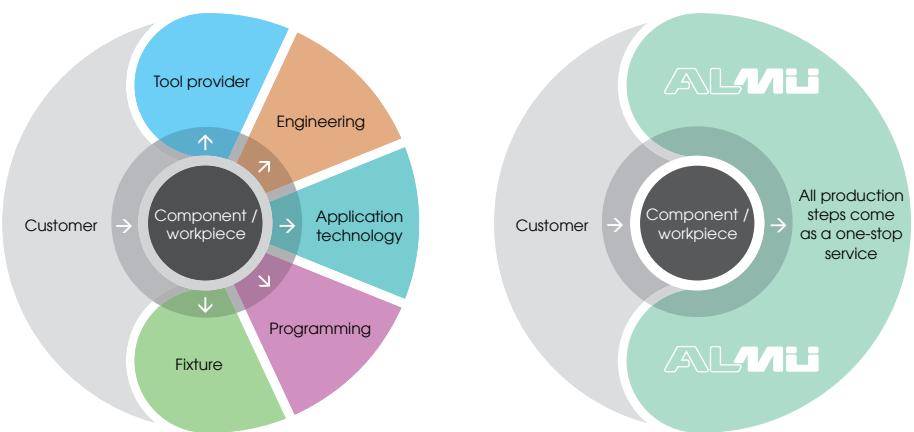


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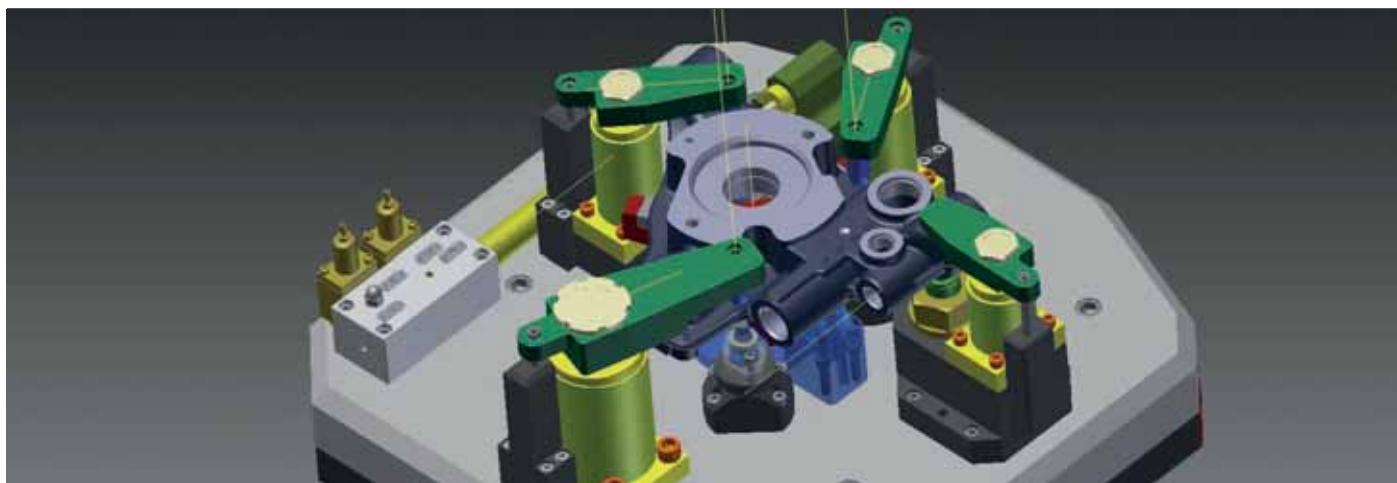
June 2015

PRECISION TOOLS AND FIXTURE CONSTRUCTION – YOUR COMPLETE PACKAGE „MADE BY ALMÜ“

Tools and clamping fixtures are two domains that have always been inextricably linked. In most cases, the tools are provided by a tool manufacturer, the fixtures by a fixtures constructor, or in-house. Now, add the domains of engineering, application technology, and programming, and we at ALMÜ call it our ALL-IN-ONE PRINCIPLE. Only if all components are perfectly harmonized, you can start serial production with the workpiece you have to have machined. In this Insider, we present you a project for SHW from Bad Schussenried in southern Germany.



One-stop service from just one contact who knows exactly what you need.



