



User Report
Automation

ZOLLER
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Mauth Werkzeug-Schleiftechnik GmbH

Economical Series Measurement with ZOLLER »roboSet 2«

Automation for Tool Grinders



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Automation for Tool Grinders

Mauth Werkzeug-Schleiftechnik GmbH in Oberndorf am Neckar benefits from the unattended, automated measurement of special tools in small and medium-sized series. As Michael Mauth says, he always focuses on innovative technologies. He founded his tool regrinding company in 1996. He quickly realized that there was great potential in developing and manufacturing special tools himself. He therefore soon invested in high-quality 5-axis tool grinding machines and suitable 3D CAM systems. Simulation software was added to test grinding processes

Profitable: Thanks to automation with the »roboSet 2« robot cell tool grinders measure special tools produced in series particularly economically.

for complex special tools before grinding. As Michael Mauth confirms today, the bold investments in pioneering technology have driven his company's success forward. Today, in Oberndorf 50 specialists design and manufacture sophisticated, mostly individually optimized special tools for medical technology, hydraulics, mechanical engineering, wood and plastics processing, the automotive industry and drive technology. Michael Mauth recently integrated TELA Präzisionswerkzeuge GmbH in Horb into his company as a sister company. There, a further 25 specialists mainly manufacture special tools with PCD and CBN cutting edges as well as individually designed gear cutting tools and tool holders, for example for gear cutting large gear wheels for wind turbines.

From One-off to Series

As Michael Mauth reports, he works closely with a large number of customers in the region, but also nationally and internationally, usually over many years. "That's why we initially produce special tools as one-offs. We often optimize them in collaboration with users and then produce a few more. If the developed special tools prove to be technically and economically optimal, we produce several thousand of them over several years in repeated order batches." The special service provided by the tool grinder in Oberndorf includes reconditioning and regrinding worn tools.

Measuring Every Step

Complex special tools usually combine several machining steps in one process. This is

why they prove to be economical, despite initially higher investments compared to standard tools. However, in order to realize this benefit, special tools must be manufactured with particular precision. Michael Mauth says: "Maintaining the highest quality and accuracy is crucial to the machining result with special tools. Workpiece geometries produced with a special tool cannot be corrected, as the accuracy is determined by the profile of the special tool." To ensure that the special tools ground in Oberndorf correspond to these requirements, Michael Mauth invested in suitable measuring technology several years ago. "Our production specialists measure directly in connection with individual grinding processes. This is the only way to guarantee that we produce high-precision tools that correspond to the specifications in every processing step and avoid time-consuming, cost-intensive rejects," he explains.

Suitable Technology

In his opinion, measuring methods and measuring devices that are also used in manufacturing companies for measuring and presetting tools are ideal for measuring tools close to production. "Such measuring devices are designed to be robust for use in production. They also provide the measurement data that users of the special tools determine and verify in production," he reports. This is why the specialists in Oberndorf measure the geometries of the special tools immediately after grinding on three tool inspection and presetting devices, among others »genius« and a »smartCheck« measuring machine from ZOLLER. "We opted for this manufacturer because the measuring machines and the software are very closely aligned with the company's practice. The specialists in Pleidelsheim know and take into account the requirements of the production technicians," says Michael Mauth. This makes measuring the tools much easier, especially for personnel who are mainly involved in grinding. Without extensive know-



Convenient and clear: Easy-to-understand graphics, icons and input fields allow tool grinders to easily program and monitor the processes for automated loading, unloading and measuring of tools.

ledge of measuring technology, the specialists can use the ZOLLER measuring machines to record and assess whether the ground special tools meet the specifications within a very short time. Operation is also very simple. Operators are guided consistently and reliably through the measuring process using easy-to-understand graphics, useful icons and logically sequenced menus.

Economical Automation

As Michael Mauth explains, he also considers the automation of numerous production processes for a tool grinder to be sensible and future-oriented. "To be and remain globally marketable, automation is simply indispensable," he emphasizes. This is why the tool grinders in Oberndorf have automated numerous internal processes, particularly for grinding series of several hundred special tools. The tool grinders produce tools in series of 10 or more on tool grinding machines with pallet stations and robots for loading and unloading. This allows the specialists to concentrate on programming and producing individual pieces as prototypes. Automation enables them to operate multiple machines. This proves to be particularly economical. The tool grinding machines are





Michael Mauth: "Automation is essential in order to be internationally competitive."

set up and loaded with pallets in standard work shifts. The blanks placed on them are then ground in the unattended night shifts.

