

Optimize

Interplay of Quality and Economy: Optimized Tool Management Through Integrated Process Chain

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From the shrink fit chuck to the presetting device, aerospace supplier HEGGEMANN relies on consistent HAIMER quality in tool management. The benefits are visible: in the simple, user-friendly operation, the automated data transmission, longer tool holder and tool life, as well as great results regarding precision and component quality.

Anyone who, like HEGGEMANN AG, Büren, concentrates on the development and production of sophisticated metallic lightweight components and subassemblies, is a predestined partner of the aerospace and automotive industry. Since the company was founded in 1962, it has been supplying these two premium industries. Most of the orders come from the aerospace industry, for which HEGGEMANN holds all the important certificates. "We also undergo annual audits, not only by the German Federal Aviation Administration, but also by major manufacturers such as Airbus and Boeing, as well as first-tier suppliers such as MTU, Rolls Royce, and so on," reports member of the board Dr. Christian Howe. He emphasizes: "Our slogan is '360° – from Engineering to Production'. Accordingly, we support our customers in all phases of the product development, from conception and development through simulation and engineering to prototype construction, the general and functional testing or the production of small series."

Machining at the highest quality level

Highest quality standards apply at all times. This can be seen in production with state-of-the-art CNC milling and turning centers. Ulrich Ahlers, Head of Machining, explains: "Here we cut a wide range of very demanding materials from titanium, inconel, stainless steel, steel to high-strength aluminum. In most cases, it is individual parts and small series that have a high demand for precision and quality. Accordingly, not only the machine shop floor, but also the tools and the tool management are of great importance." Ulrich Ahlers and Juergen Ballbach, who is responsible for tool management, have taken on this field in recent years in order to optimize it: "Our desire was to achieve the greatest possible consistency in terms of the shrinking, balancing and presetting devices used. We succeeded in doing this together with our partner HAIMER."

Jürgen Ballbach has been using two HAIMER Power Clamp Comfort NG shrinking machines for six and four years, in order to shrink the required milling tools. "As the name implies, the intelligent NG coil and integrated contact cooling make these devices very comfortable to work with," says Ballbach from daily experience.

Balancing system is used for tools and flywheels

Two years ago, HEGGEMANN invested in a HAIMER Tool Dynamic Comfort balancing system. Ulrich Ahlers describes the reasons: "We mill here with up to 18,000 rpm and use cantilevered tools. If they show an imbalance, this puts a strain on the spindle and noticeably shortens its service life. These are considerable costs that can be avoided by the balancing process on the Tool Dynamic. In addition, finely-balanced tools achieve a higher level of precision and surface quality on the component due to reduced vibrations. "

To use the modular HAIMER balancing system in two ways, the HEGGEMANN employees had an idea. They wanted to balance not only tools, but also special products. These are elements for flywheels, for which the client orders the balancing including documentation. After consultation with HAIMER: no problem! Just the large standard software package was necessary be installed to define forbidden areas for balancing. The software tool "Alternative Balancing Positions" is also required here. Appropriate holders for the flywheel elements were made by the machining specialists themselves. Ahlers sums up: "We saved the required external service and thus time and money."

When an outdated tool presetting device was to be replaced, the staff in charge tested, among others, the Microset VIO linear offered by HAIMER – a fully automated presetting device. "Due to our small lot sizes, we have to measure tools every day. That is why we wanted to keep the effort as low as possible," argues Head of Machining, Ahlers. "The HAIMER Microset VIO has fully convinced us with all its capabilities. Especially since we now achieve a manufacturer's consistency for shrinking and balancing, which gives us further advantages." Among other things, he mentions the completed premium maintenance service contract, which covers all HAIMER devices, thus minimizing effort and costs.

Tool presetting – fully automatic and capable of communication

But first of all, the demands that HEGGEMANN had for the tool presetting. In addition to the fully automatic operation, which ensures simple operation and process-reliable measurement, it was important for the chippers to be connected to the hyperMILL CAM system used in the company. It should be possible to realize a functioning process chain from the CAM to the machine, which looks like this: The programmers create a tool list for each job based on the included tool library, which is then sent to the Microset VIO linear as a measurement job for tool presetting. The operator inserts the respective tool, selects the link to the 3D CAD tool data via the touchscreen and starts the automatic measuring process.

The HAIMER Microset VIO linear receives all the required information regarding X and Z dimensions as well as the starting position through the connection to the CAM system hyperMILL. The presetting device then supplies preselected actual values in the complete tool set via post processor and network to the intended machine tool.

Jürgen Ballbach appreciates his new presetting device also due to many other strengths such as the machine-like retraction force. In general, he is impressed by the quality of HAIMER devices, including HAIMER tool holders, which he now prefers to use. "Previously, we used different brands that are usually cheaper to buy, but do not have the same precision nor comparable life. We have found that if the quality is right – and at HAIMER it fits one hundred percent – the extra investment will pay off long term."

Cooperation with HAIMER is gaining momentum

The partnership between HEGGEMANN and HAIMER continues to develop. An example: When Jürgen Ballbach talked to Thorsten Böker, the responsible technical sales representative from HAIMER, about the difficulty of special processing, he had a proposed solution. It concerned a bifurcated component into which two elongated grooves approximately 100 mm (3.94 in) apart must be inserted as fits. So far, this task was taken over by an oversized carbide end mill, which had to be ground free by hand to get through the first tab. HEGGEMANN now manages this machining with HAIMER Duo-Lock™, a modular tool system with solid carbide exchangeable head milling cutters and extensions in various geometries and lengths.

"The switch to this tool has paid off in no time," emphasizes Ulrich Ahlers. The problem solver was

ultimately the extension that HAIMER has already delivered unencumbered. It saves the manual grinding of every single tool. All that needs to be changed is the HM tool head, which is considerably less expensive. "In addition, the screw head can be changed quickly at the workplace," mentions tool specialist Ballbach.

"Because the Duo-Lock™ tools can be preselected with a repeat accuracy of 0.01 mm (0.0003 in) due to their special interface, we do not even have to measure them after the change." In addition, the overall system runout of less than 5 µm ensures best machining results and according to Ballbach tool life is three times as long as those of the predecessor tools.

Currently, further HAIMER solutions are being tested and discussed at HEGGEMANN. For example, the aerospace suppliers are considering using the HAIMER Safe-Lock™ system for heavy machining of demanding materials in the future. Its constructive design combines the frictional clamping forces of the respective clamping process with a form-fitting connection and thus reliably avoids the danger of tool pullout during roughing or power milling.

Quality in products and partnerships

The process and results of cooperation with HAIMER not only satisfy the production staff and those responsible, but management also appreciates the quality and reliability of their partner. HEGGEMANN CEO Christian Howe: "Thanks to the high-quality HAIMER products, we have succeeded in further improving our production processes. The high quality products perfectly match the requirements of our customers in the aerospace and automotive industries. Additionally, we benefit from short distance to the HAIMER location in Bielefeld, where we always get fast, perfect service."

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