

Sealing Solutions

*The Sonderhoff group of companies exhibits at the Automechanika, September 13-17, 2016 in Frankfurt am Main, **Booth D05 / Hall 4.0***

Sealing, gluing and potting diversity for the automobile industry

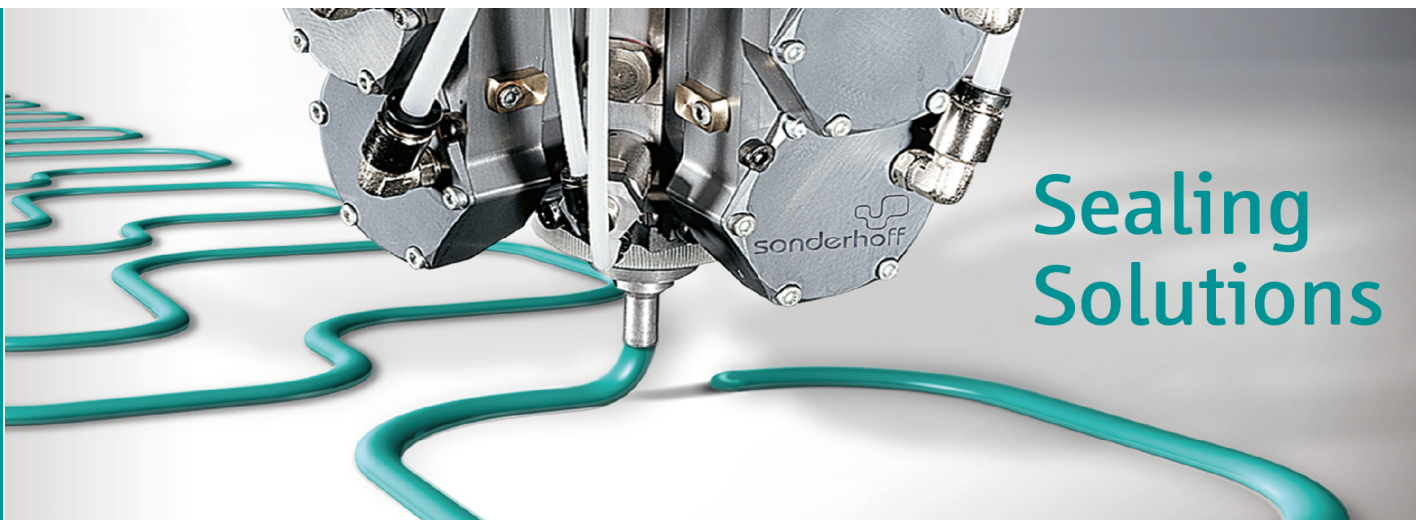
At Automechanika, from 13 to 17 September 2016 in Frankfurt am Main, the Sonderhoff group of companies will present their products for the automotive industry. The world's leading system supplier and process specialist for sealing, gluing and potting solutions based on polyurethane, silicone or PVC is also machine manufacturer of mixing and dosing systems for the automatic application of liquid to pasty materials on industrial parts. Thus, the customers get everything from one source. The Formed In-Place (Foam) Gasket dosing technology for sealing, gluing and potting of components has prevailed especially in the automotive industry as an efficient, accurate and economical production method, in particular because of the large numbers and complex component geometries.

Particular highlights at the Sonderhoff booth are the new Low-Emission (LE) and Fast-Cure (FC) polyurethane foam seal systems Fermapor® K31 and the newly developed polyurethane-based 2-Component adhesives Fermaglu®. The precise gasketing of low-emission foam seals with the dispensing cell SMART-M will be seen live at the booth. The dispensing cell has a modular construction and can be adapted to different manufacturing concepts.

Components and modules that are used in the manufacture of automobiles must be tightly sealed after their assembly against moisture, dust and harmful media. The foam sealing, adhesive and potting systems from Sonderhoff are very versatile in the car manufacture, for example, low-emission foam gaskets sealing the air intake passage, adhesives in different degrees of hardness for bonding various auto parts or temperature resistant silicone foam gaskets for sealing enclosures in the engine compartment.