SHW's first predecessor was founded in 1365, making it one of the oldest industrial companies in Germany. The SHW Group has specialized in producing items such as brake discs, engine components, and pumps. In these market segments, SHW is one of the leading automotive suppliers.

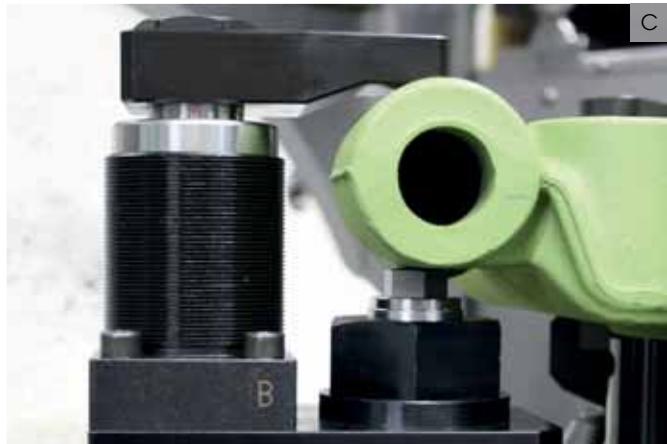
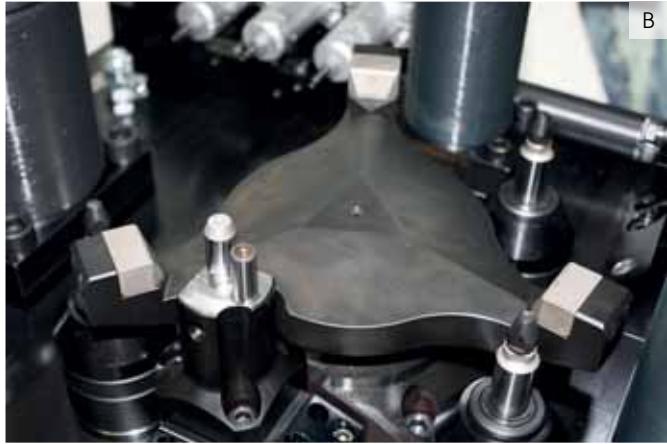
Thanks to the complete solution we present here, pump casings for agricultural machines are being produced on new

CNC machining centers, type Grob G551. Before, you could only get a daily output of 180 pieces, while in future, the facility will make it possible to produce 240 casings per day. For the decision in favor of letting ALMÜ's engineers and other experts take care of the entire project, a major reason was to get one-stop service provided by a single partner. Georg Grammenos is ALMÜ's executive manager for this project.

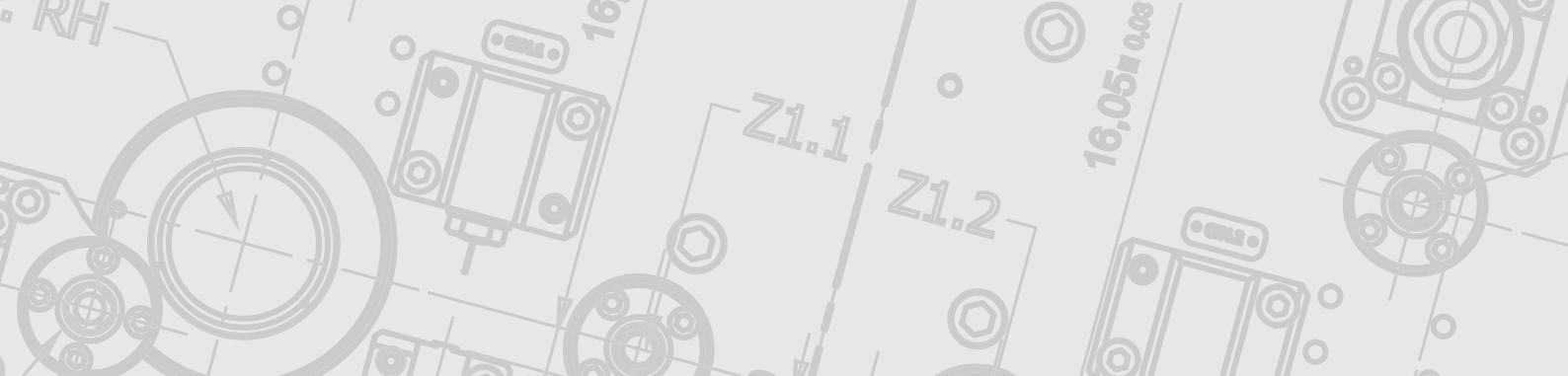
He puts all the advantages in a nutshell:

