly manner via a roller pull-out below the working area. Easy access to the dosing cell is also provided by the removable cell roof. The height of the cell, without the roof, is 2.20 m. This is decisive for overseas transports in sea containers, where the ISO Standard stipulates containers with an opening height of 2.28 m. The dosing system is equipped with a separated cell floor, which ensures a protected routing of the electrical and pneumatic lines. The lockable machine cabinet containing the dosing periphery is located right on the rear wall of the dosing cell on the same chassis. The material pressure tanks for the material components are mounted on a separate base frame. The control technology is installed in a separate switch cabinet located at a maximum distance of 15 m.



**Precision mixing head  
SONDERHOFF MK 600**  
with high pressure water rinsing



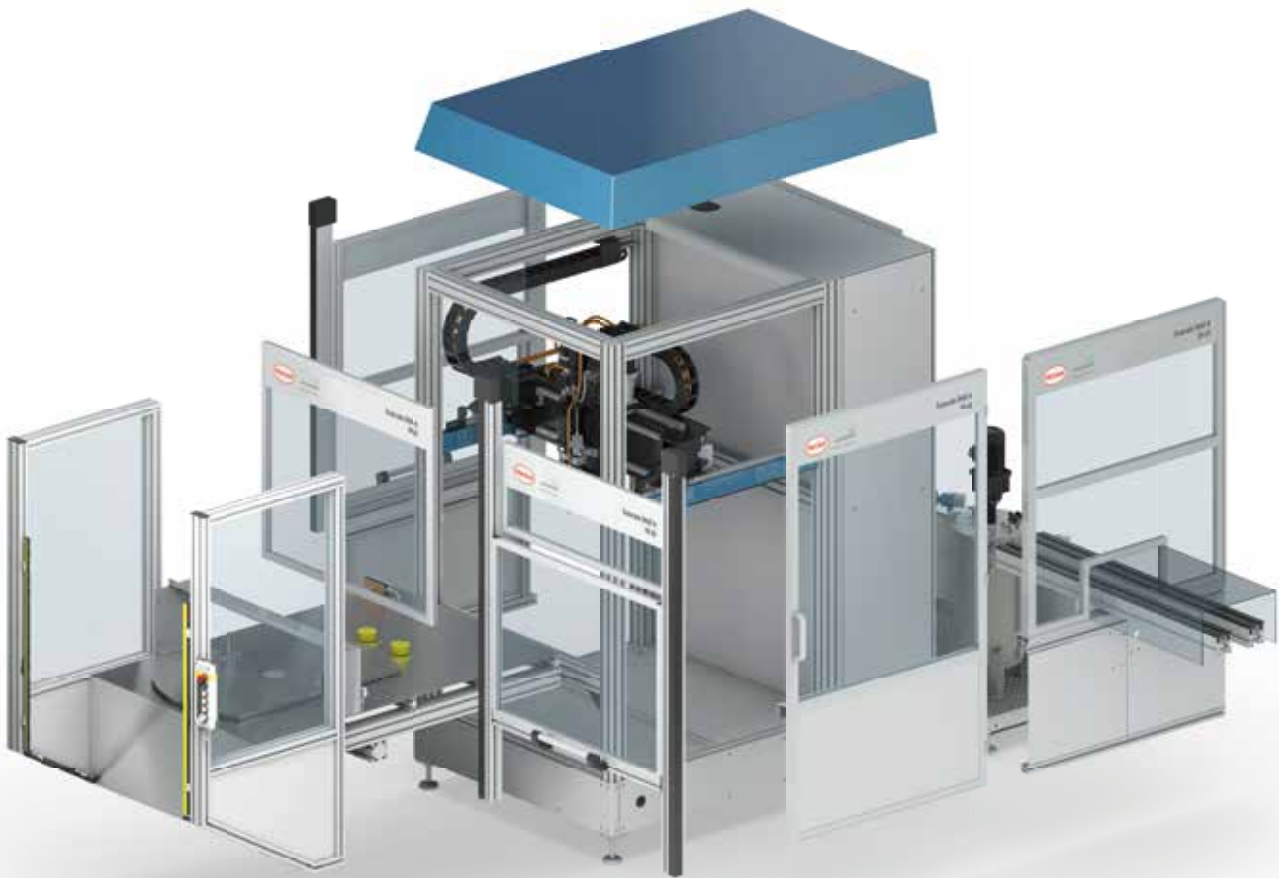
Simple removal of the rinse water tanks  
through the lateral roller pull-out

# SONDERHOFF SMART-L and SMART-M

## Versatile automation

### Modular and flexibly adaptable to different manufacturing concepts

The compact dosing cells SONDERHOFF SMART-L and SMART-M are modular, featuring standardized single components. The mixing and dosing area and the linear robot share a base frame in the dosing cell. Little planning effort is required to later modifications of the dosing cell due to changed production concepts. For frequently changing applications and part quantities, different modules, such as optical part recognition, are offered. Various part applications can be freely programmed with both dispensing cells.



