

# Fast-Cure Foam Systems for Series Production

## *Very Short Tack-Free Times Accelerate Processing during Foam Sealing*

Newly developed two-component polyurethane foam systems for seals are reacting so fast that the foamed industrial parts can be seamlessly processed in the subsequent production process. The so-called Fast-Cure foam sealing systems thus enable high production speeds without temporary storage.

The formed-in-place foam gasket (FIPFG) sealing technology, i.e. the automatic application and curing of liquid seals, has been state-of-the-art for many years in the highly automated vehicle construction but also during the series production of control cabinets. With the FIPFG sealing technology, high quantities with the required zero error tolerance and with a repeatable product quality can be reliably achieved.

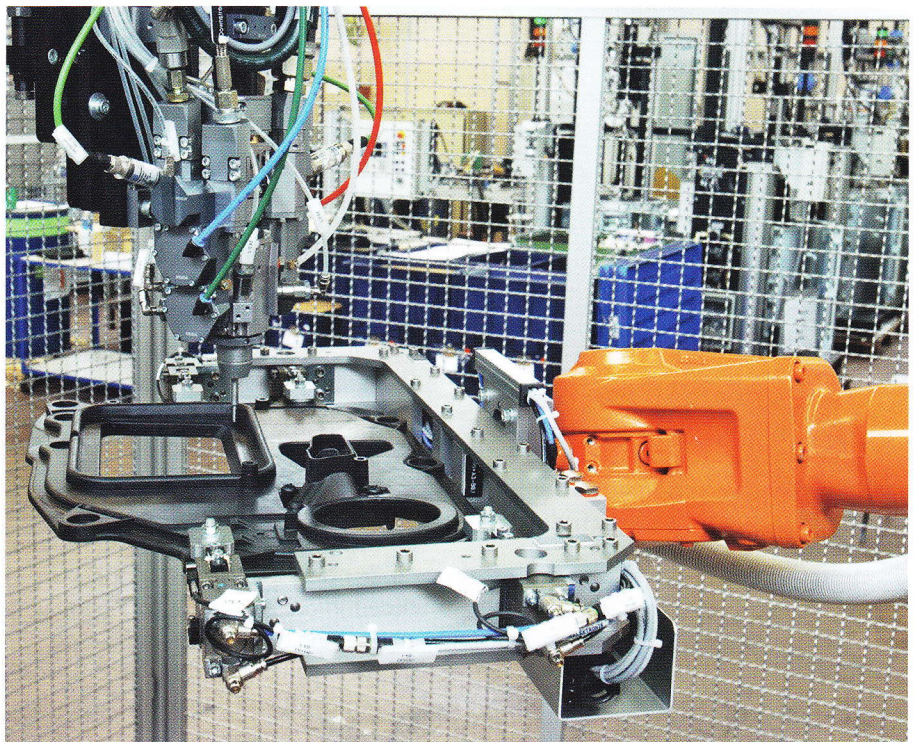
For the foam sealing of parts made of metal or plastic new "Fast-Cure" two-component polyurethane foam systems have been developed (type: Fermapor K31, manufacturer: Sonderhoff Chemicals GmbH, Cologne, Germany). Liquid foam sealants are, in terms of contour and dimensions, precisely applied to industrial parts (with or without groove) produced in series and cure there to become a soft foam seal.

### *Efficient Production due to Early Final Assembly*

The Fast-Cure polyurethane foam systems from Sonderhoff Chemicals used for gasket application of automobile door modules or control cabinet panels achieve tack-free times of less than 3 minutes at room temperature. This means the industrial parts can be quickly processed in the subsequent production process without requiring intermediate cost-intensive storage. Additional investments for furnaces are also not needed in order to accelerate curing reaction of the foam seals on the parts.

