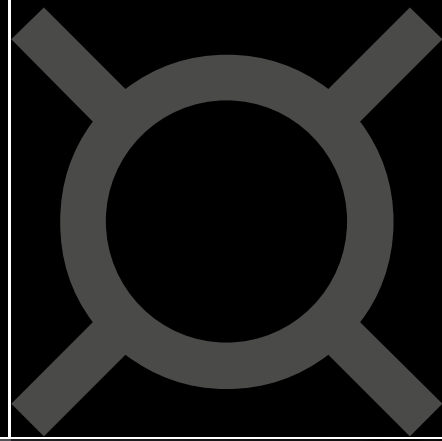


Z

MAGAZINE ISSUE 01 — 2015

zmagazine



The power of a single source

ZOLLER – a family-run business with a clear objective: solutions for the efficient manufacturing from a single source.

— TITLE

Solutions for efficient manufacturing – all from a single source

— TREND

Touch-screen operation for measuring machines

3D measurement technology

Intelligence in production: interview with Christoph Zoller

— FROM PRACTICE

Aircraft: Lufthansa Technik

Tools: SANDVIK Coromant

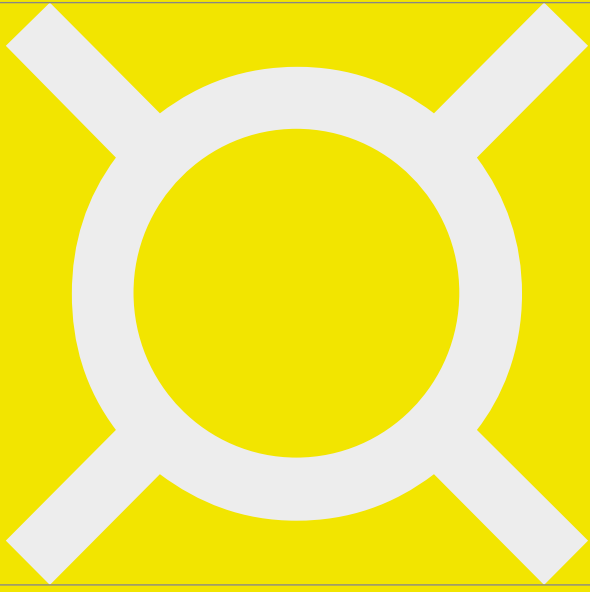
Watches: NOMOS Glashütte

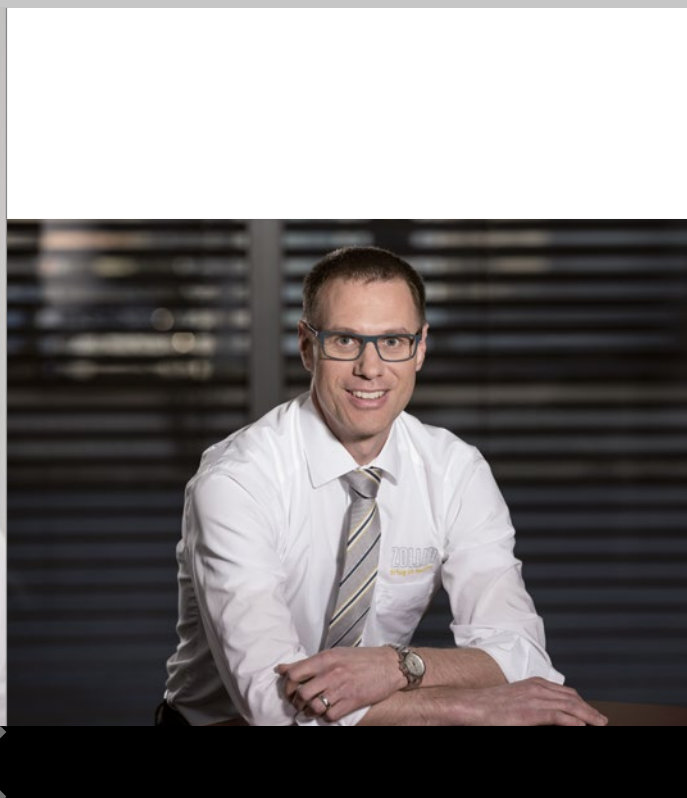
Simply measure – no problem

— ZOLLER UPDATE

ZOLLER makes things happen: development »hobCheck«

ZOLLER
expect great measures®





Dear readers,

the manufacturing industry is faced with a multitude of challenges: both customized products and large quantities need to be manufactured at high quality and with documented processes. More and more tool data needs to be accessible overall for safer processes. Numerous machines and software systems need to interact from the drawing through to the finished product. And always under increasing pressure.

To meet these needs, one needs to look at the entire manufacturing process – the best CNC machine is of no use if it is fed with inaccurate tools. The most sophisticated controls can only prove effective if they are also simple to operate. And data management software can only be effective with corresponding interfaces to other systems. In short: a thousand factors need to be taken into account.

Our recommendation: find a partner who can help you find comprehensive and future-oriented solutions. Be inspired by ZOLLER and find out about everything that is possible.

Enjoy the first issue of the new ZOLLER magazine.

Christoph Zoller
Managing Director ZOLLER

Alexander Zoller
Managing Director ZOLLER

Z magazine

SPECIAL

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All from a single source.
Solutions for efficient
manufacturing.



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Simple and operator-independent measuring?

No problem!

01.2015



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Review 2014

Sport /// Sport /// Sport /// Sport

ZOLLER employees not only give their best during work – they are also extremely active in their free time. And successful, too! Be it at the Strobike marathon where two ZOLLER teams covered 50 and 75 kilometers, or in Freiburg, where ZOLLER's Michael Haas and Simon Zimmermann ran the marathon, or in St. Pölten, where Michael Haas participated in his 4. IRONMAN.

Congratulations!

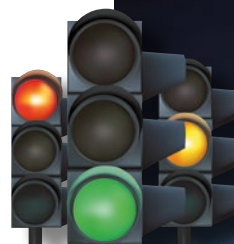


A prize for the champion!

Award for »pilot 2 mT« and ZOLLER Polska: „Artificiem commendat opus“ (honors the work of the master) – is the text on the award for innovation and successful company presentation which was awarded at the Toolex trade fair. Michal Pawlowski, Managing Director ZOLLER Polska, accepted the award. Here, too: congratulations to the Polska team!

Why »flash«?

This ZOLLER software module has not inherited its name from lightning as in thunderstorm, and also has nothing to do with the comic hero Flash Gordon. The name stems from the so-called „flash cards“ as used previously in manufacturing companies when tools were defective. Employees noted the tool to be replaced on these cards, took them to an assembler and he had to replace the tools. And meanwhile the machines stood still. ZOLLER »flash« automatically shows when a tool needs to be replaced, as simple as traffic lights with red, amber and green – this avoids machine downtimes.





Congratulations – ZOLLER »elephant« gets its ®

Letting untrained personnel measure tools? Sure – with »elephant« technology – now officially registered as a brand since 2014. By the way, the name was derived from Eberhard Zoller's granite elephant: „The elephant stands for a simple pictorial choice, like in children's books – only that tools are displayed instead of dogs, cats and elephants.“



ZOLLER as sponsor of the ESPRIT World Conference in Phoenix/Arizona

445 visitors from 28 countries met for expert discussions, including the topic Machining Cloud – and despite outdoor temperatures of 45° C, the relaxed atmosphere with interesting contributions in air-conditioned rooms ensured nobody broke out in a sweat.



