

Press Release

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SOFTWARE SOLUTIONS

Tool management in prototype construction at STIHL

From measurement device to digital process chain with Zoller

For 90 years, STIHL has been serving its customers as the world's leading manufacturer of chainsaws and power tools for forestry and agriculture, landscaping, and construction. The company's development knowledge is concentrated at its corporate headquarters in Waiblingen. STIHL has trusted ZOLLER for over ten years with presetting and measuring processing tools in its test part service, the prototype construction service of the development center. For five years, STIHL has also been working with ZOLLER in the area of tool management.

With the updates to the milling machine fleet at STIHL, the number of individual components and assembled tools is increasing sharply. This makes keeping a central overview of all of the components and data involved in the milling process a challenge. As an established manufacturer of presetting devices, ZOLLER offered the company a "digital outlook" and expandable solution right from the start with its tool management software. Today, centralized tool data management is a reality in test part service at STIHL, and digital process chains in tool handling have been completed – a path that has paid off.

Development-oriented process chain – high manufacturing flexibility

The spectrum of components involved in the STIHL test part service is highly diverse, encompassing almost all components that later make up the finished product. Besides all of the rapid prototyping technologies, shaping and machining processes are also used to quickly and efficiently supply prototypes to development. These processes require short lead and reaction times, a broad variety of materials, and widely varying parts quantities between 1 and 100 in internal NC processing. Because of this, the entire process chain uses high employee and machine flexibility to quickly manufacture individual prototypes at a high level of quality.

Starting point: Machine fleet updates put tool management in focus

Updates to the milling machine fleet in test part service at STIHL, which involved moving from 3 to 5-axis simultaneous processing, have facilitated a considerable increase in milling efficiency and a significant expansion of the component portfolio. An increase in the number of milling tools accompanied the update. Suddenly, 30 to 60 magazine locations were available, putting extra focus on tool management. "With the 3-axis machines, the diversity of tools was still easy to manage, and operators could quickly ask one another which one of them was working with which tool. With the new machine capacities and stronger focus on CAM programming, tools needed to be clearly defined, digitally recorded, and locally assigned," Patrick Pfeffer, STIHL Project Manager for the

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The diversity of the spectrum of components in prototype construction at STIHL requires a high level of manufacturing flexibility.



»vention« presetting and measuring device, integrated into the manufacturing chain



Consistent data transfer to the machine



Over 450 standard tools and 1000 individual components are used in prototype construction at STIHL

introduction of the tool management system, says in describing the initial situation.

In focus: Digital networking

With the investment in presetting and measuring devices from ZOLLER, questions about the system's capabilities for integration and expansion were in focus. How can measuring devices and software be optimally integrated into existing NC manufacturing at STIHL, and which interfaces to machines, CAM, or simulation systems are required? "Here, ZOLLER simply performed the best for our shop floor environment, impressing us with flexible software customizing," says Christoph von Hiller, Group Leader in Prototype Construction at STIHL. "With a central tool database, software interfaces, and modular software, ZOLLER offered a digital outlook and clear opportunities for development – including with regard to tool management."

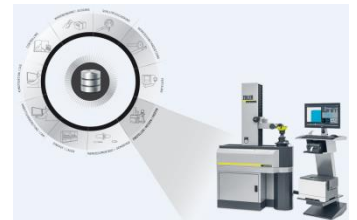
The challenge: Direct data exchange between measuring device and machine

Direct data exchange with machines was the top priority in selecting presetting and measuring devices. Prototype construction uses about 450 mounted standard tools and almost 1000 individual components. These are available on 220 magazine locations on 5 milling machines and a turning/milling center. ZOLLER »venturion« presetting and measuring device communicates with the machines via Siemens MMT, transferring measurement and specification data for the tools through post processors. Magazine location assignment is called up at the same time and provided to the CAM programming.

The goal: All information in a single central database

Before the expansion of the milling machine fleet, no tool planning and administration tools were used in test part service at STIHL. The tools used were painstakingly constructed in the CAM system for specific applications; manufacturing equipment was neither documented nor inventoried; there was no administration for storage locations, and magazine location assignments were visible only to machine operators. All process knowledge, from tool-specific technology data to component-related information, was stored on a local basis by the employee involved.

With the introduction of the new milling machine fleet, the goal was to link all equipment and combine all information relevant to manufacturing in a central database: Individual components, complete tools, technology data, fixtures and clamping devices, machines, orders, and capacity planning.



