User report
Kreyenberg

REGO-FIX

USER REPORT
A Report by REGO-FIX AG

The Epitome of Smooth Running

In order to machine precision components with a high degree of accuracy in five axes, contract manufacturer Kreyenberg GmbH primarily clamps long protruding, relatively small tools with the powRgrip® clamping system from Rego-Fix. This is the only system that guarantees the tools rotate with sufficient precision.

In an interview with Clemens Kreyenberg, one of the two owners of Kreyenberg GmbH, headquartered in Norderstedt in northern Germany, it becomes clear that contract manufacturers face ever-increasing demands in today's industrial environment. Clients expect maximum flexibility, even when it comes to one-off orders and small batches that have to be completed within the shortest possible time. To meet these requirements, Kreyenberg relies on innovative technologies such as five-axis machining centers that operate with an exceptional degree of reliability.

An Extremely Versatile Contract Manufacturer

"Due to the increasing shortage of skilled workers, we are being forced to automate as much as possible. But this is only feasible if the production process is extremely reliable and requires very little intervention by skilled personnel," explains Clemens Kreyenberg.

The contract manufacturer currently operates two production sites in Norderstedt and Henstedt-Ulzburg and has around 200 skilled employees. The site in Henstedt-Ulzburg is mainly focused on machining aluminum components, and the processes there are largely automated. At the company's headquarters in Norderstedt, on the other hand, the specialists manufacture products for a variety of industries, in particular for medical technology, mechanical engineering, and tool and mold manufacturing.

Clemens Kreyenberg explains that implants and surgical instruments account for about 50 percent of the contract orders handled by the Norderstedt manufacturing facility – of which about 90 percent are implants. In addition, the company also manufactures various high-quality components for measurement and drive technology, assembles them on site, and even installs them into subassemblies and complete devices, all of this primarily for the medical technology sector.

Five-Axis Machining Is Standard for These Types of Products

In order to work cost-effectively, the contract manufacturer now has several five-axis machining centers. The use of multi-axis machining centers offers the contract manufacturer financial advantages because complex components can be fully machined in a maximum of two

clamping operations. This results in short lead times and increases flexibility. The increasing number of components with three-dimensionally curved surfaces and various different angles requires five-axis machining in order to be able to fully process all of their shapes.

Five-axis machining also presents challenges, however, particularly with regard to the use of long protruding tools. These are necessary for milling deep pockets as well as for drilling and thread milling in openings. These must be held in slim, extended tool holders, which can prove difficult.

Mechanical-Hydraulic Clamping Better Than Shrink-Fit Chucking

Clemens Kreyenberg reports that conventional shrink-fit chucks have limited ability to hold the smaller diameter tools. In particular, it is difficult to ensure that long protruding tools continuously run true with shrink-fit chucks. Precision tools that don't rotate smoothly don't perform reliably and lead to inaccurate machining results and insufficient surface quality. In addition, they wear out prematurely.

Overall, it is critical for the contract manufacturer to use appropriate tool holders to meet the requirements of five-axis machining and achieve high-quality results.

The Users Were Already Convinced after Just a Short Test Run

The production engineers in Norderstedt came into contact with Hermann Meyer during their search for suitable, highly accurate rotary clamping systems specifically for long protruding tools. He is one of the owners and general managers of MMI Meyer und Münster GmbH, headquartered in Verden, Germany. The dealer is a regional partner of the Swiss clamping technology manufacturer Rego-Fix AG, headquartered in Tenniken, Switzerland. Hermann Meyer presented the "powRgrip" hydraulic-mechanical clamping system and initially left a PGU9500 clamping unit and an initial selection of collets and tool holders with the specialists at the contract manufacturer for a few weeks. "After just a few weeks, we were completely convinced," reports Florian Bodenstab, programmer and machine operator at Kreyenberg, about this test run.

Since then, the production engineers in Norderstedt have been using the innovative Rego-Fix clamping system for five-axis milling, especially for small-diameter tools. As they confirm, drilling and milling tools clamped with powRgrip® rotate much more smoothly than conventional clamping devices. As a result, the precision tools last up to 20 percent longer than before. In addition, even with extremely long, slim tool holders, it is possible to drill small holes, for example, with an accuracy of just a few micrometers in terms of their diameter and roundness.

The powRgrip® clamping system can easily be used to clamp tool holders up to 400 mm long. PG10 collets and milling and drilling tools clamped in them run perfectly smoothly to an accuracy of 3 to 5 µm. As a result, the powRgrip® clamping system in use at contract manufacturer Kreyenberg is proving to be significantly better in terms of performance characteristics compared to the previously used conventional tool clamping with shrink-fit chucks.

Optimal Clamping Achieved over the Long Term

In addition, the specialists in Norderstedt emphasize that the collets of the powRgrip® clamping system from Rego-Fix reliably hold the tools in place over a large number of clamping operations with constant clamping forces and holding torques. As Hermann Meyer explains, hydraulic-mechanical clamping preserves the material properties of chucks and shanks of extensions and tools. Heat input and alternating heating and cooling are eliminated. This also shortens the time it takes to clamp tools.

The Necessary Pressing Pressure Is Determined Automatically

With the powRgrip® clamping system, the exact clamping force is specified by the PGU9500 clamping unit. The clamping device recognizes the size of the collets on the clamping adapter and automatically sets the corresponding pressing pressure. This is confirmed by Vincent Schmidt, who is responsible for preparing the clamping, measuring, and presetting of the tools. With powRgrip®, tools can be clamped reliably with repeatable precision at all times with the optimum clamping forces.