Lunch & Learn the Bavarian way

Finding out everything there is to know about the ZOLLER Tool Management System over „pretzels and white sausages“? Can be done! At the Lunch & Learn events by ZOLLER and the CAM system provider OPEN MIND (hyperMILL®) in the technology campus in Cham, Bavaria. Demand was high. The first two events were booked out completely. No matter whether held in Bavarian, Low German or High German. ZOLLER comes to you!

Find out more at www.zoller.info/training



The Swabian Silicone Valley calls...

...and the American Press follows. Invited by the INDEX Group, six editors from the most important US trade journals made their way to visit the industry's market leader in Germany. In their discussions with Alexander Zoller their main interest was „Networked Manufacturing“.



Happy Diwali

ZOLLER's Hindu customers already celebrated the Diwali Festival of Light in October. The core message of the event is the victory of good over bad, of light over darkness and recognizing inner strength. Diwali can be compared with our Christmas and houses and trees are also lit up in these Hindu countries during this period. No matter whether it is called „Diwali“ or „Christmas“: a nice event under all circumstances!



Touch the champion

Hard to imagine daily routine without them: touch-screens – whether for tablets, smartphones or at the ticket counter. With »pilot 2 mT«, ZOLLER adds intuitive operating technology to the tool presetting and measuring machines and again underlines its pioneering role. Everyone is familiar with the technology, it is self-explanatory, easy to comprehend, saves on training and, last but not least, makes working more convenient.

THE HISTORY OF TOUCH- SCREEN TECHNOLOGY

1974

First transparent touch display, developed by Dr. Sam Hurst, USA

1979

3M patented Surface Capacitive Technology

1982

ELO Touch Systems invented the Resistive Touch Sensing Technology

1984

Bob Boie developed the first multi-touch screen at Bell Labs

» pilot 2 mT «

Up2date with intuitive touch-screen technology: »pilot 2 mT«

The clear structure, the touch functions and the customizable user interface – »pilot 2 mT« is a milestone in the intuitive operation of tool presetting and measuring machines. This allows cutting edge images, tool graphics and much more to be magnified as required, simply by dragging them into the main field by touch. Different users can define their user interface individually

according to their priorities. »pilot 2 mT« assists this application by focusing on the most important functions for tool presetting and measurement. For example, the automated cutting edge shape and measuring range recognition for over 100 cutting edge shapes or the »compass« navigation system ensure accurate measurement results with simple operation.



Tool selection and measurement per slide function facilitate operation by allowing the desired contents to be moved with fingertips through simple Drag-and-Drop. For example, this lets you move from the graphic library to automatic measurement in only a few seconds.

1989

ZOLLER TS20, Touch Screen ULTRAVISION: the first touch operation for a tool presetting machine

1996

Palm Pilot, the first commercially successful PDA with Resistive Touch-screen

2004

Nintendo DS with pressure-sensitive screen enters the market

2007

Apple's iPhone changed the world of mobile telephones

2010

The Apple iPad started a new era for the hitherto unsuccessful tablet PCs

2013

ZOLLER myTouch operating technology »pilot 2 mT«

The trend in metrology is moving toward 3D digitalization

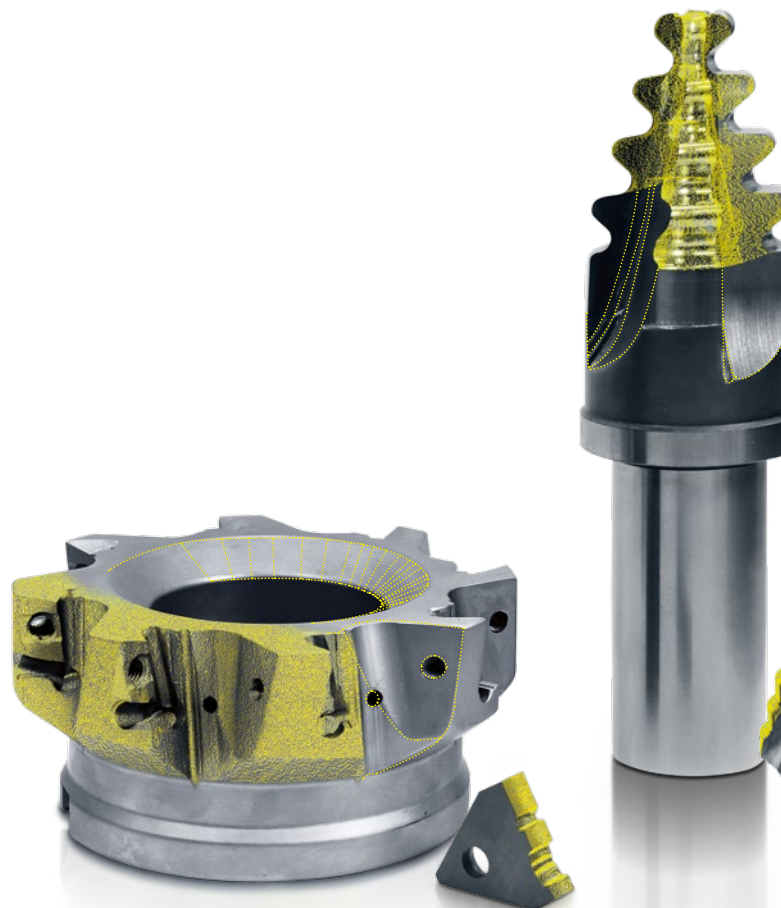
All depends on how you look at

3D changes our world and the way we look at things. 3D films provide close-up experiences and 3D printing is heralded as a new industrial revolution. And the third dimensions has also entered the field of metrology. Following the global trend of creating 3D data from existing objects, the digital model can also be measured. Some industries, such as the automobile industry, medical engineering or aerospace technology already benefit from the new technology. Others will follow.

In times where 100 percent quality control, traceability and process safety are major success factors for manufacturing companies, 3D measurement technology has advanced to become a future-oriented process. Many geometries can only be recorded completely and accurately by using 3D digitalization. The main advantages: even complex tools and workpieces such as insert pockets, implants and turbine blades can be displayed, measured and evaluated with this method. That means, the data sets can be processed further on external workstations, in particular in the customer's own CAD program.

New technologies smooth the way

Technical advances, such as structured light projectors, novel calibration methods and even more precise machine control have enabled 3D digitalization to be utilized as an economic instrument. ZOLLER have proven themselves as a industry pioneer in this field. As a result, the ZOLLER inspection machine »3dCheck« combines all the benefits of an optical 3D sensor, high precision CNC axes and fully automated transmitted light image processing.

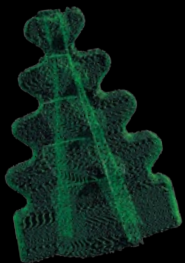




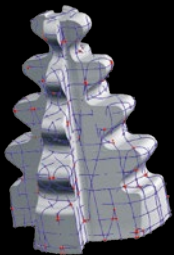
Point by point to precise images

On the »3dCheck« the route to the complete 3D model is via six CNC-controlled axes. The intelligent design and a specially developed calibration method dispense with the need for registration marks. Subsequent assembly of the 3D partial sections is fully automated via a uniform coordinate system. The »z3dCam« records the object at the precisely correct distance from different perspectives. In a first step, this creates a point cloud followed by a display of the object in the shape of a digital graph – in real time. Using transmitted light processing, the measured data for diameters, radii and angles as well as as cylindricity, concentricity and wobble compensation, run-out, point and axial angles are determined.