- One contact for the development of the project
- Close cooperation between Grob and ALMÜ
- Short changeover times
- Very high flexibility as for different versions of the workpieces
- Full collision control
- Analysis of interference contours
- Complete 3D simulation
- Aftercare during the ramp-up phase and beyond that

THE FIXTURES AT A GLANCE



200



The individual production cycles of the entire package, including two hydraulic fixtures for manufacturing the pump casings, are very complex. The machining task has been split into two clamping devices: with OP10, we use seventeen tools; as for OP20, six tools.

The initial pressure of the hydraulic clamping system was set to 150 bar. To ensure the raw part's correct positioning and orientation in the fixture, you begin by pushing it through a hydraulic positioning element (A) against a fixed stop (B), then you fix it over several swing clamps. To avoid vibration, the raw part is retained by a floating support (C). The latter is only extended when the swing clamp is closed. Moreover, the support element's contact pressure can be adjusted to avoid unwanted deformations of the raw part. Pressure and speed can be adjusted for each hydraulic element, and that directly by using the pressure control valves at the fixture (D).

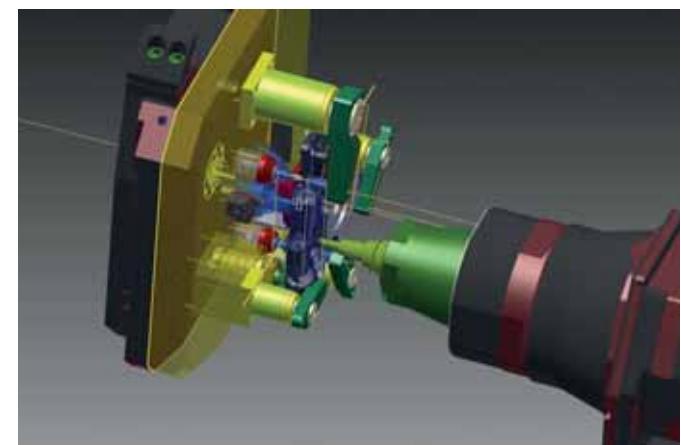
The clamping fixture for OP20 can be described as follows: the prefabricated part is clamped – by an aperture shaped in OP10 – using a sleeve mandrel. It is positioned over a spring-mounted pin sitting in a borehole that was also produced in OP10 (E). The sleeve mandrel's locking pressure is 40 bar, and can be adjusted to minimize elastic deformation of the part. Additionally, a hydraulic support (F) is used at about 120 bar. The latter serves as a support, also reducing vibrations.

Thanks to the pallet changer, OP10 and OP20 can be machined alternately. After one cycle, the finished component comes out of the five-axle machining center. With OP20, six tools come into operation. It is not essential to align the two OPs due to the sequential processing. During production ramp-up, the parts are initially inserted manually, while automated robot charging is introduced during the next stage.

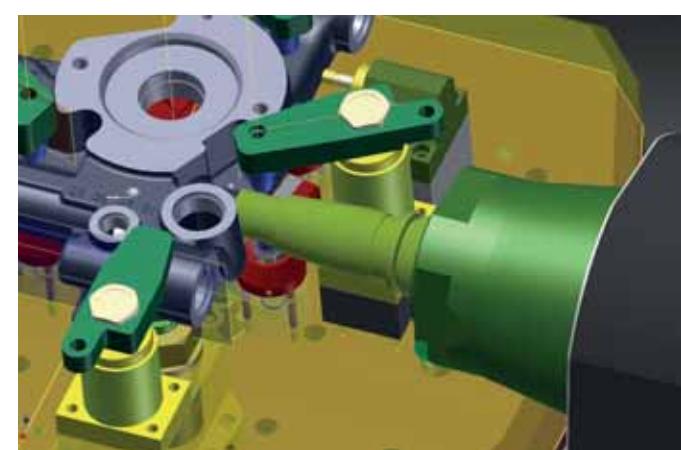
The entire project comprises two identical machines. All in all, ALMÜ delivers you four hydraulic fixtures including run-off tests, a process capability study with a Cpk of 1.66, measuring programs, CNC programs, collision analysis, cutting technology, engineering, a tool package, as well as on-site ramp-up support for you as our customer.