## Process-optimized component feeding – manual, semi-automatic, fully automatic

In the standard version, both dosing cells are fitted with a lift door at the front. The parts awaiting the application of sealing foams, adhesives or potting compounds are manually inserted into the dosing cell.

Alternatively, the parts can be fed semi or fully automatically. Depending on the model type, part feeding is a user-friendly process that either involves a shuttle table or a rotary indexing table. This has a 180° division for the insertion and working position, the changeover is carried out in a cycle of approx. 1.5 seconds. In the case of semi-automatic part loading with a rotary indexing table, access to the insertion area at the cell is protected by a light grid. Optionally, the parts are transferred on a conveyor belt running through the cell.

### Fit for the future

The control of the dosing cells SONDERHOFF SMART-L and SMART-M is based on future-oriented industrial PC technology using a real-time operating and bus system. This system has no mechanical wear parts like hard disks or fans. All system and program data are stored on CompactFlash memory cards. Networking and connection of external devices can be easily carried out via plug & play. Using onboard and remote diagnostics, our service is available to you worldwide.



**Optional:** part pick-up with automatic rotary indexing table



**Optional:** part pick-up with an attached shuttle table



**Optional:** part feeding via a conveyor belt running through the cell

# SONDERHOFF SMART-L and SMART-M

With control technology made in Germany

## Scalable, high quality and durable

Control components of well-known manufacturers are protected and installed in a high-quality brand switch cabinet. Inside, the switch cabinet offers enough space for future expansions. The easy-to-use special mounting plug system allows the inclusion of further control components. This ensures a high degree of flexibility in case future changes must be made.



Switch cabinet with optional roof air conditioning for ambient temperatures of over +25 °C



### Servo motors and servo controllers – higher resolution and path accuracy

The digital EnDat encoders of the servo motors enable outstanding path accuracy of the servo axes when moving the mixing head. The use of an electronic type plate in the servo motor offers the advantage of automatic parameterization of the servo controller to the current parameters of the connected motor.

Thanks to the absolute encoders used, the servo axes of the linear robot are immediately ready for use after the controller has started up.

Single or double controllers are simply clicked onto an improved mounting system – in case of service, the servo controllers can then be replaced very easily. The power supply for several servo controllers is provided by a central module, which is also used for communication with the controller.

### New safety features – programmable, easy, fast

The dosing cells SONDERHOFF SMART-L and SMART-M give high priority to work safety. By using the latest integrated safety logic, safety functions such as safety door switches or optional light grids, foot mats, but also more complex safety functions such as SLS (Safely Limited Speed) can be implemented. And the new safety technology also takes up less space in the switch cabinet of both dosing cells.

The programmable safety logic enables much easier and faster implementation of adjustments to the safety functions. The safety functions of the linear robot's servo axes and the optional rotary indexing table are fully integrated into the safety logic and can therefore also respond very quickly to any safety incidents.



Integrated safety logic for safety door switches, optional for light grids and foot mats



Servo technology with integrated safety logic and central power supply



Industrial PC from B&R without mechanical wear parts



Central safety technology

# SONDERHOFF SMART-L and SMART-M

## Technical data

### CONTROL CONCEPT

- › Multifunctional mobile panel SONDERHOFF MP with integrated 6.5" touch screen
- › Self-explaining operator guide with programming buttons, function and touch keys
- › Modular IPC control fitted in the electrical switch cabinet with Powerlink
- › EMERGENCY STOP deactivation with approved safety concept; real-time bus system
- › Pluggable switch cabinet
- › Preselection of set-up / standby / manual / automatic modes
- › Recipe management
- › Operator password protection with four selectable levels
- › Programmable pot life monitoring, dosing quantity preselection, automatic rinsing and material conditioning (air loading, stirring etc.)
- › Automatic and spontaneously available material feed adjustment by pressure control
- › Monitoring of the component pressure using the digital display
- › Timer with automatic switch-on function
- › Open periphery interface
- › Central control of additional periphery / automation possible
- › Data backup via USB stick, serial interface or LAN
- › Data for operating system and system programs stored on CompactFlash

### DRIVE TECHNOLOGY

- › Speed-controlled servo gear motor with speed display and adjustment through the display
- › Pumps: 1.01 kW; 1 – 250 rpm
- › Mixing head SONDERHOFF MK 400 / MK 425: 1.01 kW; 1 – 6,000 rpm
- › Mixing head SONDERHOFF MK 600 / MK 625: 1.01 kW; 1 – 6,000 rpm
- › Mixing head SONDERHOFF MK 650: 0.33 kW; 1 – 6,000 rpm