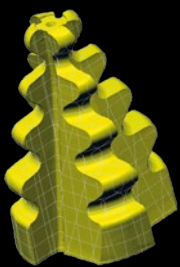




A point cloud of the measured object is created with the »3dCheck« which is then transformed to a polygonal model.



Using an appropriate CAD software, this allows parameterized reverse engineering.



The result is a CAD model which can, for example, be used for further design steps.

Perfect interplay: 3D digitalization – CAD

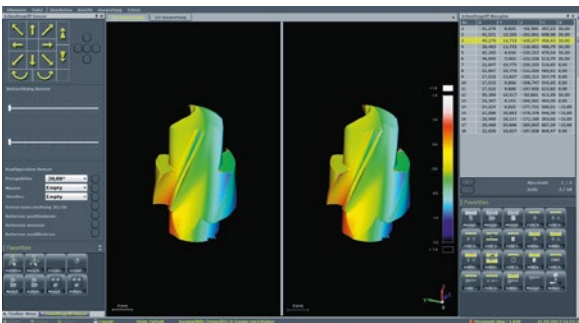
Process-oriented 3D simulation immediately allows usable conclusions as to the shape of an object. It allows an exact 3D analysis based on a target/actual comparison or on individual geometries for an ROI (Region of Interest). To this purpose, the measured data can be exported in a standardized format and processed workplace-independent in the customer's CAD system or with 3D analyses.

Excellent perspectives for efficient working

Users appreciate the easy, time-saving handling of the »3dCheck« – in particular the software and its intuitive operation. It is based on the proven »pilot 3.0« ZOLLER image processing system and offers numerous measuring and evaluation algorithms for an extensive tool portfolio.

Huge number of application options

Using the »3dCheck«, a host of different tools and workpieces up to a size of 400 mm can be digitalized, inspected and, if necessary, be corrected in a timely manner. This increases quality and efficiency at every stage of the production process – from development, serial production to subsequent designs. For example, in the fields of research and development, in quality assurance as well as reverse engineering, this leads to distinct and measurable benefits – with micro precision!



Compilation of the desired and once learned positions, including target values for the CNC axes, measuring window sizes, lighting values and measurement-specific parameters.

A host of different industries benefit from the new technology. For example, the »3dCheck« offers added value in the making of tool molds for inspecting and measuring of electrodes and formed components, or the sample recognition or generation of old tools without drawings for subsequent repairs or manufacturing anew. The innovative measuring machine also provides data with exactly the accuracy and reliability ZOLLER customers are accustomed to for the archiving of products for catalogs.

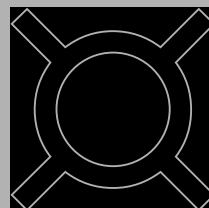
Author: Vadim Zaiser

Further information: www.zoller.info



»3dCheck«

Measuring in the third dimension



intuitive
fast
accurate

- Fully automated measurement
- Fast 3D simulation
- Measurement of coordinates and reverse engineering
- Easy to operate

ZOLLER
expect great measures®



IN FULL VIEW. UNDER CONTROL. ALL FROM A SINGLE SOURCE.

If one would regard tools in the manufacturing process as employees, the skills description would be clear: accurate, reliable, durable. However, some tools do not appear to have the right attitude: there are lazy fellows among them who hide away somewhere in the warehouse and do nothing for their money. Or even worse – the wannabe stuntmen who create attention and cause major damage with machine crashes.

To be saved from such expensive also-rans, tools should be monitored and controlled precisely throughout their entire life cycle. On the next few pages you can find out what the „working life“ of a tool should ideally look like, how you can create optimal conditions and what your benefits could be.

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anufacturing already sets the course for a successful „working life of tools“: by measuring all important parameters and documenting them according to DIN for the manufacturing company.

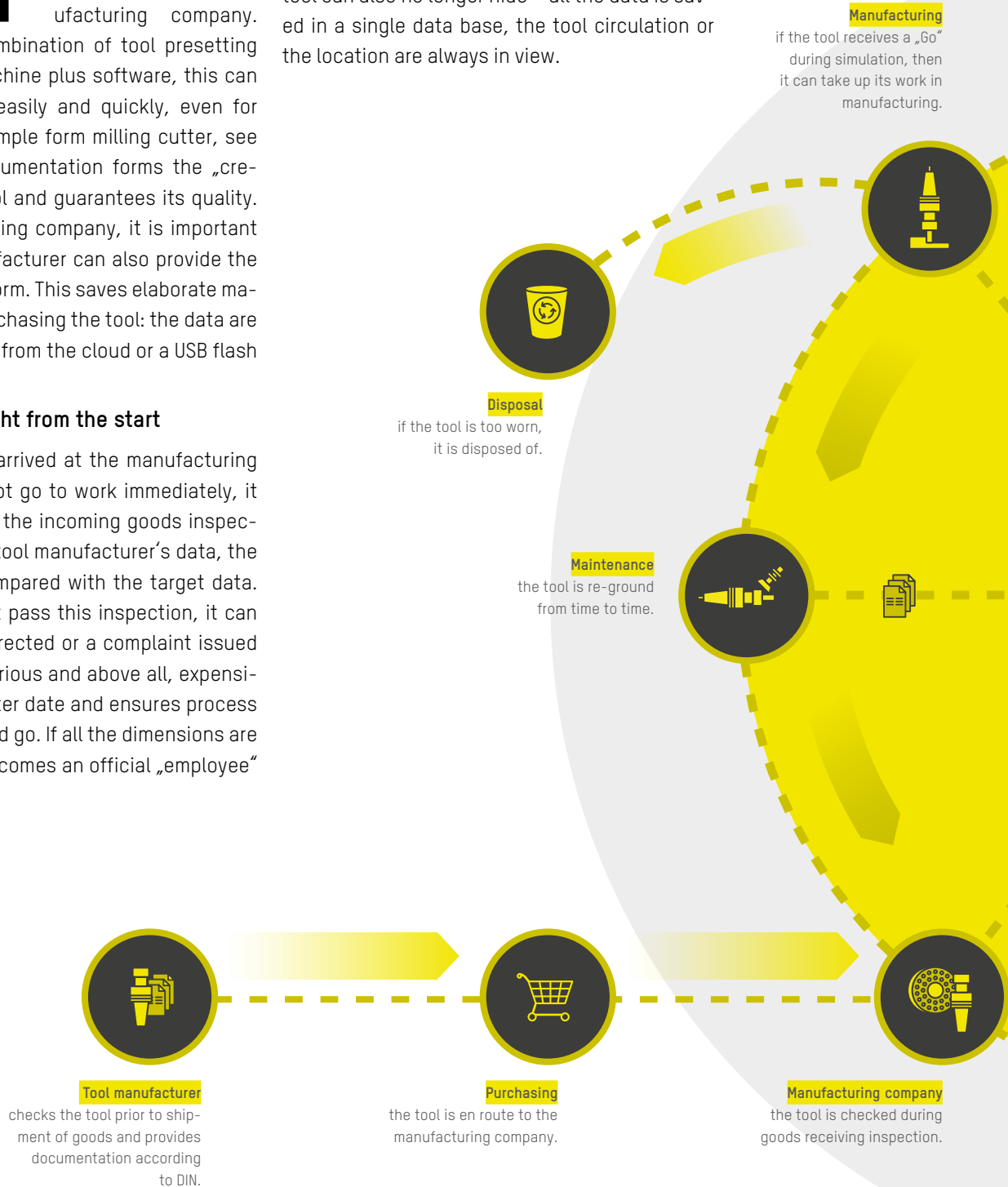
Using the right combination of tool presetting and measuring machine plus software, this can also be achieved easily and quickly, even for complex tools (example form milling cutter, see page 38). This documentation forms the „credentials“ of the tool and guarantees its quality. For the manufacturing company, it is important that the tool manufacturer can also provide the data in electronic form. This saves elaborate manual entry after purchasing the tool: the data are simply downloaded from the cloud or a USB flash drive.

