



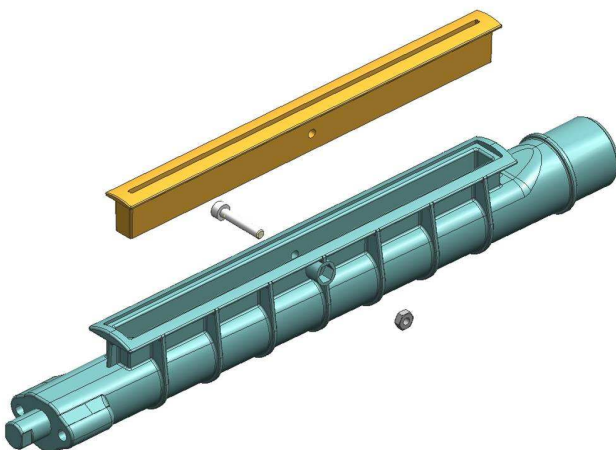
PRESSINFORMATION

„„Make 4 out of 25“– Automatic Filters in small series

MAHLE Filtersysteme GmbH changes from metal to plastics and uses polymer materials instead of stainless steel.

Fuerth, December 2009 - MAHLE Filtersysteme GmbH has commissioned protoform Konrad Hofmann GmbH to develop and manufacture a plastic reverse flow channel for their automatic filter systems that can be produced in small series. "We were looking for a supplier to manufacture custom-tailored parts that would meet high design-engineering demands. Our demand for parts initially will be about 100 units per year", explains Stötzer when asked about MAHLE's needs.

The Fürth based development company protoform Konrad Hofmann GmbH was eventually selected. The plastics specialist has made its mark in the field of prototype and small series production as well as in basic product optimization due to their choice of material and product design. In reference to the automatic filter, the designers of both companies were designing a one-piece component geared to the hereto existing stainless steel back-flushing canal.



The model part sampled by protoform consisted of about 25 individual parts. These included a wear-susceptible stripping device made of PTFE or polyurethane. This stripping device had to be replaced every two to three years under normal conditions of use, which resulted in maintenance costs and machine downtime for the user. Earlier, the reverse flow channel was to be made of stainless steel and consisted of 25 individual components including a scraper blade that was prone to wear and tear.

The assembly will now be produced by using the space puzzle molding technique (SPM), so that it satisfies all functional and quality criteria. The new solution is based on polyphenylene sulfide (PPS), a high-temperature material with a 40 % glass fiber content that is admissible for permanent operations at 180°C.

The material is also chemical-resistant, tested for pressures of up to 8 bar and maintenance-free, so that the issue of the filter medium's aggressiveness loses its significance. "In the course of our development work, the application engineers of the company MAHLE expressed their wish to incorporate an inlay to be able to respond to any changing conditions more quickly and at lower cost", says Wolfgang Tykvar, marketing director at protoform. To protoform, the outcome of this was an extended job definition: The objective was to produce a pressure-tight connection between both parts of the back-flushing canal. "This task was completed by using runners without any additional processing", explains Tykvar.



Back-flushing canal made of stainless



Back-Flushing canal made of plastics

The result of the injection molding optimization at protoform including leveling of material accumulation, the design of wall thickness, configuration of ribs and the application of a steelbolted connection was a component corresponding to all functional requirements and resisting a pressure of 8 bar. It is now being manufactured according to the Space Puzzle Molding procedure and will substitute the stainless steel back-flushing canal in an automatic filter included in the MAHLE program.

A result with a saving potential

Not only has the use of the high-tech material improved the functionality of the component, it has also reduced its weight from 1.3 kg to a mere 200 g, so that the part can now be installed simply by hand. Apart from that, the plastic material also has a positive impact on the costs: while the individual component is less expensive than before, the overall operating costs can also be reduced, since there is nor more maintenance required and the product shows a much better cleaning behavior.



Plastic problem solvers

The company with its more than 100 employees has been concentrating on the patented SPM (Space Puzzle Molding) procedure for many years now. The design department at protoform is in charge of optimizing the components developed by customers in terms of their injection molding processing or independently takes on development of components according to customer demands in CAD. This patented tooling strategy makes it possible to save up to 50 per cent of the throughput time as well as of the manufacturing costs and allows the production of series components which are identical to the materials and tools used, the manufacturing methods and the quality required.

The Company

With more than 100 employees, protoform K. Hofmann GmbH has been active in the mold construction industry for more than 35 years. protoform specializes in the manufacture of series-identical prototypes in the original material. The SPM (Space Puzzle Molding) method was developed especially for this.

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