

# Success lies in the details – highest precision for thorough hair removal

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**Shavers, epilators, nose hair trimmers – the Payer Group specializes in manufacturing personal care appliances. Its innovative products with contemporary designs and its first-class vendor parts and components meet high quality standards. For its new shaver, for example, Payer relies on custom-developed seals from Angst+Pfister. The ever-increasing success of the Payer Group points up how important it is to collaborate efficiently and intricately down to the tiniest detail in Payer Group’s worldwide supplier network.**

## Everything for hair removal

The Payer Group headquartered in St. Bartholomä, Austria, near Graz is a success story stretching back more than 60 years. The main business of the OEM world market leader consists of supplying high-quality products to international customers all over the world. In its business endeavors, the Payer Group relies on high-grade components from the Angst+Pfister Group. Payer’s product range encompasses a wide array of electrical hair removal appliances, men’s and women’s shavers, epilators, hair clippers and nose hair trimmers. Its product assortment stands out for its deployment of new technologies such as pivoting cutting head systems that adjust to the contours of the face. There are also special appliances such as three-day beard shavers. Approximately ten million

personal care appliances leave the Payer Group’s factories each year. The firm, which was founded in 1946, today employs around 1,300 personnel in six different locations around the world.

## Success through innovation

Payer’s core competencies in the fields of toolmaking, plastics technology, injection molding, varnishing and assembly, its highly specialized plants featuring cutting-edge automation technologies, and its use of Angst+Pfister’s experience in developing customized components enable the group to consistently offer innovative and complex solutions to its customers. Customer satisfaction is always Payer’s top priority. All appliances manufactured by the group must be very ergonomic,

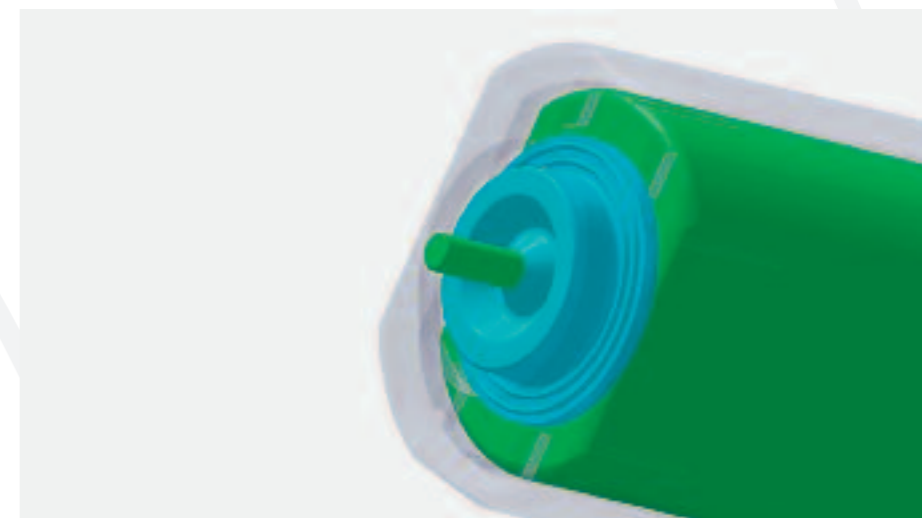
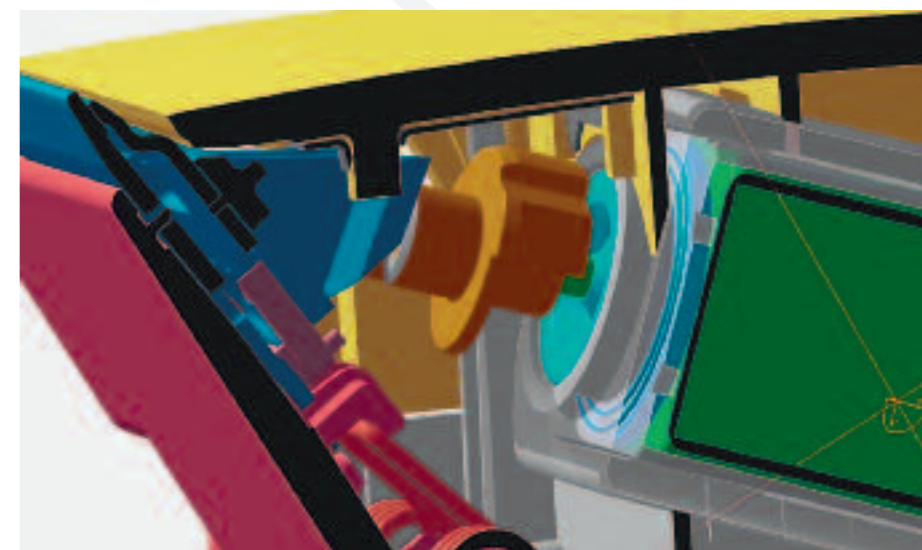
powerful and look as good as possible. Payer’s new shaver incorporates all of these attributes. The right cutting angle, configuration of the blade members, and blade and foil perforation spacings are crucial for an optimal cutting or epilating performance, as are the reliable seals from Angst+Pfister.

## Small seal, big effect

An IP-X7-grade seal prevents water from seeping into the shaver. Operating conditions require the seal to be resistant to oils, greases, alcohol and various cosmetics such as hair gel and hair spray. Assuming a service life of seven years for the shaver, the seal must be able to withstand approximately 200 hours of actual operational use. Admissible dimensional and burr tolerances for the seal are extremely small:  $\pm 0.05$  mm for inner diameter and height; no burr on the inner diameter of the sealing lip and a maximum of 0.3 mm for the outer diameter. Due to the very high speed rate (up to 7,000 rpm) of Payer’s new shaver, the coefficient of friction of the seal should be as low as possible. Finally, shaver seals involve the design of very small parts, which necessarily requires extreme scale precision and accuracy.

## Optimal product profile

The Angst+Pfister Group supplies Payer with special rotary seals that meet all of the foregoing specifications. Angst+Pfister and Payer worked together to develop an innovative rotary shaft seal (motor sealing). The Angst+Pfister motor sealing solution is installed on the open top of the shaver housing and performs two functions: a) it seals the rotating motor shaft to the sealing lip and b) it seals the motor flange to the housing. For function a), the seal provides dynamic sealing operation in the inner radial direction; for function b) it provides static sealing in the axial direction. The Angst+Pfister seal has a special lip construction and is easily compressible and can accommodate a wide range of tolerances. Thanks to its special exterior geometry, the sealing force additionally increases when external pressure is increased. A PTFE-based antifriction coating and lubricant pockets guarantee low friction coefficients and ensure achievement of the required rotational speed.



Special solution for sealing motor enclosures

## Efficient collaboration

All of Angst+Pfister’s extensive sealing technology expertise went into the development of the Angst+Pfister motor sealing solution. The Payer Group shares the same corporate philosophy and collaboration-oriented business approach as Angst+Pfister. In keeping with this philosophy, Angst+Pfister partnered with Payer step by step throughout the entire product engineering process, which involved highly demanding production-related technical requirements and enormous time pressure. The excellent product quality, delivery reliability, continuous consultative support and – last but not least – price convinced Payer in every aspect. The finished products of this specialty manufacturer of electrical hair removal

appliances are a testament to the extraordinary efficiency of the teamwork between both companies.

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