Based on their positive experience, the production engineers in Norderstedt are using the Rego-Fix clamping system for an increasing number of machining centers. “Especially when clamping small tools that protrude with corresponding extensions, we do not see any alternatives to the powRgrip® clamping system today,” emphasizes Clemens Kreyenberg, adding: “In terms of process reliability, ease of use, and the smooth running of the clamped tools, the clamping system is significantly better than all other conventional systems. That is why the powRgrip® clamping system is the first choice for us, especially when machining difficult materials. This particularly applies to medical technology components. We have to meet special requirements for these. This means that we manufacture reliably with the highest precision and high surface quality. In addition, validated processes have to be traceable.”

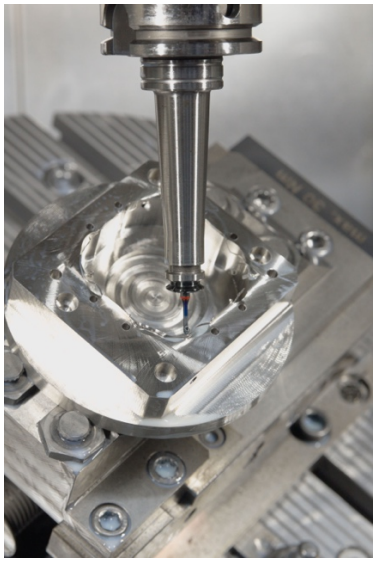
The Clamping System Also Supports Traceability

The powRgrip® clamping system from Rego-Fix also helps the contract manufacturer in Norderstedt to ensure traceability in this way. After all, the PGU9500 clamping unit monitors and stores the parameters of all clamping operations occurring during the manufacturing process, for example the time of the clamping operation, the inserted adapters and collets, and the clamping pressure. This package of features makes all of the relevant information available to the respective user for documentation purposes, if required.

Lead image

Rotating precision: Long protruding tools can be clamped quickly, easily, and reliably with the powRgrip® clamping system from Rego-Fix. The application at the contract manufacturer Kreyenberg confirms it.

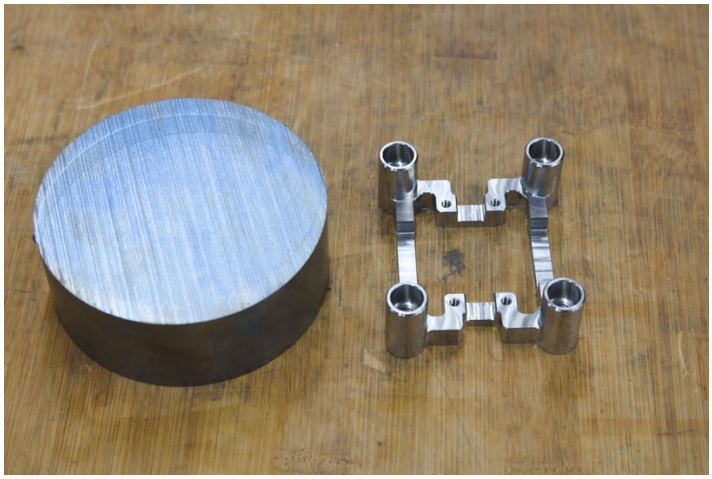
Image 1



((Werkzeug_IMGP3058_1.jpg))

Completely from scratch: At the contract manufacturer Kreyenberg, the production engineers process five-axis machine complex components made of steel alloys that are difficult to machine, including for medical technology and tool and mold making.

Image 2



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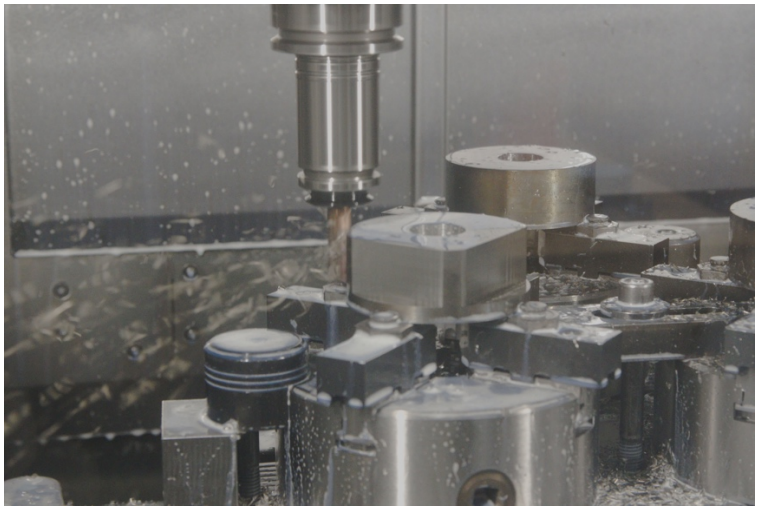
At Kreyenberg, the production engineers machine complex components made of steel alloys that are difficult to machine in five axes, including for medical technology and for tool and mold manufacturing.

Image 3



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When it comes to circumferential milling with end mills at Kreyenberg, the powRgrip® clamping system showcases its ability to reliably generate high clamping forces and holding torques that prevent axial pull out.

Image 4

((AV_PGU_IMGP3073_1.jpg))

Vincent Schmidt, who works in tool preparation, appreciates the ease of use of the PGU9500 clamping unit for the repeatable clamping of tools, even ones with a long projection.

Image 5

((Personen_IMGP3112_1.jpg))

They made the right decision in favor of powRgrip® (from left to right): Hermann Meyer from regional partner MMI Meyer + Münster GmbH in Verden as well as Division Manager Jan Bakowski and machine operator Florian Bodenstab from Kreyenberg.

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