

## User report

June 7th, 2019

E. Zoller GmbH & Co. KG  
Presetting and measuring machines  
Gottlieb-Daimler-Straße 19  
D-74385 Pleidelsheim  
www.zoller.info

Contact: Giulia Trostel  
Tel. +49 7144 8970-289  
Fax +49 7144 8970-70289  
Email: trostel@zoller-d.com

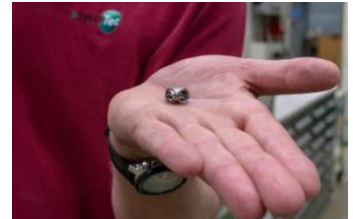
### 30% Faster Presetting of Turning Tools Thanks to ZOLLER »hyperion«

For some people, going to the dentist is routine - for others, the mere sound of the many dental tools regularly used in dentist offices around the world is enough to make them reconsider their trip! It may surprise them to learn, however, that some of the smallest dental instruments being used must work with high precision at speeds of up to 500,000 rpm. With that being the case, one can only imagine how small the motors and drive units integrated into a dental handpiece must be. SycoTec GmbH & Co. KG, located in Leutkirch in Allgäu, produces these parts and more, and the ever-increasing demands of the manufacturing industry have created some interesting challenges along the way.

SycoTec doesn't just manufacture delicate components for dental technology, though; today, they are one of the world's largest providers of high speed drives. This business area covers a wide range of custom-tailored electrical drives and motor components ranging from turbo generators to specialized motors and more. A third area making "Components", also requires excellent knowledge and expertise. The company provides a full range of technology like milling, turning, grinding, honing, laser welding, deep drawing and robotic welding. Handling the broad diversity of static and rotating tools used on their many different machines is a unique challenge for SycoTec. The company also needs to manufacture delicate components with very tight tolerances in small to medium batch sizes, while ensuring outstanding efficiency. In addition, turning tools on double holders must be set precisely each day to produce turned parts for dental technology. ZOLLER was selected to support SycoTec in this endeavor, with the »hyperion« presetting and measuring machine and »pilot« tool measurement software.

#### Growing Requirements Demand New Investment

SycoTec made the decision to achieve better efficiency through tool presetting many years ago. The company has been working with three ZOLLER measuring machines since 1985. Milling tools are measured on a vertical device, while tools for turning are measured on a horizontal one. "The machines have been running and running and running – for 20 years with no problems" says Benjamin Präg, Tool Manager at SycoTec. The company's growth and expansion of the machine fleet meant they needed more space. Facing growing tool requirements and increasing demands for efficiency, the company ultimately decided to add a new measuring machine to replace the three former devices.



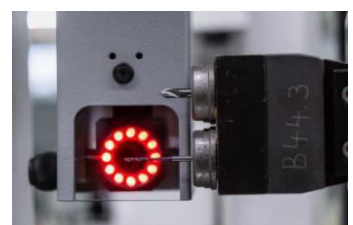
SycoTec produces highly complex components for dental technology in small to medium batch sizes – such as the head, pictured above, which is at the end of every dental handpiece.



One manufacturing challenge is the broad diversity of tools. SycoTec manufactures products using static tooling, as well as a wide variety of rotating tools.



Benjamin Präg, Tool Manager at SycoTec GmbH & Co. KG (l.) and Christian Merk, Head of Basic Production, explain the production challenges they face.



The horizontal clamping position on the »hyperion« is designed to exactly match clamping on the machine.

“For us, the »hyperion« presetting and measuring machine from ZOLLER was the only choice due to its horizontal clamping position, which is exactly matched to the position on the turning machine, and the universal application possibilities. There was no other company on the market that could offer a complete solution like this” confirmed Christian Merk, Head of Basic Production.

### **Easily and Efficiently Set Turning Tools at Center Height**

In the past, SycoTec used a complex process involving a dial gauge and sensor to set and measure center height. Today, the company benefits especially from the options offered by the swiveling incident light camera, which can be used to precisely inspect the cutting edge and exactly set and measure this parameter. “With this additional measurement and setting option, we get the “right clamp” much more quickly. Now, we not only have a brand-new, modern device in our tool presetting room, but we have also saved space and 30% of the time required for tool presetting. In addition, precisely set center heights mean fewer broken cutting inserts. This saves us costs as well” says Benjamin Präg in summary.

Another advantage is saving tolerances for the values to be measured. For example, SycoTec stipulates upper and lower tolerances for the corner radius of a cutting insert. If a worker accidentally places the incorrect cutting insert, the corner radius is measured as well automatically, without any additional action from the operator. If the measured values are outside of tolerances, the measurement device software detects this immediately and the worker is warned accordingly. This means the wrong insert never reaches the machine. “Cutting inserts can often look very similar. In the past, we often made errors with small cutting inserts, resulting in scrap parts” says Präg.

### **Challenge: Multi-Piece Rotating Holder**

Long bed and universal lathes used by SycoTec are fitted with both driven tools and stationary turning tools. The ZOLLER »hyperion« presetting and measuring machine is used in all areas, both for universal lathes from Index and long bed lathes with Star machines. In the latter, especially, multi-piece rotating holders are often used. These provide space for multiple turning tools on a single holder.

If one of these multi-piece holders is clamped on the »hyperion« measuring machine, a problem quickly becomes clear. The turning tools cover one another, making all around measurements more difficult. In addition, some of the cutting tool edges are outside of the center – not at a rotational position of 0, but rather offset by approximately 15 to 30 millimeters. It is impossible to measure these tools with a vertical measuring machine. “Thanks to the additional Y axis on the horizontal device, which we have never had from ZOLLER before, we can measure turning tools on multi-piece holders fully, quickly, and easily” emphasizes Christian Merk.

