

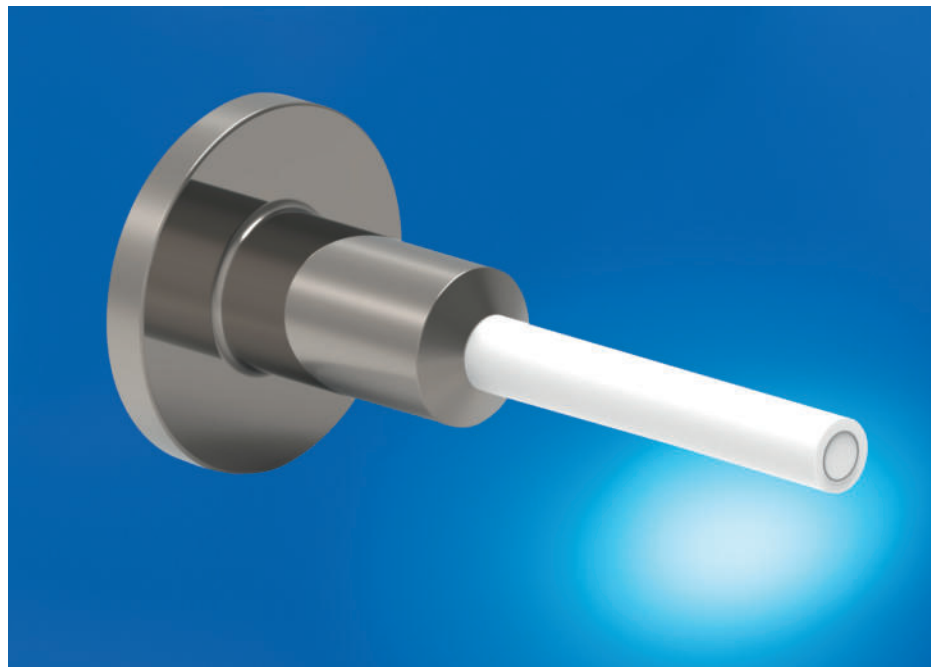
Product solutions made from high-performance plastics for safe filling processes

Nationwide warnings regarding food contamination circulate in the media again and again. Either by a foreign body or through cross contamination, the equipment and materials used in the manufacturing process needs to be specified correctly in order to prevent such occurrences from happening.

Sensors are an important component of a reliable monitoring and control system and control values such as temperature, flow rate or filling levels. Sensors are available in different designs and functions and are often in direct contact with the food or media in question. The range of media involved extends from mineral water, to alcoholic or caffeine-containing beverages as well as sauces, dairy products and lactic acid.

The standard cleaning process with media based on phosphoric, acetic or nitric acid at a temperature of up to 140 °C is also a great challenge for many components. When designing a sensor for use in the food industry for example, the aim is to avoid the possibility of contamination and to simplify cleaning processes. Here, the guidelines and specifications of Hygienic Design must be applied to avoid microbial and particulate contamination of the food. The selection of a suitable material is just as important for cleaning as it is for production.

In the process of filling a vessel, it is essential to check the actual level. This is especially relevant when it comes to bottling expensive drinks such as champagne. The valve for stopping the filling must be switched in time



▲ Schematic representation of a rod probe in the food sector.

to prevent over-foaming of the bottle and thus the loss of champagne. In this case so called probes can be used. The level of a liquid can be precisely determined by switching electrical signals. In order to ensure a consistent filling level, either volume or fill height controlled sensors are used. A difference in fill level caused by volume fluctuations can be avoided by using a fill level controlled probe. The insulation of the metallic rod or the metallic tube of the probe can be reliably provided by a thermally treated shrink sleeve made of

Polytetraflon™-PTFE.

To avoid air pockets between the metal and PTFE and thus potential possibilities for contamination, a dual heat-shrink tube can be used which consists of two tubes assembled inside each other.

The outer heat-shrink tubing is made of Polytetraflon™-PTFE and has a higher temperature resistance than the inner tubing made of Moldflon™-FEP or -PFA.

Due to the different melting temperatures of the materials, the inner tubing liquefies completely and thus reliably eradicates any voids and at the same time compensates for any geometric or

surface irregularities of the component to provide a process-safe solution. Dual wall heat-shrink tubes with a wall thickness of 0.4 mm (after shrinking) with outer diameters up to 25 mm are available as standard. The probe can therefore become media-tight depending on the version, can withstand a continuous operating temperature of max. 260 °C. An essential advantage of heat-shrink tubes compared to ceramic coatings for example is that no particles can get into the food if the sheathing is damaged. If for example, the probe incurs any mechanical damage when entering a bottle head, ceramic coatings can splinter off due to their hard and brittle nature. Ceramic particles can then accumulate in the bottle as well as in the filling machine itself which can result in costly cleaning and subsequent loss of production. A coating of Polytetraflon™-PTFE is so elastic that contamination of the bottle and product can be avoided.

Polytetraflon™-PTFE has the great advantage of being inert to virtually all media and so can be used in the vast majority of cases. Another benefit is that fewer product residues can adhere to its surface reducing the potential for cross contamination. Cleaning processes can also be simplified and take less time to complete when PTFE solutions are deployed in this way.

Based on the experience of more than 50 years in the production and processing of high-performance plastics, we are ready to work with our customers to develop individual solutions for challenging sensor technology applications.

Different manufacturing processes, from mixing raw compounds to the production of semi-finished materials and final machining are opportunities for us to develop collaborative solutions. In addition and to remove complexity from our customers supply chain, we are also able to produce complete assemblies which can if required, involve thermal jointing and welding processes.

Due to our in-house compounding, we are able to offer a wide range of materials with various approvals such as FDA, WRAS, W270, EG1935/2004, 3-A Sanitary Standard, ACS or USP Class VI. In addition our manufacturing facilities are certified according to GMP (Good Manufacturing Practice) so customers can rest assured that the products we manufacture are dimensionally accurate and deliver consistently reliable performance.

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