MCi, the world leader in manufacturing actuators for adjustable electric side-view mirrors, was looking to increase the efficiency of their rapid tooling. And they found it with the help of Somos® PerFORM.

Mirror Controls international a Flex company (MCi) is the world’s leading manufacturer of glass and power-fold actuators used to move and control electric side-view or wing mirrors on automotive vehicles. MCi supplies tier one automotive part makers such as Magna and Ficosa, who incorporate MCi actuator products into finished units for automotive manufacturers. MCi invented the electric glass actuator in 1964. Today, MCi supplies 80 million actuators annually. When drivers around the world adjust their side-view mirrors, there is likely to be a MCi actuator moving the mirror.

MCi is known for delivering excellent products, services and continually innovating their product portfolio to improve quality and performance. New product development takes place at the company’s headquarters in the Netherlands.

One of the company’s recent innovations is a new backplate that holds and protects wires and electronics components. Backplates are a common part of an actuator unit, however, this new unit has a special clip feature that connects the actuator to power and control assemblies while acting as a dust and waterproof cover to protect electronics within the side-view mirror.

Fast, low-cost rapid prototyping
A critical part of product development is making prototypes that can be tested prior to moving to full production. MCi product designer, Evelyne Salters, says, “For a project like our new actuator backplate, which needs prototyping to examine the new design, using aluminum to create tooling for the part is quite an expensive and slow process. We were looking for a new approach that offered lower investment, but would also allow us to use a material similar to or the same as the material used in final production. The aim was to make the backplate development cost effective, fast, flexible and more realistic.”

Salters was doing some research into alternative methods for rapid prototyping when she happened to come across a design competition set up by Somos®. The global competition asked for particularly challenging development projects where Somos® believed its rapid tooling materials could provide a viable solution. MCi entered the competition with the new actuator backplate challenge and won.

For the winning prize, Somos® brought together its rapid tooling expertise, advanced materials technology and its business-partner channel to deliver a solution for MCi. The solution was based on Somos® PerFORM, a composite SLA (stereolithography) material, that replaced MCi’s traditional aluminum material to make an injection mold for the new actuator backplate prototype.
Somos® PerFORM strong and heat resistant

Somos® PerFORM was chosen because it produces strong, stiff, high-temperature resistant composite parts that are ideal for creating 3D printed tooling. In addition, tools created with Somos® PerFORM possess superior sidewall quality and provide fine detail resolution making it ideal for injection molding.

Somos® selected one of its service bureau partners in Spain, Wehl&Partner, which specializes in rapid tooling for the automotive industry. Wehl&Partner has a base mold with interchangeable pockets ideal for Somos® PerFORM applications. The part is placed in the mold base and then the molding process can begin. The first batch of parts, some made with basic polymer and some with a glass-fiber additive, were supplied to MCi for assessing dimensional features and other injection mold issues, such as flashing, venting and warping. This feedback was provided to the service bureau and a second batch of parts was delivered within just eight days. After some final adjustments, the Somos® PerFORM molds were ready to produce the prototype parts that would be used for full testing. MCi has started product testing and customer acceptance phases and expects the new backplate to go into full production in approximately six months.

Somos® PerFORM helped MCi improve the development and production of a new actuator part used in automotive side-mirror applications. The key benefit is more efficient product development because it is faster and more cost effective than traditional aluminum-based injection mold tooling. Rapid tooling with Somos® PerFORM also offers the benefit of being able to inject the mold with the material used for final production. Whereas, with SLS the simulated part will always be different from the final product.

60% cost saving with 3D printed tooling

Creating 3D printed tools with Somos® PerFORM can be significantly faster and more cost effective as compared to machined aluminum tooling processes, especially for complex designs. Somos® PerFORM can shorten the prototyping process by three weeks, typically down to just five days and deliver up to a 60 percent cost saving.

Somos® PerFORM technology provides an efficient solution of design freedom and accurate tool production for rapid tooling compared with machined aluminum. For example, complex elements on a mold, such as undercuts, can be incorporated into the build rather than milled in post-production. This allows much more flexibility when adding complex elements to the design.

3D printed molds made of Somos® PerFORM also have the ability to make prototypes of the same, or similar, material used for the finished product enabling much more realistic and accurate testing. It is also a particular advantage over other methods of printed prototyping because of the limited range of materials.

Real material prototyping

Jan-Willem Timmerman, mold design engineer at MCi, says, “Because Somos® PerFORM allowed us to create a printed injection mold, you can use the same polymer as the final product so you get a prototype much closer to the end-product that provides greater flexibility for functionality testing like breakage or maximum-force testing.”

“Somos® PerFORM is particularly effective for non-standard part development where lead time, size and flexibility are key considerations. For the new backplate part that MCi needed to develop, there were very short lead times. This was a new product for a specific customer and we wanted to be able to test a new connector clip functionality using the final material. This case was a good first experience with Somos® PerFORM in cooperation with Wehl&Partner because of speed, flexibility and the lower cost solution it provided over machined aluminum tools,” says Salters.

Design freely, save time and cut costs using Somos® PerFORM for your next rapid tooling project.