

Sophisticated Process Technology for Applicators

Innovations rarely occur in isolation. Knowledge, commitment, passion, and the gift of linking several ideas to form something new are central. Training courses can be a source of all of these and, therefore, can provide the inspiration necessary for innovations. Engineers got the idea for a revolutionary mascara brush, the sandwich brush, at a training course in Switzerland.

What is the most important competitive advantage of mascara? It's often not the color or the active ingredients, but mostly the new type of application brush. It is incredibly important that the mascara can be applied without smearing or clumping (Fig. 1).

Inspiration for innovation

Developing new types of brushes again and again for the application of mascara is a demanding task. How does the development team come up with new ideas all the time?

As well as evaluating the needs of the users, developers also need to consider manufacturing processes. The development team from Geka, part of the Sulzer Applicator Systems (APS) division, repeatedly gains inspiration from training courses and specialist lectures — even from other disciplines. Training courses are often considered to be time-consuming exercises because there is enormous time pressure in development. However, if one takes the time for training, it becomes quickly apparent that new knowledge provides inspiration, creates new links within the brain, and triggers new approaches to problem solving.

New ideas through training

In September 2005, the managing director and the head process engineer for plastic processing at Geka attended a training at KATZ: the Plastics Training and Technology Center in Aarau, Switzerland. The informative lectures and the commitment of the speakers led to a relaxed, but inspiring atmosphere among the participants, which is an important precondition for the development of creativity. The Geka employees were particularly impressed by one lecture. Dr. Ing. Jörg Dassow from the Ferromatik Milacron company held a lecture called the "Increase of Productivity through Multicomponent Technology — Mono-sandwich and Layer-turning Technology." The two Geka employees were bubbling with ideas upon their return. The "mono-sandwich lecture" had inspired them, and the creative process had begun.

The exclusive Moltrusion® technology

At the time, Geka was manufacturing single-component brushes and Moltrusion® brushes. Mascara brushes made from a single plastic material are cheap to manufacture but are often too hard and are prickly on the skin. Or else they are too soft, and

1 Mascara brush in use.





2 The softSECRET mascara brush, manufactured using the sandwich technology, provides a hard core with soft bristles.

cannot separate the eyelashes. Geka had already created its patented Moltrusion technology to solve this typical mascara application problem. In the Moltrusion process, first, a hollow core is produced using a hard material. This hard core is then shot through under high pressure from the inside to the outside with a soft compound. The result is soft bristles with a stable core. The brushes thereby not only feel very comfortable, but also separate the eyelashes precisely.

The Moltrusion brush for the application of mascara was a unique selling proposition (USP), and enabled Geka to enter exclusive contracts with defined sales quantities. However, the very high tooling costs for the Moltrusion technology were a disadvantage. In addition, Geka needed to find a solution for customers without exclusive contracts.

A new, two-component plastic process

Inspired by the Dassow lecture, the process engineer had a game-changing idea during the journey home: The sandwich process, which had been described by Dassow, could be tested on the two-component injection-molding machines at Geka to replace the Moltrusion process. The big challenge was to create a suitable brush tool. The Geka tool specialist converted an existing prototype tool in a way that the sandwich technology could be tested for the first time.

It took some time before the first brushes were manufactured using the sandwich technology. Process engineers continued to work intensively as a team on the injection molding machine and on mold-making. The material selection, the tool, and the process parameters had to be optimized.

Patented sandwich technology

The result was Geka's first extruded brush, which, through the use of the sandwich technology, also

combines two plastics with each other. The soft material is thereby injected first, and the harder carrier material is pressed into a mold in the second step. The result is also a stable core with particularly soft bristles (Fig. 2). Contrasted with Moltrusion technology, however, the production of a sandwich construction is significantly more cost-effective and more flexible. Geka has a patent for the sandwich technology for brush production, and, in 2013, one customer received the exclusive right to the sandwich brush for a period of three years.

The softSECRET mascara brush

The technology for the manufacture of sandwich brushes has been freely available to all customers since 2016. That was the starting signal for the Geka brush designer and his team. They designed Geka's first standard brush produced based on the sandwich technology, and the brush first appeared under the brand name softSECRET at the LuxePak in Monaco in September 2016. The first mascaras with this brush are expected to enter the market in 2017.

There's not only a brilliant idea at the start of an innovation. Ensuring the successful implementation requires enthusiastic inventors and developers with endurance, and it can take years before the idea becomes a business success. The idea of producing mascara brushes in the sandwich technology was born in 2005. The patent application followed in 2007. The market launch of this patented idea took place in 2013. Geka provides forward-looking solutions to meet the changing needs of the cosmetics industry. Because of its focus on R&D, Geka registers an average of 30 patents a year.

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