Central Database

A company-wide network for data exchange between CAD/CAM programming, order planning and CNC machines also contributes to economical production with minimal effort and short throughput times. A central database contains all the information relevant to the production of the tools. The spe-

Compact and easy to program: The robot cell »roboSet2« can be used to load and unload different tool measuring devices from the manufacturer ZOLLER.



cialists can access this data via the network at almost all production stations in the grinding shop. Michael Mauth from Mauth Werkzeug-Schleiftechnik GmbH says: "This organization and structure creates transparency and speeds up internal processes considerably. Avoidable trips by individual specialists to different departments and lengthy inquiries are no longer necessary." Michael Mauth has also largely optimized the internal material flow. This ensures that the tool grinder can flexibly manufacture and provide even complex special tools in the shortest possible time.

Automated Measuring

The tool grinders in Oberndorf now also benefit from the advantages of automation when measuring special tools that are ground in series of 10 or more. Michael Mauth says: "With the current shortage of skilled workers, we are relieving staff of repetitive, tiring tasks. We take care to keep our skilled workers occupied in a meaningful way. This includes work that requires creativity and expertise." That is why he recently invested in a ZOLLER »roboSet 2« robot cell in conjunction with a »genius« measuring machine from ZOLLER. It can accommodate up to eight pallets with up to 150 special tools each. An integrated robot loads and unloads the connected measuring device. It also sorts out tools that do not meet the specifications based on the measurement results. Once the robot cell and measuring device have been set up and the pallets have been set up, the measuring process runs completely automatically and unattended. "This »roboSet 2« robot cell ensures that we can measure all tools completely, without exception, even in series with several hundred tools and thus guarantee their quality 100 percent," emphasizes Michael Mauth. For series of several thousand tools, the tool grinders in Oberndorf can at least measure random samples – around every fiftieth tool – very economically and at a reasonable cost.

After a few months of experience with automated measuring, the specialists in Oberndorf confirm that the system works reliably and, above all, relieves them of tedious tasks.

Reliable Relief

Depending on the dimensions, it measures several dozen to several hundred tools unattended overnight. It logs and saves the measurement data. It also transfers the information to the central database to which the »genius« measuring device is connected to. This means that the tool grinder can always create and provide his customers with the relevant documents on the quality of the special tools produced.

Michael Mauth confirms the economic benefits of the »roboSet 2« robot cell in conjunction with a »genius« measuring device from ZOLLER. He is also impressed by the excellent cooperation with the specialists at ZOLLER.

Practice-Oriented

"The technicians and engineers at ZOLLER always have an open ear and take into account the wishes and requirements of users in practice. They are very interested in optimizing the presetting and measuring devices for users," he says, assessing the performance of the Pleidelsheim-based manufacturer.



Focus on special geometries: The specialists at Mauth Werkzeug-Schleiftechnik GmbH develop and manufacture special tools for drilling, reaming, milling, grooving, turning and gear cutting for manufacturing companies all over the world.



Form grooving inserts ensure maximum precision when turning complex profiles.

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(From left to right)
Andre Lorefice, ZOLLER Sales,
Malte Otto, TELA Präzisions-
 werkzeuge in Horb,
Tillmann Zoller, ZOLLER Sales,
 and **Michael Mauth**,
 Managing Director of Mauth
 Werkzeug-Schleiftechnik
 in Oberndorf.

**Automation with the
 ZOLLER »roboSet 2«
 for measuring tools
 in series is proving
 to be very reliable
 and profitable.**

Focus on Special Tools

Mauth Werkzeug-Schleiftechnik GmbH in Oberndorf am Neckar employs 50 skilled workers to produce rotationally symmetrical special tools from 0.5 mm diameter made primarily from solid carbide for drilling, milling, reaming, sawing, thread milling, grooving in bores and shaping. For turning, the experts develop and produce grooving and forming tools with individually optimized special geometries. Mauth also manufactures hobbing cutters and gear skiving tools for individual gearing. The special tools have outstanding advantages for users when machining complex geometries, primarily due to the significantly shorter machining times and the accuracy of aligned workpiece shapes and geometries integrated into the tool.

At sister company TELA Präzisionswerkzeuge GmbH in Horb am Neckar, 25 specialists produce special tools with screwed or brazed inserts made of carbide, CBN or PCD with an effective circle of up to 250 mm. The tool grinders also manufacture tool holders such as HSK, SK, MK and Capto. From development and design to grinding and coating to regrinding and reconditioning of assembled special tools with cutting inserts, customers receive a comprehensive service. Mauth Werkzeug-Schleiftechnik is now a qualified partner for manufacturing companies all over the world. Around 30 percent of the special tools developed and manufactured are exported, including to the USA, Turkey, India and China.



ZOLLER Solutions

More speed, higher quality, safe processes – with ZOLLER, you increase the efficiency of your production. ZOLLER offers you outstandingly precise devices for adjusting, measuring and testing cutting tools, software, interfaces, cloud services and solutions for the automation of tool processes. You can combine all of this to create your individual system solution – on your way to the smart factory.

Presetting & Measuring

Tool Management

Inspection & Measuring

Automation

DRABMALTH-DE (05/2024)



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