Due to a usage of almost 100% of the raw materials, the material costs are kept to a minimum. In contrast to the pre-fabricated conventional inlay seals, there is no punching or cutting waste. Thus, the

Regarding conventional foam seals with considerably longer tack-free times, control cabinet parts and automobile door modules must be cured on a longer curing line or even stored temporarily before be-

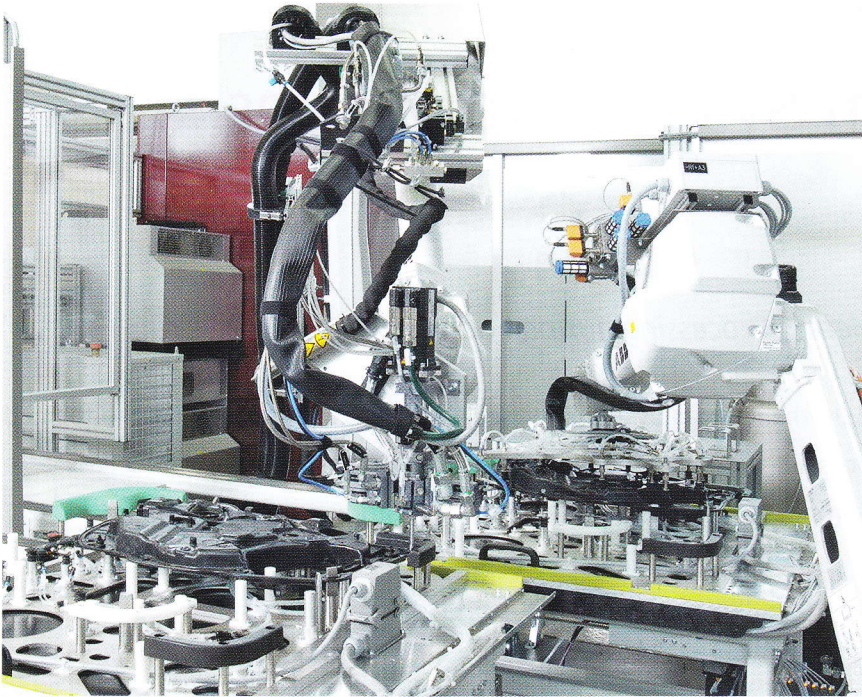


The articulated-arm robot picks up the part and moves it below the mixing head of the dosing system to be foamed (figures: Sonderhoff)

FIPFG sealing technology achieves high process safety and also quick subsequent processing times if Fast-Cure foams with a very short tack-free time are used.

ing subsequently processed. However, by using Fast-Cure foam seals, manufacturing companies are able to realize quicker subsequent processing and also an earlier start of the assembly of the parts. This »





For the application of the Fast-Cure foam the articulated-arm robot with mixing head moves along the part contour of the door module



The good resetting ability of the foam seal is critical when a control cabinet door is frequently opened and closed in order to maintain a constantly high sealing effect in closed position

results in significant savings of time during the entire production process, and thus, it contributes to reducing the unit costs and to make production more efficient.

### *Flexible Production Solutions*

The fast reacting Fast-Cure foam seals of the Fermapor K31 FC product family have a low water absorption, and even some of them meet the protection class IP69K in mutual combination with the sealed part. Thanks to good mechanical values, they can be easily installed and reset 96 to 98% under test conditions at 70°C. This good resetting ability of the Fast-Cure foam seal is critical when a part, such as car door modules, barrel lids and control cabinet doors, is frequently opened and closed in order to maintain a constantly high sealing effect in closed position.

For sealing automobile door modules or control cabinet panels made of metal or plastic according to the FIPFG method, Sonderhoff offers low-pressure mixing and dosing systems of the DM 40x series. The users may integrate these systems in a semi- or fully automatic manner into their production process either as a stand-alone solution or as a fully automatic production line. The Sonderhoff Mold'n Seal procedure allows for a process-integrated in-line production com-

binning injection molding and gasket application in a central place saving space.

### *Application via Linear or Articulated-Arm Robot*

When applying a sealing to a flat part, e.g. a control cabinet door, a linear robot moves the mixing head of the mixing and dosing system along the part contour and the paste-like material is freely applied via the low pressure mixing head dosing nozzle. Once the sealing is applied, the foam expands to a size several times its volume and forms a soft foam seal with a width-height ratio of approx. 2:1. The ratio of width to height of a seal can basically be adjusted by means of the component material.

Regarding more complex three-dimensional parts with inclinations, the automatic sealing application may also be performed by an articulated-arm robot. Two configurations are possible in this regard: Either the robot grabs the part to be foamed and moves it below the mixing head of the dosing system or the mixing head is guided by the articulated-arm robot and precisely travels along the part contour for the sealing application. ■

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