Process safety right from the start

Once the tool has arrived at the manufacturing company it does not go to work immediately, it first needs to pass the incoming goods inspection. Based on the tool manufacturer's data, the actual data are compared with the target data. If the tool does not pass this inspection, it can immediately be corrected or a complaint issued – this precludes serious and above all, expensive surprises at a later date and ensures process safety from the word go. If all the dimensions are correct, the tool becomes an official „employee“ in manufacturing.

All tool data on view – with a single data base

The measured data are saved in the data base and linked to the virtual data. Using appropriate interfaces, the various departments in the company always have all data available in real time, job tickets or folders are a thing of the past. The tool can also no longer hide – all the data is saved in a single data base, the tool circulation or the location are always in view.





POSITIVE OUTLOOK

With ZOLLER, you can import the tool data from all tool manufacturers who make their data available electronically per mouse click. And, depending on the system, this not only applies to individual components, but also entire assemblies. This makes your manufacturing process simpler, better and faster than ever before.



Collision simulation

the contours of the complete tool are transferred to the CAM system and processing is simulated to ensure safe procedures.



Measuring/presetting

The complete tool is preset for its intended task on the tool pre-setting and measuring machine.



Assembly/disassembly

Various tool components are assembled to a complete tool.



Comprehensive data base

The virtual and real data are saved – and can then be accessed by all departments due to corresponding interfaces.



Store location management

the tool is assigned a location in the warehouse – and can be located immediately when required.





Processes under control – with collision-free guarantee

Once the tool is required in manufacturing, it is complemented by further components. The final assembled complete tool represents the so-called „project team“ for the corresponding task. And as a team is always more than the sum of its parts, the complete tool first needs to be sent to a tool presetting and measuring machine to be measured with micro precision and to be pre-set for the task on the machine. To prevent machine crashes 100%, it is best to also conduct a „crash test“. There are a number of options here, for example, the scanned contours of the tool can be transferred directly to the CAM system via interfaces in order to simulate processing with real data.



Tool data under control everywhere: with the ZOLLER App you can access information anywhere via your smartphone or tablet.

Only once collision-free operation has been ensured, may the tool finally proceed to the CNC machine.

Maximum control, minimum effort

But this does not spell the end of control. During the „daily working day“ the tool is under constant supervision – quite simply by using a comprehensive data base and easy-to-operate machines. For example, the service life of the tool is monitored and the production employee is warned in time if a replacement tool is to be prepared. This reduces machine downtimes to a minimum. The tool then passes to re-grinding – usually outsourced – and then returns to manufacturing. Here it undergoes goods receiving inspection and the cycle repeats itself – over the entire „tool working life“. And once the tool has outlived its purpose, it is not only deleted from the stocks, but a new purchase order is triggered automatically and the vacant job is filled immediately. This ensures data consistency from the cloud to the machine, from the linking of virtual and real tool data via the complete process chain and the entire lifecycle.

Tools under control, costs reduced, efficiency increased

When examining such an exemplary tool lifecycle, one thing becomes abundantly clear: accurately measured and well organized tools save time and money by avoiding errors and unnecessary work. Duplicated data storage is a thing of the past, as is the tedious manual entry and never-ending search for tools or inadvertent multiple purchases. All data can be verified and passed to customers at any time via inspection protocols. Micro precise measured and preset tools guarantee consistently high manufacturing quality and minimize machine crashes and downtimes. In other words, production is faster, more flexible and virtually fault-free – at reduced tool costs. If one assumes that hundreds of tools are being used in modern manufacturing companies, then it becomes clear how massive the hidden potential is here.

All from a single source: machines, software and always the right solution

However, in many companies this potential is not even tapped in the slightest. Why? For one, the processes involving the tool are often not scrutinized enough. In terms of investment, high-tech machinery ranks tops, the periphery is often neglected. In addition, optimization of tool management initially spells work – all systems need to be adapted, interfaces must be provided, data needs to be reviewed and production still needs to be kept running. Nonetheless, companies should react now – as the costs resulting from faulty or poorly organized tools are tremendous. And in

future, more flexibility and greater speed will be demanded – although the number of skilled persons available is decreasing. Processes therefore need to run safely independent of the operator. To achieve this, data transparency needs to be ensured across the entire company as well as easy operation of hardware and software. Sounds complicated? Not with a partner who can offer you everything you need from a single source! On the next pages we will show you two examples from companies who have already optimized their periphery successfully with ZOLLER.



Smooth running:
JAI and CERATIZIT



✂ Author: Nicole Dewald

✂ Further information: www.zoller.info

PRESETTING SOLUTIONS

SOFTWARE SOLUTIONS

INSPECTION SOLUTIONS

AUTOMATION SOLUTIONS

From machine manufacturer to system provider – ZOLLER solutions:

Cost-effective manufacturing processes are the goal of everything that the family-run ZOLLER company tackles. For 70 years, and now in its third generation, the spectrum of services has been expanding consistently. As innovation leader in the field of metrology, ZOLLER already offers its customers considerably more than just tool presetting and measuring machines: customized system solutions through the intelligent combination of machines, software and services. Companies worldwide benefit from the know-how of the company in Pleidelsheim – with measurable success.

STRONG PARTNERS

These two companies have optimized their manufacturing extensively.

EXAMPLE FROM PRACTICE | JYDSK ALUMINIUM INDUSTRI (JAI)

Getting from part to part faster

The challenge: the objective was to speed up processes all-round: more machine hours per day and more parts per hour were to be achieved. To lower production times, the interim periods between a finished part and the next were to be shortened in specific.

The solution: JAI found the ideal partner in ZOLLER – everything comes from a single source here, from external tool presetting and measuring, via safe data transmission to the machine through to tool organization. For example, the data on the eleven machines is now called up in real time via the CPC networking system – a process-safe and time-saving procedure.

The result: „With the ZOLLER Tool Management we save a lot of time as everyone knows where the tools and individual components are. The tools are organized far better. Today, I know exactly which tool I need for which part and how often. In addition, the ZOLLER tool presetting and measuring machine provides us with data we can trust 100%“, states Claus O. Nielsen of JAI. The modular system was introduced step by step and will be extended further. This way, JAI benefits more and more from the ZOLLER overall solution.