THE PROJECT AT A GLANCE

- Material to be machined: GJL-200
- CNC machining center: Grob G551 with pallet changer
- Hydraulic fixtures: OP10 and OP20, two of each
- Clamping device 1 (OP10): 17 tools
- Clamping device 2 (OP20): 6 tools
- Contact control: pneumatic
- Components produced: three different versions
- Capability reached: Cpk > 1.66

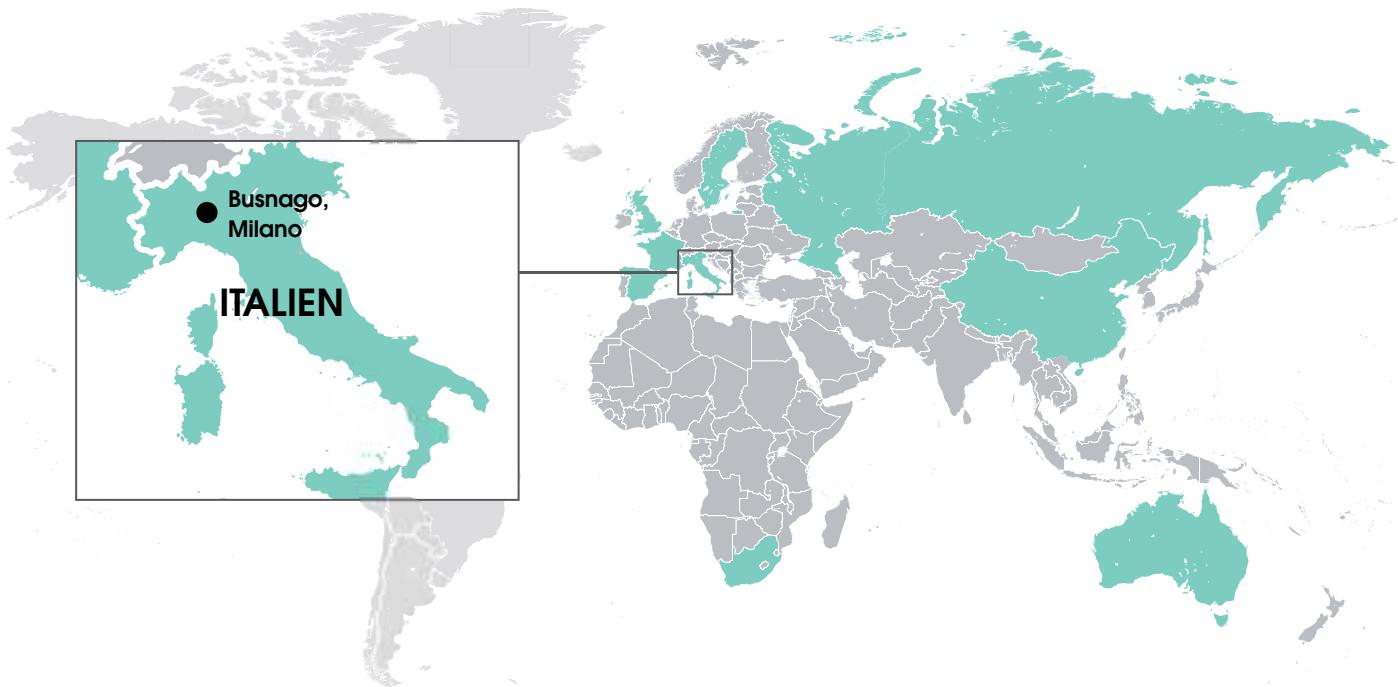


3D simulation of the machining process



Analysis of interference contours of an ALMÜ tool

ALMÜ SALES PARTNERS AROUND THE GLOBE



Our partner in Italy: B&B snc, Busnago



B&B snc has its seat the north of Italy, near Monza. Founded in 2009 by Carlo Bonanome and Roberto Baghini, their company focuses on precision tools for the automotive, aviation, and medical industry.

Roberto Baghini grew up in Germany where he attended business school. Carlo Bonanome has dealt with the field

of tool construction and production since 1994 – immediately after his engineering studies.

Since 2010, B&B has closely cooperated with ALMÜ. In the meantime, B&B has established itself as one of the three leading manufacturers for special-design precision tools in the Italian market.

YOUR CONTACT

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