The polyurethane foam seals Fermapor® K31 from Sonderhoff used for air conditioning systems in cars ensure a leak-free fit of the filter on the air intake passage, so that no unfiltered air passes the filter into the interior. The antimicrobial properties prevent that microorganisms and molds settle on the seals used on the air duct and filter. Thus the hygiene requirements of VDI 6022 are met for air filters.

Decisive for constant quality of foam sealing, bonding and encapsulation are the right choice of raw materials and excellent workmanship as well as security and accuracy of the production facility, thus, a more precise application process of the materials on the components can be achieved. This is particularly true for the polyurethane foam seal systems Fermapor® K31 with Low-Emission and Fast-Cure properties.



Low-Emission foam sealings for fresh air in the car interior

Sonderhoff has steadily improved the low-emission foam seal systems Fermapor® K31. They now meet the strict limit requirements of nearly all automobile manufacturers. The target values for the VOC emission are at 100 micrograms and for fogging at 250 micrograms per gram of polyurethane. This allows reducing a high level of VOC in the air inside the vehicle significantly. Irritation of eyes, nose, throat, skin or allergic reactions can be avoided. Volatile Organic Compound (VOC) are volatile organic compounds, which are not always firmly integrated into the molecular structure of plastics or adhesives. Therefore, they can slowly diffuse to the surface of plastic parts and thus into the air.

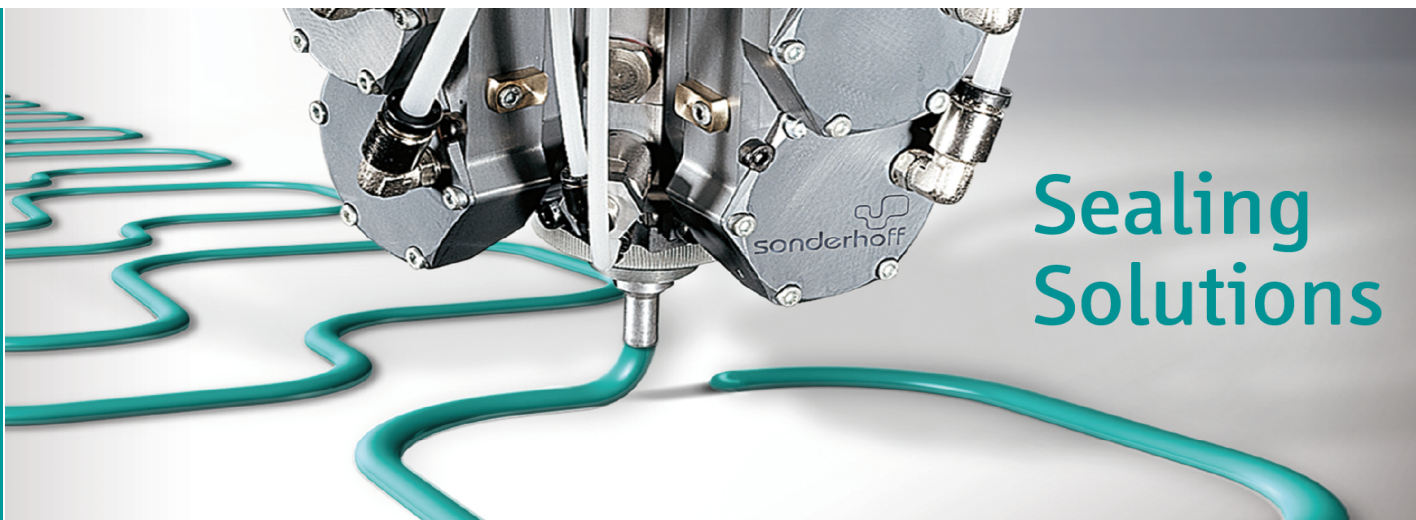
The automaker Daimler, for example, confirmed the sealing specialist from Cologne that the low-emission polyurethane foam seal Fermapor® K31-A-45CO-1-G-LE meets the stringent technical requirements of the manufacturer's own specification DBL 5452-13 to comply with the target values of VOC emissions and fogging behaviour.