SycoTec was impressed after they were able to test the device live in production with their own tools. Benjamin Präg confirms: “We were able to



From left to right: Michael Haas, Sales at ZOLLER, Christian Merk, Head of Basic Production at SycoTec and Benjamin Präg, Tool Manager at SycoTec discuss further projects.

clarify our requirements directly with everyone involved on site, and become familiar with the device and the »pilot« measuring machine software quickly”

## Ready for the Future

To remain successful over time and be prepared for future requirements, SycoTec focuses on long-term planning for its machine and system fleet. “We want a device that won’t force us to make any compromises in the future” says Christian Merk. ZOLLER measuring machines offer the company a wide range of networking options to third-party systems that will become more and more important in the future, leaving them well prepared for new challenges in tool measurement. No matter what specialized tools the company adds to its tool inventory – ZOLLER has the right hardware and software solutions.

The »pilot« measuring machine software is open to all of the machine controls, offering a range of data transmission options. For example, SycoTec transmits measured actual data prepared by the post-processor to the Siemens-840D controls on the Index machines. This completely eliminates errors entering data into the machine, minimizing the “human” risk factor. “In the past, we typed the data into the machine by hand. This caused errors from time to time, of course. With data transmission via the post processor on the measuring machine, we have a much more convenient option” says Markus Herdrich, Head of CIP / NC Programming in Basic Production. “And with fast support from software application engineer at ZOLLER, everything was set up quickly as well” Präg continues.

Thanks to its in-house development, ZOLLER can react with flexibility to customer requests and software adaptations – like the adaptations SycoTec needed to the output format of a tooling sheet.

## »pilot« Measuring Machine Software

Company employees worked on the former measuring machines with the predecessor software »saturn« for many years. Today, SycoTec uses »pilot« measuring machine software for both tool measurement and to create a solid basis of tool data in the ZOLLER z.One central tool database. “Of course, our workers needed to get familiar with the software first. The older generation, in particular, had a little bit of a tougher time than the young ones, who have grown up with smartphones and computers. Despite its numerous functions, the interface has a very user-friendly structure. It is flexible too: I can jump to the tooling sheets during a measurement, change something and continue with the measurement right where I left off” says Benjamin Präg.

It is also very easy to create new tool data sets. When a new tool is measured, it is created immediately including its T number, ERP article number and photo. “However, our production process isn’t entirely paperless yet. We print out the tooling sheets, with images of the tools used. This makes work simpler and more intuitive for our employees” says



The third axis, the Y axis on the ZOLLER »hyperion« measuring machine, makes it possible to fully measure turning tools on multi-piece holders



“With data transmission via the post processor on the measuring machine, we have a much more convenient option” says Markus Herdrich, Department Manager of Basic Production at SycoTec.



The »pilot« measuring machine software is open to all of the machine controls, offering a range of data transmission options

Markus Herdrich. All of the tooling sheets for an order are collected in a folder. The company has thousands of these folders in use. If the same order is issued again, it can be completed more quickly as SycoTec can draw on the values it has already measured in the past.

### **Clear Increase in Efficiency**

Due to the medium batch sizes it produces, and the 5 to 10 conversions it carries out each day, SycoTec has to maintain a high level of flexibility. Because of this, it is essential to save as much time as possible even before part production begins. With a new ZOLLER measuring machine, SycoTec was able to save approximately 30% of its tool measurement time. Once the learning effect takes hold after a certain time, and after data has been input, they can save even more time. All in all, Christian Merk says: "We've saved time in tool measurement, greatly reduced our error rates, and the 'human' factor has become much less complex. In addition, we produce good parts more quickly and have less deviation."

### **Looking Toward the Future**

ZOLLER and SycoTec are already planning further optimizations to make production even more efficient. The project to fit the »hyperion« presetting and measuring machine with a mount for the swiveling TNL20/32 three-part holder for Index automatic lathes is already in full swing.

### **About E. ZOLLER GmbH & Co. KG**

E. ZOLLER GmbH & Co. KG., headquartered in Pleidelsheim near Stuttgart, has a passion for presetting and measuring technology, and has been developing innovative solutions for more economical production processes for almost 75 years. At present, the company has installed over 38,000 presetting and measuring machines worldwide as well as unparalleled software solutions. ZOLLER has developed from a manufacturer of presetting and measuring devices into a global technology and system solutions provider. An international network of branch offices and representatives guarantees the highest possible quality of service through personal customer consultation.

[www.zoller.info](http://www.zoller.info)

### **About SycoTec GmbH & Co. KG**

Dynamism and a powerful drive run through the entire 50 year history of SycoTec. The company laid the cornerstone for successful development in 1959 in its Leutkirch plant. Today, it is one of the world's leading specialists in high-performance drives in industrial and dental applications. For more than 50 years and with around 300 employees, SycoTec has been creating complex drive technology for key industries like machine tool manufacturing, dental and medical technology, aerospace, automotive, robotics, and renewable energies. The company also produces mechanical components and assembly groups with precision, innovation, and passion.

[www.sycotec.eu](http://www.sycotec.eu)



Benjamin Präg, Markus Herdrich and Michael Haas, Sales at E. Zoller GmbH & Co. KG, summarizing the benefits of the »hyperion« presetting and measuring machine.