

No scope for tolerance with micro milling

There is no scope for tolerance with micro milling. Poor results or expensive waste are taboo. It is therefore all the more important that experts such as in dental laboratories, the watch and jewelry industry, medical technology and in tool and mold construction can rely on their working tools.

CNC-controlled micro precision milling machines from the Peißenberg-based company Primacon are therefore often the first choice. The manufacturer of high-precision milling machines relies on powRgrip for tool clamping. This stiff tool clamping system from Swiss manufacturer Rego-Fix AG ensures a stable cut and extremely precise results.

"We'd had enough! We kept having to realign and readjust during production. The tool clamping system in use not only had application problems but also failed to deliver the quality to meet our own and our customers' requirements," remembers Muhammer Kör from Sales at Primacon. He now looks back relaxed. The global company founded in 1995 is a leading manufacturer of top-precision CNC-controlled micro milling machines and compact machining centers for small parts with precision requirements of 0.001 mm. To solve the problem Primacon called on REGO-FIX from Tenniken as specialists in tool clamping systems. Today the procedure

for Primacon users is simply "Cut, apply, enter nominal diameter, measure length and radius in the laser, start programming – manufacture parts."

Since the powRgrip® tool clamping system of the Swiss manufacturer Rego-Fix has been implemented the user has been able to rely with confidence on correct precision – irrespective of whether they are dealing with titanium, cobalt alloys, carbon or carbon fiber materials.

Clear benefits in processing

The success story of powRgrip in micro milling and in particular for Primacon is a result of a number of different reasons: Michael Reichmann, application technician at Primacon, explains: "We switched to the powRgrip system because we saw clear benefits in processing: the stiffness of the tool holders provided an enormous advantage in terms of precise processing for the manufacture of top surface quality. The behavior of vibrations with the powRgrip tool holder system is much better

than before and leads to first class end results. By way of comparison the operator notices immediately that the machine runs more quietly and stably."

This is the case in dental laboratories producing individual dentures. The runout and fit quality are the decisive factors here for the quality of dentures that can be manufactured. For example, the fit quality underneath must be high for cutting the dentures to size. To achieve this it requires not only excellent concentricity, but also all vibration-free cutting during dynamic loading. The Swiss tool clamping system is able to absorb these strains. As virtually no more fitting difficulties now occur this prevents faulty ceramic bridges from being manufactured and having to be rejected and scrapped. The toolholding system already has paid off after a short period through the material cost savings.

The system with its excellent concentricity also offers Primacon customers a further advantage in the manufacture of watch plates. For each watch

The Swiss tool clamping system has been developed especially for micro milling applications. The photo shows the manufacture of a nozzle bore for a ceramic injector.



Picture: Rego-Fix

German Summary

Beim Mikrofräsen gibt es keinen Spielraum für Toleranzen. Schlechte Ergebnisse oder Ausschuss sind tabu. Um so wichtiger ist es, dass sich Medizintechnik-Anwender, etwa in Dentallabors, auf ihr Arbeitsgerät verlassen können. CNC-gesteuerte Mikropräzisions-Fräsmaschinen von Primacon aus Peißenberg sind daher oftmals erste Wahl. Der Hersteller hochgenauer Fräsanlagen setzt in der Werkzeugspannung auf ein spezielles Werkzeugspannsystem, das durch seine Steifigkeit extrem präzise Ergebnisse liefert. Der deutschsprachige Beitrag ist nachzulesen auf www.meditec-international.com/medi0112pg

grip tool holders produced by Rego-Fix. In the micro milling area the Swiss system is said to be the optimum tool clamping system with the collet size PG10 that covers a clamping diameter of 0.2 to 6.350 mm (1/4"). The user does not require any pre-adapter for clamping and does not need to worry about different clamping forces of the respective clamping diameters. powRgrip is both extremely flexible and quick. Michael Reichmann: "For our applications the system is massively superior to shrinkage in the area of interfacing contours in terms of stability and damping behaviour. These benefits are clearly noticeable during simultaneous milling."

There are major differences in the basic length in terms of the overall length design of the tool holders available on the market. This can pose problems for coolant supply. With the powRgrip system the collet is always located at the same place.

Muhammer Kör: "All Primacon machines supplied for the micro milling sector these days leave the production line equipped with powRgrip. Only this system enables us to guarantee the required quality." ←

plate the manufacturer expects 30 to 50 tool changes. The spindle force is adjusted for each stage of the work. This calls for both a stable and precise machine and a stable clamping system with secure concentricity.

The key advantages that customers expect are of course productivity and quality. Michael Reichmann: "If I am only able to use one out of three blade edges then this is anything but productive. Our standard machines are supplied with a spindle of 50,000 rpm. Balancing has never been an issue for us due to the very well balanced powR-



1) Michael Reichmann, application technician at Primacon: "We switched to the powRgrip system because we recognized clear benefits in machining."

2) An application technician at Primacon, carefully inspects the condition of the tool after the milling process.