Too much VOC in the air often causes fogging. Soot, dust and / or aerosol particles in the air move from warm to colder zones where they are deposited. At the car this can lead to condensation on the interior side of a windshield or on the inside of headlight covers. In extreme cases, the road safety of motorists could be affected by this. The low-emission sealing products from Sonderhoff, particularly in demand among car manufacturers and their suppliers, contribute to reduce the fogging effect and VOC pollution of the air in the car interior.

Fast-Cure foam seals for the highly synchronised process manufacturing

The Fermapor® K31 Fast-Cure systems exhibited at Automechanika are fast reacting 2-component polyurethane foam seals that Sonderhoff has developed specifically for the automotive high clocked process manufacturing. Already after about 120 to 180 seconds the surface of the fast-cure foam seal is tack-free at room temperature. Due to this, the foam sealed parts can be rapidly processed in the subsequent manufacturing process and thus assembled earlier. It saves energy costs, possible costs for an intermediate storage of parts, investments in a tempering furnace or transfer belts for long curing lines. With the Fast-Cure foam seals from Sonderhoff waiting for components for the next processing step is over. The faster processing and thus the earlier final assembly of the components result in significant time savings throughout the production process, lower costs and a more efficient production.

Special fast-cure foam seals from Sonderhoff meet the technical requirements of the manufacturer's own standards in the automotive industry, from the Daimler DBL 5452-13 to the VW standard TL848 to Chrysler / Fiat standard MY 560. The fast-reacting Fast-Cure foams have low water absorption and protection classes up to IP69K depending on component design and the used foam seal system. They have a good adhesion on different material surfaces, on certain substrates after previous treatment. The viscosities of the Fast-Cure foams can be adjusted from liquid to pasty flexibly to the respective part



geometry. Different hardness grades are possible. Thanks to good mechanical values, the Fast-Cure foam seals can easily be installed.

High processing reliability with FIFPG sealing technology

The Formed In-Place (Foam) Gasket sealing technology for automatically applying liquid gaskets directly to components with or without groove has established itself in the highly automated vehicle manufacturing as a production standard. The mixing and dosing systems from Sonderhoff used in car production meet the high quality requirements of the automotive industry. Seal applications are reliably produced with the required zero fault tolerance in large numbers and in a reproducible product quality. The used raw materials are exploited almost to 100 %, so that no punching or scrap losses occur.

All information relevant for the quality of safety engineering, material and process data are automatically recorded by the Sonderhoff mixing and dosing systems, making them accessible at any time. The traceability of previous processing operations of the system ensures a reproducible production quality. The use of rapidly reacting Fast-Cure foam seals with very short tack-free time and safe plant and process control are prerequisites for a highly synchronised process manufacturing, as it is common in the automotive industry.

