



*Microcut engineers Thomas Kohler (left) and Adolf von Burg.*

# Putting the finishing touches to boreholes

**Improving minuscule boreholes: Microcut demonstrates how to successfully occupy a niche market. The engineers at the Bern-based company regularly consult the maxon online shop to build their machines.**

Superfinishing boreholes doesn't immediately sound like the most spectacular business area. But the team at Microcut, a Swiss company from Lengnau, have perfected a technology that has made them internationally sought-after professionals. They have named their procedure "Microcut Bore Sizing". Put simply, it's all about touching up the tiniest boreholes. And when we say tiny, we mean tiny: We are talking about dimensions in the micrometer range. The smallest boreholes measure a mere 0.015 millimeters – not even a human hair could fit through them. "We don't drill any holes ourselves, we improve existing ones," explains Microcut engineer Adolf von Burg. Especially in markets such as medical technology, fiber optic technology and the automotive industry, perfect bores are in demand – think medical cannulas, minuscule injection nozzles or assembly instruments for microelectronics.

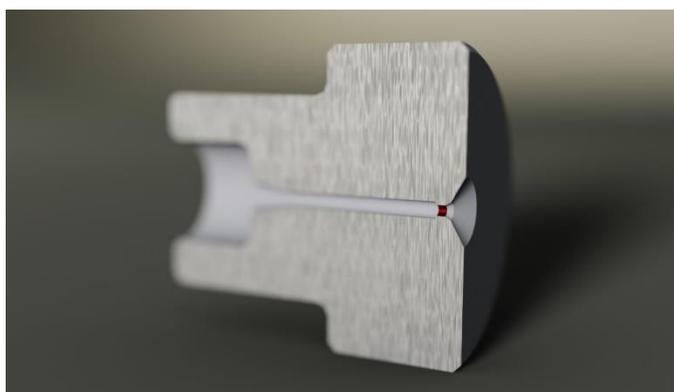
In simple terms, the machining process can be considered a kind of grinding process. In technical jargon, it's called honing. Cylinders in car engines, for example, are commonly treated using honing technology. Only if the cylinders are perfectly round and smooth on the inside can the pistons travel smoothly up and down. Microcut does exactly that – just on a much smaller scale. Depending on the diameter of the bore, a needle-like rod or wire coated with ultra-fine diamond grains or covered in a liquid diamond suspension is guided through an existing borehole. High-precision rotation and longitudinal movement of the wire in the opening enlarges, centers, rounds or polishes the borehole.

The small company processes the workpieces on its own machines in Lengnau according to customer specifications. The main business, however, is the development and sale of such machines to customers all over the world. "First and foremost, we are mechanical engineers," states Adolf von Burg. Microcut produces and supplies around 5 to 10 customer-specific systems per year. "We can't complain. There is a lot of demand, especially as our technology is also becoming increasingly popular for larger boreholes of several millimeters."

Microcut prefers to use motors made by maxon in the machines they have developed in-house. "We have a long tradition of using maxon components," says development engineer Thomas Kohler, explaining that in terms of durability, reliability and precision, maxon's brushless DC motors are unsurpassed. Microcut also sources gearboxes, encoders and controllers from the Swiss drive specialists. For some time now, buyer and engineer Adolf von Burg has been using maxon's online shop for this purpose. "A big advantage is that I can directly see the availability and prices of the products. The shop is very convenient and clearly structured." Microcut engineers have also made frequent use of the possibility of configuring and combining components online. "A very helpful tool!"

Incidentally, maxon is not only a supplier but also a customer of Microcut. The Bern-based company processes boreholes in small ceramic parts produced by maxon motor in Sexau.

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*Bore for fuel injection with 0.35 mm diameter.*

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