

Press release

powRgrip System at Liechti Engineering Pushing the limits of machining

Process reliability is of the utmost importance to the tool maker Liechti Engineering. At Liechti, the tool clamping system used plays a key role a constant clamping force is essential for insuring reliability. The Swiss company has relied on the powRgrip system from REGO-FIX in particular for many years. Their trust in the system is reinforced, above all, by the fact that the powRgrip System results in a considerably low level of tool wear.

Liechti Engineering is the market leader in quality for programming and machining solutions worldwide in manufacturing flow profiles on turbine components. The Swiss company offers overall solutions and specializes in building machines that are tailored to complex airfoil components. Thanks to their specific profile machining technology, Liechti milling machines reduce machining times by up to 30%. This level of performance is a primary result of its development expertise and know-how in machining materials, such as titanium, Inconel, Nimonic and high-alloy steels.

Process reliability is a very important aspect for Liechti Engineering and its customers. After all, reproducibility must be guaranteed and it relies on a constant clamping force. In addition, everything runs on 5-axis machines at the test center in Langnau. The cutting programs are running at their outright limit. If a tool clamping system is used, it must operate with maximum efficiency under these specified requirements.

"We use the system that is best suited for constructing a workpiece," reported Simon Trummer, Liechti senior CAM application engineer. "For this reason, we not only work together with a reliable partner, but in most cases we can also recommend the powRgrip system from REGO-FIX for achieving the best results." All finishing processes on the turbine blades are preferably performed in-house using the powRgrip system. The dampening characteristics ensure a flawless surface quality."

The cutting programs at Liechti Engineering are pushed to their limit. A comparison test is performed with a constant feed rate of 7,146 mm/minute. The machining is carried out on 5-axis machines – all five axes move simultaneously. If a tool clamping system is used, it must operate flawlessly with maximum efficiency under these specified requirements. During the test performed on the 5-axis milling machine, the finishing process on the stainless blade X20CR3 1.4021 was performed under the same conditions. The test was conducted in two stages for 59 minutes and 30 seconds. The inside and peripheral area of tool was cooled during the testing. The tool length-from the tool holder collar to the tip of the workpiece – was 158.33 mm in both cases. The view on the microscope image revealed that there was clearly less wear with the powRgrip system than with comparable products. The tools used in manufacturing turbines must be replaced before wear occurs since the quality of the turbine blade is otherwise no longer ensured. The efficiency of the turbine primarily depends on the flawless quality of the surface properties.

REGO-FIX's powRgrip system has proven successful across the board at Liechti Engineering. It is designed especially for grinding. The system is also frequently used for light roughing operations in which it achieves less tool wear and an extremely high-level of vibration dampening, especially for grinding and light roughing applications. The fact that the tool can be clamped without heating up and is available for use immediately after machining is a constant testament to the powRgrip system.

Summary: The advantages highlighted by the test speak for the powRgrip system and are consistent with the results that were also determined in other sectors. "Tool wear during machining is significantly less than with the other systems we used in-house. In other words, the properties of the powRrip system preserve the tool and extends its service life," summarized Simon Trummer. "Using the microscope, we can precisely determine the behavior of the wear on the tool over the machining cycles. When switching to the powRgrip system, our customers always save significant sums of money when purchasing the cutting tools."

Liechti Engineering is an international family-owned company that develops and produces highly dynamic milling and machining centers and CAM software for machining complex curved aerodynamic profiles, such as turbine, impellers and blisks. Liechti is the technology leader in the complete machining of complex turbine blades and blisks in a single clamping operation. Thanks to the highly dynamic roughing and finishing processes performed in a single clamping operation, chucking errors are avoided, setup costs are reduced and the accuracy of the turbine blades and blisks along with their production efficiency is dramatically increased.

Liechti Engineering products make it the ideal choice for companies from the power generation and aviation sectors, in particular, where the highest demands are placed on precision, quality and productivity. Reference customers include Alstom, General Electric, Pratt&Whitney, Rolls-Royce and Siemens. www.liechti.com

REGO-FIX is an international family-owned company that produces and distributes high-precision tool clamping systems. The company founded in 1950 has its headquarters and production site in Tenniken, Switzerland, is one of the leading tool manufacturers and is well-known in the metal-processing industry throughout the world. Through its global sales partner network and three separate locations in Switzerland, USA and Asia, REGO-FIX has an excellent position and can be found all around the world.

With its pioneering inventions, REGO-FIX has grown from a small company into a global solutions provider for tool clamping systems. Each product is developed with the aim of increasing productivity. In particular, the customers come from the vehicle/airplane construction, mold construction, mechanical engineering, medical technology and watchmaking sectors. www.rego-fix.com

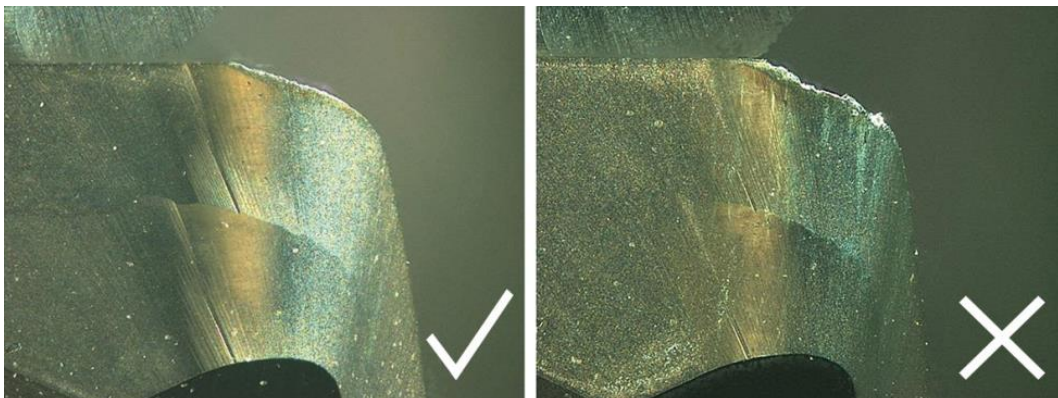
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The cutting programs at Liechti Engineering operate at their limits: If a tool holding system is used, it must operate flawlessly with maximum efficiency under these specified requirements.



The test milling tool is a finish milling tool with a 20 mm diameter.



Free form surface wear on the milling tool with powRgrip System (l.); free form surface wear on the milling tool with comparable with dimensions (r.).