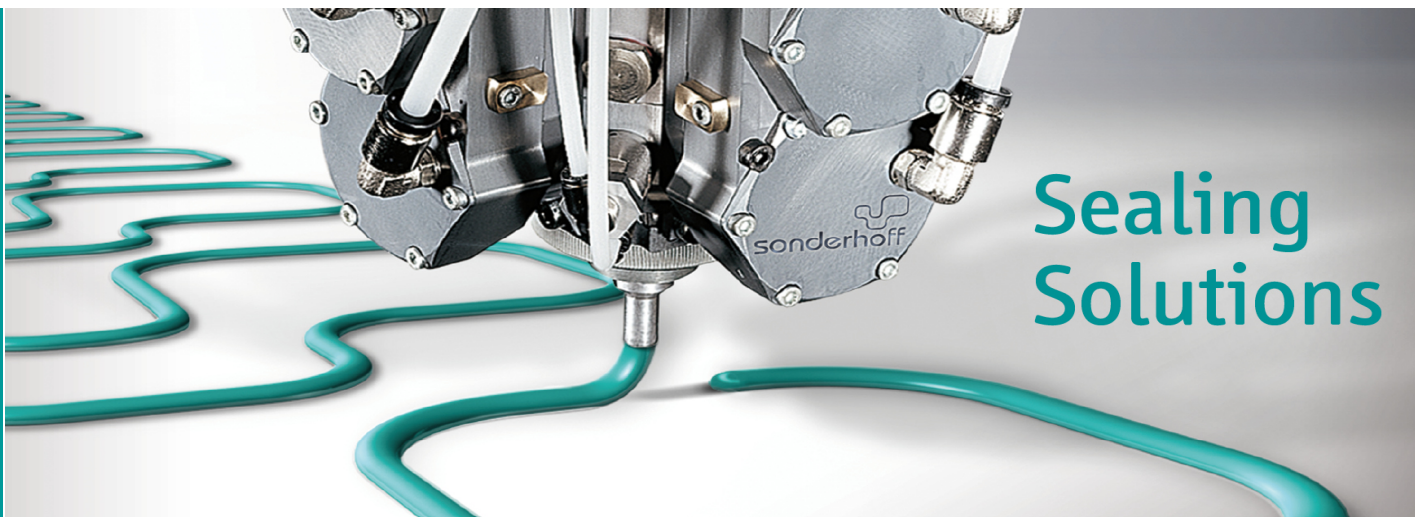
Polyurethane adhesives from Sonderhoff – the right choice for a variety of applications

Thanks to new materials and their combinations, the design possibilities in the car lightweight have diversified. Inputs and attachments in the car from thermoplastic or thermosetting plastics (partially fiber-reinforced/GRP) or plastic components with metallic components are increasingly bonded with 2-component polyurethane adhesives. These are in vehicles a number of components: GRP sandwich constructions (e.g. truck bodies), KTL coated metal frame for sunroofs of glass, PMMA or PC with scratch-resistant coatings, roof panels, trims and spoilers as well as ABS or PP-based tailgates.

Here, the 2C polyurethane adhesive systems Fermaglue® obtain optimal bonding results in different degrees of hardness for various substrate combinations of components to be bonded. They meet the high demands on mechanical and climatic resistance. The bonding process requires an accurate mixing and dosing of the adhesive components, while maintaining a well-defined mixing ratio. This requires a precise system technology with a systematic process monitoring. Sonderhoff has the appropriate mixing and dosing machines for it. They provide an optimal processing of polyurethane adhesives and a process-integrated dosing accuracy.

