

Application report

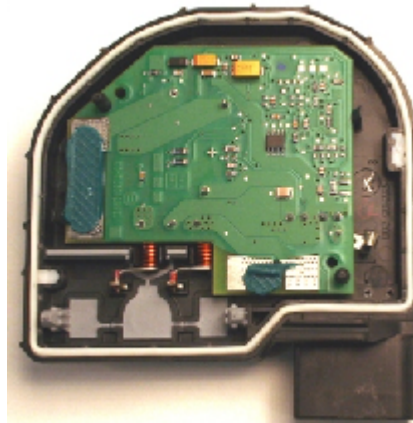
Project: Sealing of automotive electronic parts with silicones

Customer / Branch: automotive supplier industry (electronic parts / systems integrators)

Description

In the automotive electronics industry some parts have to be protected in a very safe and resistible way. Parts like PCB-boards are very sensible and needs housings which are sealed in a good way. Some of these parts have to stand a lot of influences like different kind of temperatures or humidity or even shaking. In order to lay these components in a protective housing and exclude external disturbances like moisture, special seals and special sealing material is needed to close these housings. So silicones with certain features for example against temperature changes are used. These silicones are very special, because of the requirements. For example one of them has to be cooled at 23°C in order to avoid hardening. An example of the silicone is Wacker Semicosil.

As the number of electronics in cars is increasing, also the production of these parts gets more important. The electronic parts are always very sensitive towards external influences and needs special protection and requirements.



Example of electronic PCB with silicon-sealing

ViscoTec Solution

ViscoTec has developed a perfect solution for this application: it is a special version of the barrel-emptying-system (ViscoMT-XS with a 3 VMP 12-pump), in combination with a tempered hose and a RD-dispenser. So the principle is a 1-component-dosing-system (see also fig.1). Because of the special features of the silicone and the requirements, ViscoTec has designed a special housing for this emptying system, which is tempered and cooled at a constant temperature of 23°C. Also the hose is water-cooled, so that the silicon does not harden in the hose. Another special feature of the system is the double-version of the emptying-system so that in case of a barrel-change the production process is not disturbed. During one barrel is changed, the system is switched over to the other barrel-emptying-unit. The control regulates the climate conditions as well as the emptying-systems. It is easily integrated in the PLC of the customer.

Optional the ViscoTec-Inline-degassing unit could be integrated in the system, if the silicone contains a lot of air or other gases. So with the Inline-degassing it is possible to degas the silicone within the tempered area and feed constantly the hose and the dispenser with the 100%-air-free silicone

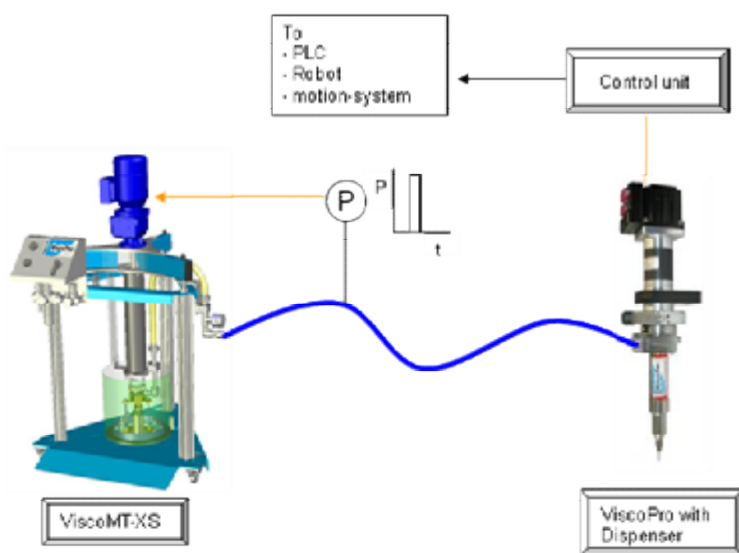


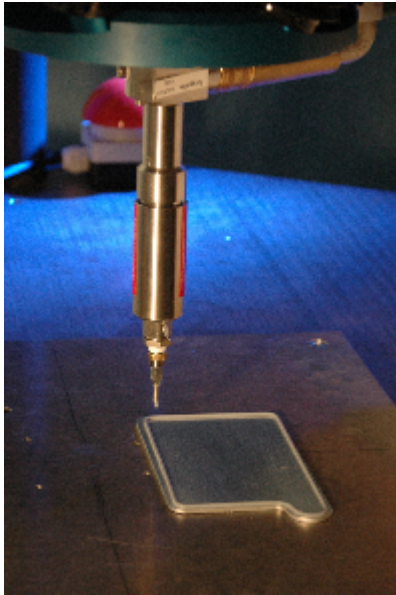
fig. 1: principle of the system



Pictures of the system with tempered are / housing

ViscoTec Advantages

All electronic parts are very sensible and needs special protection. So the advantage of this ViscoTec-system is that the customer gets a high-sophisticated system which offers the customers a complete process-safe process. Through the features of ViscoTec-technology like the accuracy and repeatability the silicone is dosed perfectly on the electronic parts. The customer could control the whole system with his PLC and could so get an automatic and controlled process. Different sensors (like level sensors, pressure sensor or temperature sensors help to regulate the process in the best way. In combination with the ViscoTec-Inline degassing unit, a nearly complete emptying of the barrels is possible. So even without the degassing-unit, the rest, which is left in the barrels, is less than 1%, but with the Inline-degassing the emptying-result is even better and nearly nothing is left in the barrels. Also special requirements (like temperature control is not a problem for ViscoTec). When the silicone is emptied out the barrels, the main advantages of ViscoTec show up: in combination with a robot, silicone beads are perfectly dosed on the parts with always the same dosing quantity. Through the suck-back-function a clean dosing without after-dripping is realized and gives the customers the best solution he could get on the market!



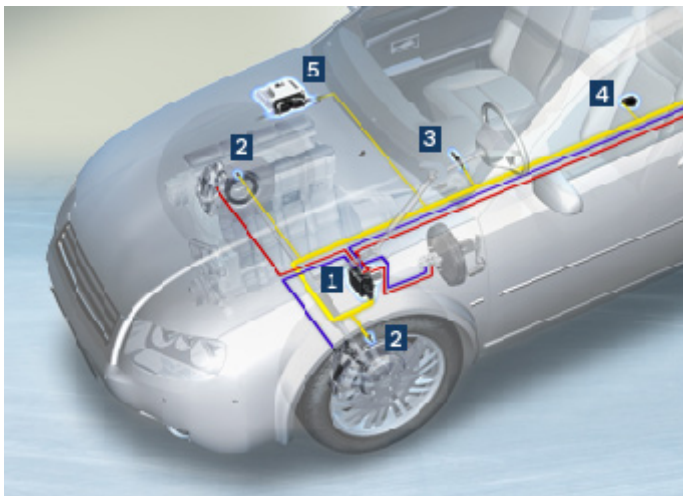
Dosing of silicone beads



ViscoTreat-Inline for degassing

Customer potential

Automotive supplier industry: electronic parts for example ABS / ESP-systems or all kinds of automotive electronic parts.



- Hydraulic unit with attached control unit
- 2 Wheel-speed sensors
- 3 Steering-angle sensor
- 4 Yaw-rate and lateral acceleration sensor
- 5 Communication with engine management

Example: ESP-control-system (source: BOSCH)



Example: PCB-Board (source TRW)