Aluminum foundry
7400 Herning, Denmark

JAI is one of Europe's largest aluminum foundries and based in Denmark. The company produces chill-cast components for the production lines of leading European industrial enterprises. JAI has been working with ZOLLER products since 1991, initially in the field of tool presetting and measurement, and in 2012 the ZOLLER Tool Management Solutions were introduced.

www.jai-alu.dk



EXAMPLE FROM PRACTICE | CERATIZIT

Optimized process sequences

The challenge: tool data saved on different systems, components without links to complete tools and warehouse management requiring considerable manual documentation – all at permanent further development of the product portfolio: new solutions were necessary for the production periphery and the process procedures.

The solution: CERATIZIT already had good experiences with the ZOLLER measuring machines – now the partnership was extended to cover tool management. First, the tool data were transferred to the TMS Tool Management Solutions: by straightforward outputting and inputting from the Kardex cabinet system. Close cooperation continues on complex tasks such as graph generation according to DIN 4000.



Hard material solutions

72186 Empfingen, Germany

The result: „The TMS Tool Management Solutions warehouse management immediately tells us which tool is in which drawer“, explains Elmar Schweizer of CERATIZIT. The ordering system has also been optimized: „The design department only needs to provide the drawings. Using the graphs from the system, it is then easier to order tools.“ This way CERATIZIT benefits all-round from the ZOLLER solutions – from an easy-to-operate measuring machine via consistent data through to an overview of the warehouse and fast ordering.

CERATIZIT S.A. is a pioneer and global player in the field of demanding hard material solutions. The company is established in more than 50 countries and is the world's market leader in a variety of selected industrial segments. This benefits customers, among them the automotive industry, mechanical engineering or tools and molds. The ZOLLER solutions from a single source have convinced the customer.

www.ceratizit.com

Christoph Zoller on the topic

Intelligence in production

What is the status of the lead topic at the EMO 2013 today? How is the topic being implemented? Which intelligent solutions are available, and above all: what are they contributing to the manufacturing industry?

✂ **Mr Zoller, is „Intelligence in Production“ still a topic for you or was it just a buzzword?**

In principle it does not matter whether you call it „Intelligence in Production“, „Industry 4.0“ or „Smart Factory“ – what is always meant are more flexible, adaptable manufacturing processes with consistent, verifiable data and a high level of user-friendliness. Obviously, combined with the greatest possible efficiency – so therefore the topic is still current for us.

✂ **Can you describe for us, how „Intelligence in Production“ correlates to the solutions from ZOLLER?**

Today, significant increases in productivity are no longer possible through the further development of machines, equipment or tools. Therefore, the existing systems must communicate better and faster with each other. This is where ZOLLER provides the link: TMS Tool Management Solu-

tions, tool presetting and measuring machines. The tool data are processed in such a way that everyone involved in the production process can access and use the required information: to create a CNC program, to have the tools available in time, to conduct the inspection of the tools, tool presetting and provision to the machine. The major variable in the manufacturing process lies between the machine spindle and the workpiece: the tool! And ZOLLER manages this variable with linked systems.

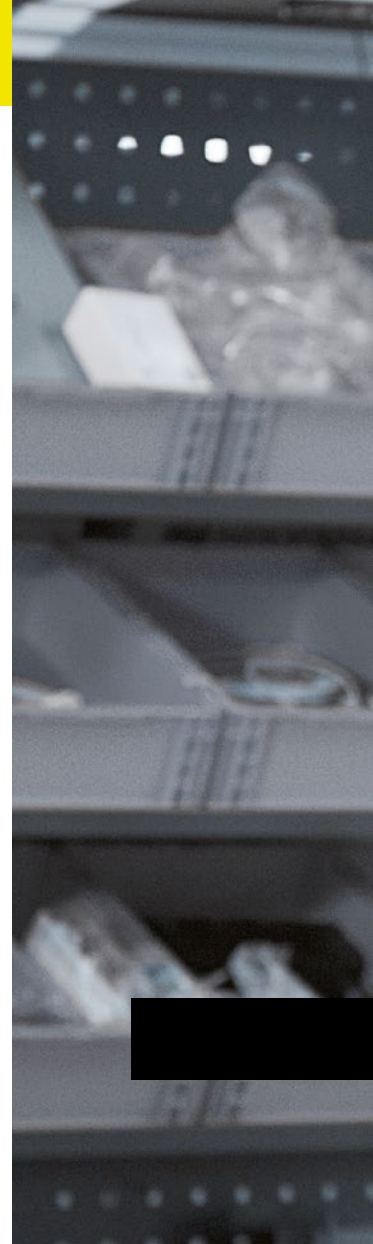
✂ **Intelligence is a broad term. What does „intelligent“ actually imply at ZOLLER? Does this only cover the software, or does it also relate to the machines and the service?**

For ZOLLER, intelligence means that all our products have contributed to a proven increase in productivity at the customer in their respective requirements and that the potential of the

ZOLLER products can be utilized fully by the customer. And this across all company sizes – it could be a solution for a business with one CAM workstation and 3 CNC machines, or a large company with 200 CAM workstations and hundreds of machines. Utilizing the full potential of the products in all its applications – that is what we mean by intelligence.

✂ **To be concrete: for example, what does intelligent manufacturing mean in the field of inspection and measurement?**

Someone who inspects tools either manufactures them or buys them in. In both cases the tools need to be checked according to specifications and the results provided for further processing.





„ ... With a passion for precision is how we give our customers
decisive advantages in production“

Christoph Zoller, Managing Director ZOLLER

An intelligent solution needs to accomplish these requirements accordingly.

✎ How exactly can a company engaged in grinding and sharpening technology operate intelligently and efficiently today?

ZOLLER measuring machines and software can provide efficient manufacturing. In concrete terms, the following products can be mentioned: ZOLLER »genius« measuring machines, »smartCheck« for final inspection, the »pom« series for production-related tests, and all this linked to the ZOLLER »pilot« image processing system with interfaces to optimize the flow of data.

✎ Extensive pressure on costs as well as high demands on efficiency and environmental protection require more cost-efficient concepts than ever before. How is ZOLLER equipped to deal with this?

ZOLLER makes companies with existing machines more productive, meaning, more can be produced with the same number of machines. This lowers costs – and, as a consequence, is also environment-friendly. ZOLLER as a company, is highly productive as a result of appropriate systems being introduced in the past and continuously being developed further. This has been confirmed, for example, by the DEKRA certificate.

✎ Zlmagazine interviews
Christoph Zoller

Intelligent production solutions for the future

„Intelligence in production“ was not only the main topic at the EMO 2013, but remains a prime requirement for today’s manufacturing. This includes an holistic approach to manufacturing processes – the linking of machines and software, data transfer, supporting the machine operators with simple systems and, of course, fast and uncomplicated service by the providers.

This is why ZOLLER continuously develops intelligent solutions with a view to overall manufacturing – only holistic thinking can lead to safe and efficient production.

Up-to-date with
the free ZOLLER
Newsletter





Safe take-off!

Flexible technology for individual customer requirements.

A modern aircraft is a highly complex machine. The safety of passengers depends on the fault-free functioning of components and perfect interplay, as does the reliability and cost-efficiency of the flight operations of an airline. The basis is state-of-the-art technology on board – and behind the scenes. In addition, this needs to allow maximum manufacturing

flexibility in the manufacturing division „VIP & Executive Jet Solutions“. The spectrum of parts is considerable, customer wishes are extremely individual and the overhaul and repair work difficult to predict. Extendable systems and maximum data consistency are essential prerequisites here – Lufthansa Technik has the right partners in CAMTECH and ZOLLER.