Complete equipment and all information relevant to manufacturing in a central database



Simple tool identification using a QR code



Standard tool pools: Reduction in product diversity



From right to left: Otto Lutsch (Baden-Württemberg Team Leader at ZOLLER), Christoph von Hiller (Group Leader in Prototype Construction at STIHL), Patrick Pfeffer (Project Manager for Tool Management Introduction at STIHL), Philipp Mahr, (Team Leader Application Technology Tool)

The task: Comprehensive tool management system

Zoller's task was clearly defined: A comprehensive tool management system that maps digital tool data, from importing manufacturer data to configuring tools and providing tools in the PTC Creo programming system and NCSimul simulation software with just a click.

The groundwork: Structuring the manufacturing environment

Of course, no tool management system can set up a basic framework or structure its own manufacturing environment. Therefore, the first step for STIHL was to develop an intuitive nomenclature to clearly identify all components and designate mounted tools. Warehouse space also needed to be structured and each individual storage location clearly identified.

The diversity of materials with which STIHL works require a wide variety of tools. An overview has been created to handle the task. Individual components and complete tools were clearly described and centrally categorized with the TMS software module "Technology data and object characteristics," based upon both geometric and technical process considerations. This allows operators to view the applications and materials for which a tool is available in the TMS database just by clicking a mouse.

The database: Centralized tool and measurement data management

Today, the ZOLLER tool management system is established as a database in test part service at STIHL. The company works with software modules for tool administration, including warehouse management and item statistics. The integration of presetting and measuring devices is a major advantage. This means that not only tool management data, but measurement data as well, is available in the central database – including interfaces to machines and to the CAM and simulation system.

The expansion: Tool data import via cloud services

Now, a complete and consistent digital process chain is a reality at STIHL. Tool data is imported into the ZOLLER TMS through the ToolsUnited platform, which provides comprehensive information and technology data for some tool manufacturers (e.g. Hoffmann Group). This means the tool management system ensures digital consistency from manufacturer data to the PTC Creo CAM system and NCSimul simulation program, as well as to the milling machines.

Payback: Reducing tool diversity

A new tool strategy is here: After two years, STIHL has been able to provide targeted filtering and analysis for an inventory of over 2,000 managed items and 800 mounted tools. The results are clear: The diversity of items has been reduced by more than half, and the number of mounted tools by more than a third. Creating individual component and standard tool pools, and converting to a tool manufacturer with optimum support, have also increased processing efficiency.

Conclusion: Necessary step towards a digital process chain

The significance of the project has only become clear as it has progressed. The introduction of ZOLLER tool management represents a step in the

right direction towards a forward-thinking, digital process chain for test part service at STIHL. "Now, tools are well and clearly organized. This has significantly reduced time spent searching for tools, leading to an enormous increase in efficiency and significant reduction in error rates," Patrick Pfeffer says, describing the benefits of the system.

For STIHL employees, the tool management system represents a level of communication, a tool data informational pool. "ZOLLER TMS offers an interface that can be individually configured so that everyone can work with it," summarizes Patrick Pfeffer. Today, all employees involved in the process chain communicate through the central database. In addition: "Combining all of our processing knowledge in a single database also allows us to use it for knowledge management in NC processing in our test part service. Recently, managing tools with ZOLLER TMS has allowed us to put our focus fully on our core duties, which are programming and 5-axis machining," says Christoph von Hiller.

Outlook

During the next step, a compatible and flexible manufacturing planning tool will be added to the process chain at STIHL. The company can also imagine using the TMS statistic module intensively to assess and distribute production orders or tooling sheets to machines. In any case, the step towards a digital process chain has paid off.

About ANDREAS STIHL AG & Co. KG

STIHL develops, manufactures, and distributes power tools for forestry and agriculture, gardening and landscaping, and construction. Since 1971, STIHL has been the best-selling chainsaw brand in the world. The company was founded in 1926 by Andreas Stihl, who developed the first one-man chainsaw. The company is active in over 160 countries, and has its main headquarters in Waiblingen near Stuttgart. As an independent, family-owned company, STIHL relies on its long-term orientation and concentration on its core skills: Developing, manufacturing, and distributing chainsaws and power tools. Most products are distributed through specialist retailers and service providers.

www.stihl.de

E. ZOLLER GmbH & Co. KG

With enthusiasm for inspection and measuring technology, E. ZOLLER GmbH & Co. KG. based in Pleidelsheim near Stuttgart, have been developing innovative solutions for greater efficiency in manufacturing processes for almost 70 years. More than 30,000 presetting and measuring machines with worldwide unrivalled software solutions have been installed to date. To an increasing extent ZOLLER is growing from a manufacturer of presetting and measuring machines into a globally active technology provider and system solutions specialist. An international network of subsidiaries and agents ensures the highest level of service quality with personal customer care.

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