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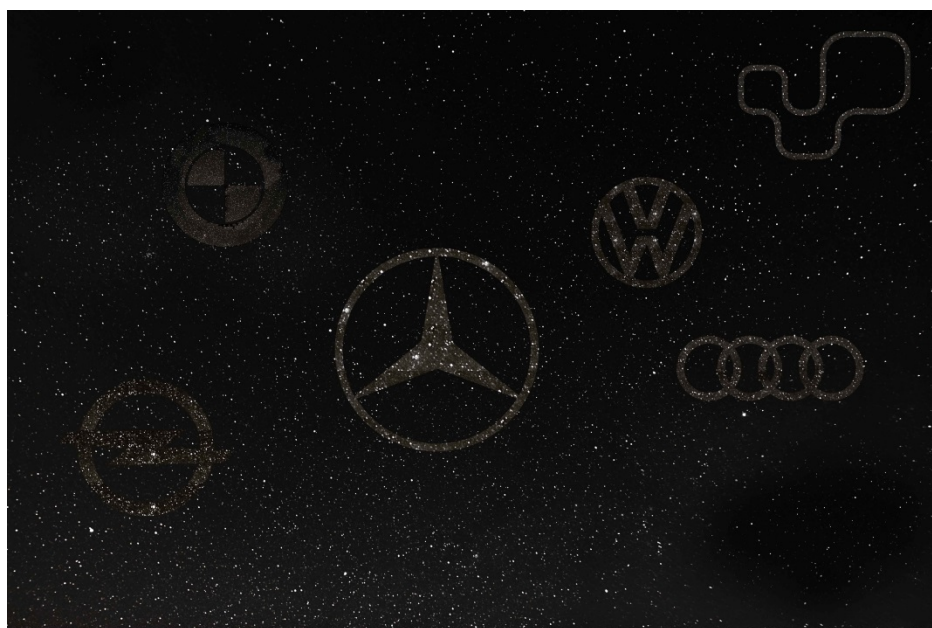
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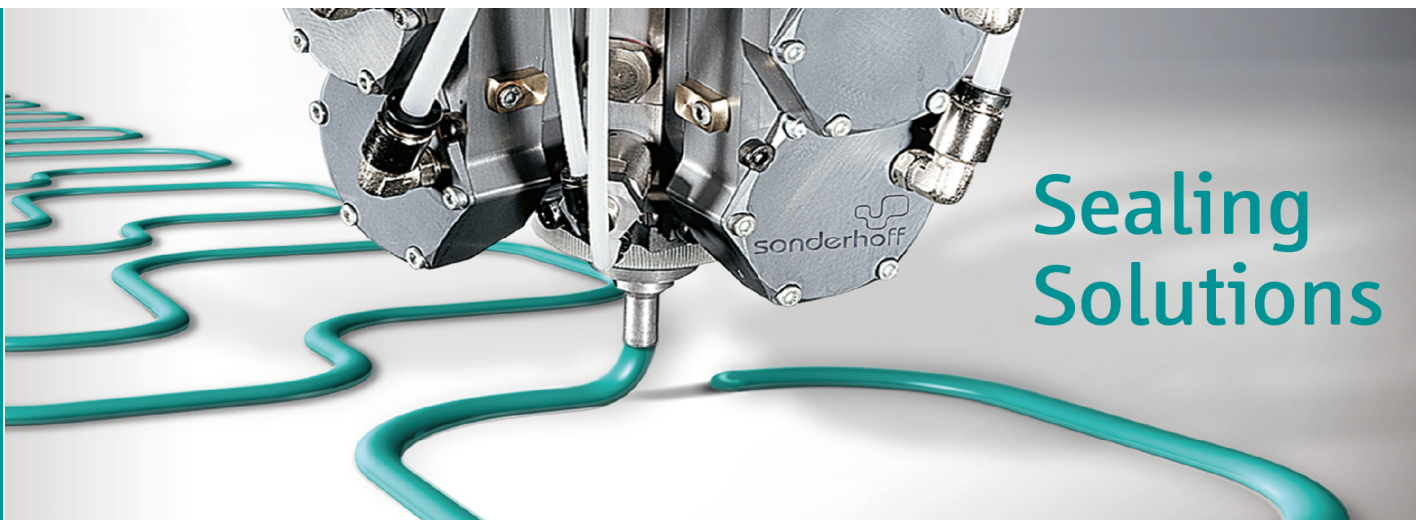
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Press photos:



Sonderhoff meets the manufacturer's own low-emission standards of Daimler (DBL5452-13), GM / Opel (GMW15634, GMW60326, GMW3235-B, GMW60271), BMW (PA-C 325) and VW / AUDI (VW50180, PV3925, PV3015) – for clean air in the car.



Sealing Solutions



For clean air in the vehicle interior: carmakers are increasingly using low-emission foam gaskets and plastics.