Lufthansa

Airbus A380-800
Berlin





State-of-the-art technology on board – and behind the scenes

Next to safety, an extremely high level of quality is paramount in the mechanical manufacturing in the business division „VIP & Executive Jet Solutions“. The individual requirements include the production of high quality components with new geometries daily. To this end, a tool pool of approximately 2000 different complete tools is available. The sophisticated NC programs for these complex geometries are programmed with the Edgcam CAM system since the year 2000, and since 2009, also with simultaneous 5-axis operation. These are used for milling both prismatic parts and free shapes.

More and more tool data

Over the years, new requirements were added which accumulated in even greater volumes of tool data. Distributed over several data bases (for example, Edgcam, machine controls as well as Zoller), this resulted in redundant data storage leading to increased inefficiency and possible sources of errors due to multiple manual data entry.

Safety, quality and flexibility

Against this background and the purchase of a state-of-the-art machine pool, investment was also made into high-tech peripherals. The objective was not only to increase process safety, but in particular to ensure maximum flexibility to respond to market changes. Up to this point in time, only a single manual tool presetting machine was in use, the labels were printed and the data were entered manually into the machine.

Expandable solutions

Since 2007, the CNC-controlled tool presetting and measuring machine »vention 450« is in operation. „Following a cost-benefit analysis, the decision to go with ZOLLER was made“, explains Mr Frank Pieterwas, Planning Engineer. „Crucial for us was the expandability and the linking to the machines.“ In addition to the outlook of introducing a system-superimposed tool data base, there were also a number of details in favor of ZOLLER. „For example, the graphic user guidance for fine drill tools which is normally quite elaborate, or the fact that I can view the cutting edge perfectly with a magnifying glass“, says Mr Jan Horn, CAM specialist at Lufthansa Technik.

A leading tool data base

The basic machine was built up successively over the years and Tool Management Solutions was introduced. „We wanted the ZOLLER data base, being the leading system“, says Jan Horn. „If a new tool is to be set up, then it should be entered in the ZOLLER Tool Management data base, so that the name is correct, as well as the description and the T-number. Thus, once generated, it is used across the entire process by all employees in a uniform and consistent manner.“ Already in 2011, CAMTECH developed the interface between Edgcam and the ZOLLER Tool Management Solutions. In 2013, the Edgcam CAM system, the tool stores of the CNC machines and the ZOLLER tool presetting and measuring machine were linked via the ZOLLER data base.

Data consistency ensures operator independence

This ensured data consistency from the CAM system through to the machine. All data are saved in the TMS Tool Management Solutions and are accessed by the CAM system. The measuring specifications are saved directly next to the tool in the data base and are available at the measuring machine. Professional measurement is performed at the push of a button and the tool data are passed to the machine. This ensures consistency and all sources of errors, such as through manual entry, are thus eliminated. Multiple storing of data was thus abolished.

Programming with real data

The tool data are now saved in the ZOLLER TMS data base, being the leading data base, according to DIN4000 and are thus available in the Edgcam CAM system as exact, real envelope contours. The system programs with real data and outputs the data of those tools with which simulation was per-

formed. These can then be assembled on the machine in the same way as they were simulated. Particularly in the case of complex processing methods, it is important to have the true tool data available for programming to avoid crashes – and it saves enormously on time.

Error rate has dropped significantly

Already six months after introduction, the error rate has dropped significantly and the employees are supported as best possible when searching for possible tools to satisfy individual customer specifications. However, the savings cannot be calculated as in serial production. „What is significant, is the time saved in searching for tools“, confirms Jan Horn and adds, „a main advantage is, of course, also the flexibility of the employees when alternating on the NC machines. Everyone simply downloads his NC program onto the machine, the tools are included and have standardized descriptions. Everyone can find their way around, and it is only occasionally that a tool needs to be retrofitted.“ He further expands: „I use one data set, and this applies to all machines. Once I have written a program in Edgecam, then this also applies to all

machines – I only need to change the post-processor, send the NC program, and the procedure is completed. A major advantage of Edgecam is the simple subsequent changing of already programmed parts to other machines.“

High process safety with maximum flexibility

Lufthansa Technik often needs to respond very quickly to market changes. Repairs are often not predictable, the same as some special customer needs. A high level of flexibility is required, in particular to realize the high ratio of up to 70% outsourced manufacturing. „With the introduction of these systems we have created a perspective for the future“ is how Mr Pieterwas sums up the benefits of the investments. „This also allows us to actively approach the external market. We are independent of our own assembly components. Because we operate systems like those of CAMTECH and ZOLLER, we can respond in a flexible manner.“ – and customers can also take off safely in the future.

✂ **Author:** Dr. Karin Steinmetzer

✂ **Further information:** www.zoller.info



Successful cooperation: Frank Pieterwas and Jan Horn from Lufthansa Technik with Julian Lüdecke from ZOLLER and Ulrich Rienks from Camtech (from left to right).



Safe for the future – cooperation allows fast responses to market changes.



Lufthansa Technik

🏢 Aerospace technology

📍 22335 Hamburg



The Hamburg facility employs some 8,000 staff for the maintenance, repairs and interior furnishing of aircraft.

Everyone knows Lufthansa. But only few know that some 8,000 employees work at Lufthansa Technik in the Hamburg facility for servicing, maintenance, overhaul and furnishing of the aircraft. Over 1000 employees look after VIP, business and government aircraft.

This has over 50 years of tradition at Lufthansa Technik. The business segment „VIP & Executive Jet Solutions“ embraces the sections maintenance, design and production. As complete provider of technical inspection, cabin design, conversion, maintenance, overhaul and paintwork, it is possible to offer VIP customers unique solutions for their aircraft.



CNC-controlled tool presetting and measuring machine ZOLLER »venturion 450«.



Bernd Schwennig, Head of Technical Sales at ZOLLER

Swiveling optical carrier for distortion-free imaging of tooth profiles.



Simple and quick: measuring hob cutters

ZOLLER makes things happen

Until recently, the measuring of hob cutters was elaborate, tedious and expensive. The experts at ZOLLER have found a solution for this problem: »hobCheck« – with many advantages, both in terms of cost-efficiency as well as simplicity. ZImagazine spoke to Bernd Schwennig, who accompanied the development of the »hobCheck« at ZOLLER.

✂ Mr Schwennig, what triggered the development of the »hobCheck«?

Some three years ago, a company approached us looking for a measuring machine which could perform complete measurement of hob cutters. The specification included that the simplicity of operation should be oriented along the ZOLLER »pilot 3.0« image processing system, so that all employees could operate the machine. And that is exactly what we did.

✂ What is the problem with conventional measuring machines with regard to hob cutters?

So far, these were highly complex measuring machines with tactile sensors and could only be operated by experts in metrology rooms as well as costing between 270,000–500,000 euros.

✂ Does a »hobCheck« really measure as precisely as the machine in the metrology room?

In terms of measurement, the »hobCheck« is just as precise as conventional tactile measuring machines. The differences are: a »hobCheck« costs considerably less – that is one point. The other is, that mea-

suring is simplified considerably.

✂ How does measurement work with the »hobCheck«?

The combination of image processing technology and measuring sensor as well as 6 CNC-controlled axes allows micro precision measurement. Swiveling of the optical carrier to the milling helix delivers undistorted contours and precise images of the tooth profiles. The »pilot 3.0« image processing system makes the complete measurement or the re-measuring of individual parameters extremely uncomplicated. Add to this, that the measured results according to DIN 3969 are documented automatically, same as the assignment to quality classes. This gives every user safety.