### TECHNICAL DATA LINEAR ROBOT

- › Max. traversing speed: 20 m/min
- › Max. acceleration: 5 m/s<sup>2</sup>
- › Repeating accuracy: ±0.1 mm
- › Traversing range: SONDERHOFF SMART-L: 1,000 x 800 x 250 mm (x/y/z); SONDERHOFF SMART-M: 500 x 600 x 250 mm (x/y/z)

### PRECISION GEAR PUMPS (SELECTED)

- › Size: 0.05 / 0.1 / 0.2 / 0.3 / 0.6 / 1.2 / 3.0 / 6.0 / 12.0 / 20.0 ccm/R (Special pumps on request)

### PNEUMATICS

- › Pneumatics with filter-pressure reducer, maintenance unit with pressure monitoring and valve connection plate to control the pneumatic loads

### CONNECTIONS

- › Electricity: according to EN 60 204-1
- › Electrical power supply: 3 x 400 V, 50 Hz or 60 Hz, or in country-specific voltage
- › Rated power: approx. 10 kVA
- › Ø consumption: approx. 4 kVA
- › Compressed air connection value: approx. 150 L/min at 6 – 7 bar
- › Water connection value: approx. 13 L/min at min. 4 bar

### DIMENSIONS (WITHOUT CONTROL PANEL AND CONTAINER PEDESTAL)

- › SONDERHOFF SMART-L: 1,700 mm / 2,400 mm / 1,985 mm / 950 mm (W / H / D / Height working area)
- › SONDERHOFF SMART-M: 1,200 mm / 2,400 mm / 1,700 mm / 950 mm (W / H / D / Height working area)
- › Pedestal incl. material pressure tank (per component): B / H / T 625 x 1,500 x 860 mm, approx. 85 kg
- › Switch cabinet: B / H / T 1,210 x 2,650 x 510 mm, approx. 350 – 450 kg

### GENERAL

- › Chassis: closed cell design with Makrolon windows
- › Container platform: galvanized grating, with adjustable leveling feet and drip pan, separately standing
- › Mixing ratio: from approx. 100 : 1 to approx. 1 : 100, infinitely variable
- › Output quantity: from approx. 0.05 to approx. 0.2 g/s (SONDERHOFF MK 650), from approx. 0.2 to approx. 3.0 g/s (SONDERHOFF MK 425 / MK 625), from approx. 3.0 to approx. 100.0 g/s (SONDERHOFF MK 400 / MK 600)
- › Viscosity processing range: 1 – 2,000,000 mPas, other viscosities on request

# SONDERHOFF SMART-L and SMART-M

## Options

### CONTROL

- > Free-standing control panel with display elements and operating keys, visualization via a 15" touch screen
- > Display languages are available in German, English, French, Spanish, Italian, Chinese
- > Other country-specific languages possible
- > Strand identification
- > Switch cabinet lighting
- > Operating hours counter
- > Remote maintenance via modem or TCP / IP
- > Voltage adaptation to different power-supply ratings, 60 Hz version
- > Air conditioning unit for switch cabinet temperature control

### QUALITY ASSURANCE

- > Air load measuring and control unit SONDERHOFF LBM-3
- > Set-up and alarm logging, process data logging
- > Additional quality assurance devices are adaptable according to customer requirements

### MATERIAL PREPARATION

- > Material pressure tank with capacitive minimum fill level sensors, safety pressure valve (TÜV type approved) and shut-off ball valve, with compressed air fittings and compressed air reducer valves for pre-pressure control of the tank pressures
- > Material pressure tank: 24 L or 44 L, single-walled or double-walled, galvanized steel or stainless steel
- > Wire mesh filter cartridges and plate disc filter
- > Three-phase agitator with 22 rpm or alternatively 99 rpm
- > Electric heating for single-walled containers
- > Temperature control for double-walled containers
- > Automatic air loading
- > Manual vacuum degassing
- > Prepared to control an automatic refilling unit
- > Material supply by refilling units for containers from 20 to 1,000 liters

### HOSE PACKAGE

- > Recirculation hose package
- > Electrically heated hoses with steel-reinforced PTFE high-pressure hose core

### MIXING HEAD VARIANTS

- > SONDERHOFF MK 400 with recirculation or feed line and high-pressure water rinsing
- > SONDERHOFF MK 425 with recirculation or feed line and high-pressure water rinsing
- > SONDERHOFF MK 600 with recirculation and high-pressure water rinsing
- > SONDERHOFF MK 625 with recirculation and high-pressure water rinsing
- > SONDERHOFF MK 650 with recirculation and high-pressure water rinsing

### GENERAL

- > Material supply monitoring for component pumps
- > Compressed air dryer MDK 6
- > Workpiece automation with shuttle table
- > Workpiece automation optionally as rotary indexing table
- > Rinsing and filling shot container
- > Removable cell cover made of powder-coated sheet steel
- > Spare parts packages
- > Transport, setup and instruction

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