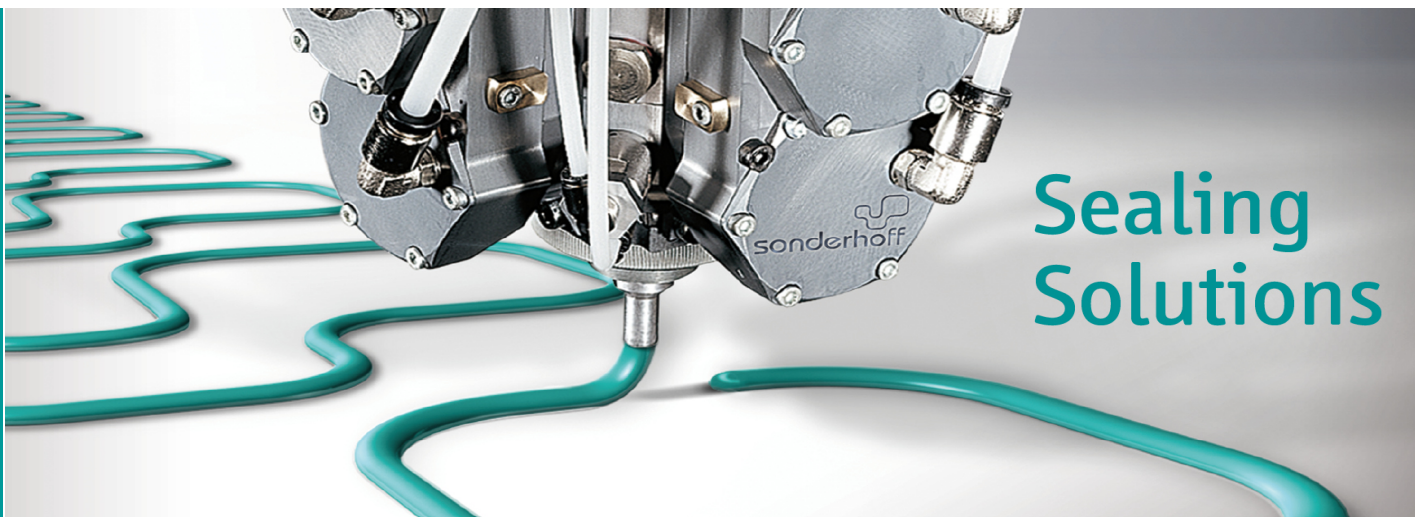
Plastic air duct in the car - applied with a low-emission polyurethane foam gasket



The mixing head MK 600 of the dosing system from Sonderhoff precisely drives the contours of a door module for the sealing with Fast-Cure foam, while the 6-axis robot is in charge of the part handling.



The exhibited dispensing cell SMART-M at Automechanika has a modular design and can be flexibly adapted to different manufacturing concepts.



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Company Portrait

The **Sonderhoff group of companies** with its headquarters in Cologne / Germany is the leading system supplier and manufacturer of polymer sealing, gluing and potting formulations, dispensing machines and automation concepts as well as for contract gasket application services.

The Sonderhoff System combines chemical and technical competence with creative engineering know-how in the fields of mixing and dosing of sealing material and process engineering provided with a comprehensive service entirely focused on satisfied customers.

The sealing products from Sonderhoff are used for foam gasket, gluing and potting applications of various industrial components, for instance, from the switch board enclosure, electronics, automotive, lighting, air condition, filter, photovoltaic, packaging or household appliance industry.

Sonderhoff Chemicals GmbH (Cologne / Germany) develops, produces and distributes worldwide polymer sealing, gluing and potting systems on polyurethane, silicon and PVC basis. Their performance is based on the experience of more than thousand formulations. The sealing material is applied onto structural components and modules of OEMs and industrial suppliers by the FIPFG / FIP (Formed-In-Place Foam Gasket / Formed-In-Place) technology.

Sonderhoff Engineering GmbH in Hörbranz / Austria develops and distributes all over the world low pressure metering systems, from stand-alone dispensing machines to automation concepts according to customers' specifications for fully automated production lines of foam sealing, gluing and potting.

Sonderhoff Services GmbH (Cologne / Germany) and **Sonderhoff Polymer-Services Austria GmbH** (Dornbirn / Austria) have positioned themselves as toll manufacturers for foam gasket, gluing and potting applications with the highest precision. Their services comprehend individual sampling of prototypes as well as sealing, gluing and encapsulation of parts, from pilot application processes and small batches up to serial production for OEMs and industrial suppliers in Germany, Switzerland and Austria. Partner companies undertake the contract manufacturing of foam gasket, gluing and potting for the customers in Great Britain, Spain, Poland, India, Singapore, Japan, Korea and Brazil.

The **affiliates of the Sonderhoff group of companies in Italy, the U.S.A and China** offer the complete range of sales, technical and contract gasket application services to the OEMs in these countries as well as production, sales of material systems and the distribution of dispensing machines from Sonderhoff.