✂ In addition to the normal »hobCheck« there is also a »hobCheck reGrind«. What is the difference and why was this machine developed?

In principle, the »hobCheck reGrind« is the solution for the production of gears. Different to hob cutters, it does not pay to purchase special machines here for measuring a special tool. Especially not for hob cutters. Now we received an enquiry from an automobile



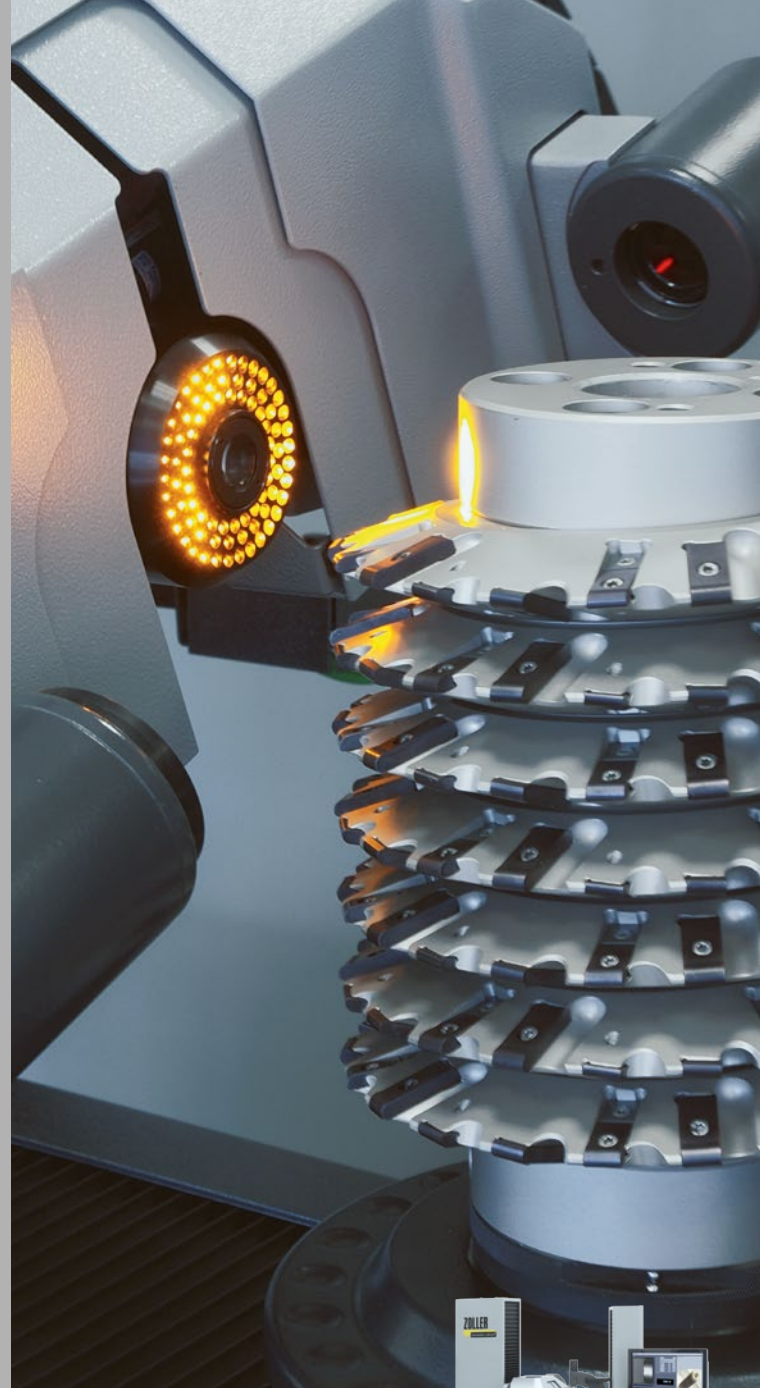
manufacturer involving the production of a new gear-box. Here it was not just a case of presetting conventional tools; rotary tools were also to be measured and hob cutters were to be checked during re-grinding. The answer was the »hobCheck reGrind«, which does measure hob cutters completely, but only the values which are important for re-grinding. To this purpose, the machine was equipped with additional functions normally handled by a »genius«. Next to hob cutters, it can also inspect turning and rotary tools.

Then the customer has several machines in one? What are the expected costs?

Indeed, with the »hobCheck reGrind«, the customer has a fully-fledged tool presetting machine, in addition an inspection unit for measuring cutting tools and he can also measure the values for hob cutters which he feels are important. Like with the normal »hobCheck«. He therefore has three machines in one – but only pays a fraction of what he would normally have to spend on the three separate machines. And he has a simple machine which allows his staff to work in production.

Zlmagazine interviews Bernd Schwennig

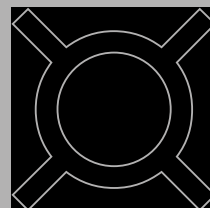
Further information: www.zoller.info



User-friendly image processing system »pilot 3.0« with fully automatic calculation of the quality classes and graphic documentation.

»hobCheck«

Quantum leap in the measurement of hob cutters

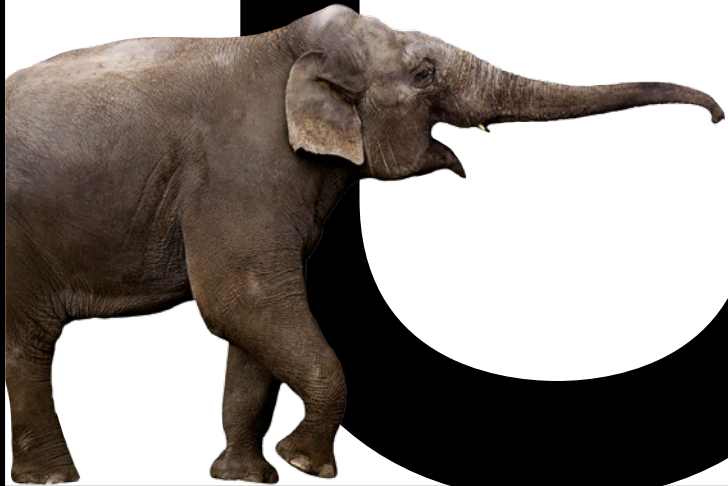


**easy
accurate
fast**

- Fully automatic complete measurement
- Laboratory results in a workshop setting
- Consistent documentation according to DIN

ZOLLER
expect great measures®

NO



PROBLEM!

ZOLLER makes measuring easy

The issue is clear: tool measuring and inspection machines must be accurate. However, it is often less clear how these machines work. This is why they are often operated by specialists in special metrology rooms separate from their colleagues in production. This is where ZOLLER machines are quite different. The machines cannot only be located in the middle of production, but also be operated by skilled staff in the workshop. The specialty of ZOLLER products: they offer high performance and are simple to operate.



Fully automated measuring at the push of a button: standard tools can be measured with »elephant« technology by ZOLLER without data entry and previous knowledge.

Things can't be much simpler.



Measuring a tool on an unfamiliar machine, especially in front of the boss... The employee of a machining supplier was clearly not delighted when visiting the ZOLLER exhibition stand with his supervisor upon being asked to test the »genius« machine with »elephant« technology himself. A brief shock was followed by a surprise. It really was as easy as promised. No embarrassment, instead, an impressed boss.



Impressed exhibition visitors: it really works so simple.

Anecdotes like these are more than plenty for Christian Pfau, Head of Research & Development at ZOLLER. Simple operation is often promised in the field of tool measurement machines, but usually there are weak points – only discovered once the machine has been purchased. This is why ZOLLER recommends interested parties to visit the machine manufacturers with their own tools and to have them measured without preparation.

Test first, then buy

„If an interested party visits the ZOLLER exhibition stand, then he will be able to record and measure the tools he has brought with him 99.9% of the time either himself or together with a ZOLLER sales representative (not a programmer). With most of our competitors this spontaneous test is not even possible“, explains Pfau and adds: „You need to be a programmer or have one available on the stand. That is also

the reason why ZOLLER has penetrated the market so well: sheer simplicity. „No problem“ is our motto.

Focused on benefits for the customer – with excellent products and reliable service

„Originally we come from the field of tool presetting and measuring machines, in other words, production. Not the place where postgraduate engineers or software experts work. Here you need machines that are easy to use and are robust. Otherwise there is little point in putting a measuring machine into production. This is like buying a mobile phone but not being able to use it without having had special training. Nobody needs that. Good technology needs to



Simply ZOLLER – simple examples



Example 1: tool measurement with »elephant« technology

Measures tools quickly and contact-free without previous data entry and with up to 52 selectable parameters. No training, no previous knowledge required, things can't be much simpler.

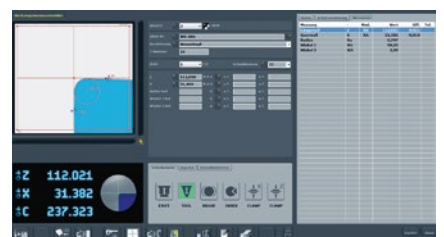
1. Select type of tool from the overview.



2. Select measuring task and start.



3. Finished! Including detailed overview of measured results.





Christian Pfau | Head of Research & Development at ZOLLER

„No problem is our motto.“



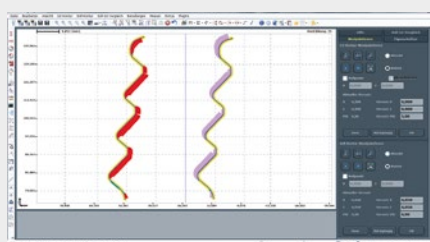
Simply there for you:
worldwide local service

Whether training, maintenance or queries: you can rely on the ZOLLER Service Team.

The recipe for solid measuring results worldwide – at the push of a button

work easily, otherwise it will not be used“, is how Pfau explains the reasons why ZOLLER invests so much effort, manpower, energy and attention to details in the development of the products. „We always think of the people who will work with our products over many years. We trust in long-term relationships and satisfied customers. This is why we develop systems which run as automated as possible, have a clear operating structure, and which can communicate with other systems via interfaces to avoid operator errors and thus downtimes. In addition, we have an excellent international service team to help customers locally quickly in case of queries.“

One needs to think further than just measuring machines, explains Pfau: „For example, also about help texts in the software as well as instructions for use in the language of the customers and application videos. About automatic search runs, monitoring tool clamping, tolerances, lighting with transmitted light, computer temperature as well as trouble-shooting and remote maintenance – there are thousands of things to be considered.“ To ensure consistency in measured results, the measurement task and evaluation range need to be defined automatically and the tools always measured immediately. „This is like a recipe for cooking, it will only taste the same everywhere if the ingredients and amounts are the same“, says Pfau: „The



Example 2: Checking profiles of form tools with »CoCon«

Scanning of contours, target-actual comparison and automatic output of the DXF target contour for grinding and eroding machines.



Example 3: determining diameters with »pomDiaCheck«

At the push of a button, diameters and concentricity or roundness are measured accurately on cylindrical and ground objects to a micro precision of $<2 \mu\text{m}$ – through CNC control of the longitudinal axis and autofocus of the high precision spindle.



Example 4: avoiding input errors through interfaces

For the smooth exchange of tool target and actual data with just one click.

HUFSCHMIED

ZERSpannungssysteme

Manufacturer of cutting tools

86399 Bobingen, Germany

Satisfied customers:

for example Hufschmied Zerspannungssysteme

Ralph R. Hufschmied,
Managing Director at Hufschmied



Hufschmied Zerspannungssysteme are convinced of ZOLLER:

„We were looking for an easy-to-operate measuring system. And quickly came across ZOLLER. ZOLLER has a reputation in the industry and ZOLLER can measure, which saved us countless discussions with our customers. Being able to program own measuring routines saved us from having to purchase expensive new equipment for just a single purpose.“

www.hufschmied.net



current »pilot 3.0« control software, for example, includes an export function which can output the target dimensions, measuring and image processing parameters defined in the ZOLLER measuring system in XML format. These are small files containing all relevant data for the tool, which can then be transferred by USB stick or e-mail. These data can be imported anywhere in the world to measure tools at the push of a button in the same way as with the original tool. The user does not have to create the data again and benefits from the know-how of the tool manufacturer."

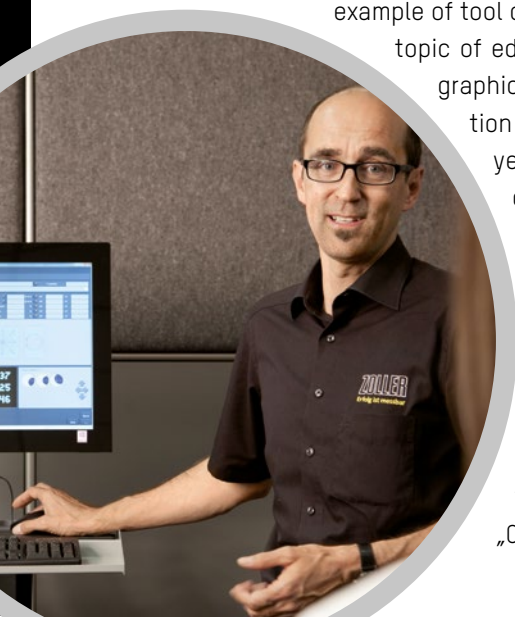
Simple machines spell more profit in the end

Being operator-independent is another advantage of simple inspection and measuring machines. Pfau mentions the example of tool control: „Let us take the topic of edge rounding. If contour graphics are used for inspection and these are employed incorrectly, then the diamond tip is gone and 1,000 euros have gone down the drain“. And that is just one of the parameters to be measured. Using different measuring machines can lead to further complications. „Often, various measuring

systems are used for historic reasons, having been purchased over the years“, says Pfau, „and each of these systems operates differently, which results in enormous training requirements. In addition, these machines are no longer state-of-the-art in technical terms and are usually not linked to each other, in other words there is no common data base, which makes documentation of the results a major task.“ The solution: „Instead of employing many employees with many systems in inspection, tools can be measured safer and more accurately at the push of a button with automated solutions, as well as measuring all parameters at once. The results do not depend on individuals, are documented seamlessly, expensive mistakes are avoided, and the quality and service life of the tools is improved“, summarizes Pfau. The advantages of easy-to-operate measuring solutions are obvious: satisfied users, more efficient production lines and greater profits for the businesses.

👉 Zlmagazine interviews Christian Pfau

👉 Further information: www.zoller.info



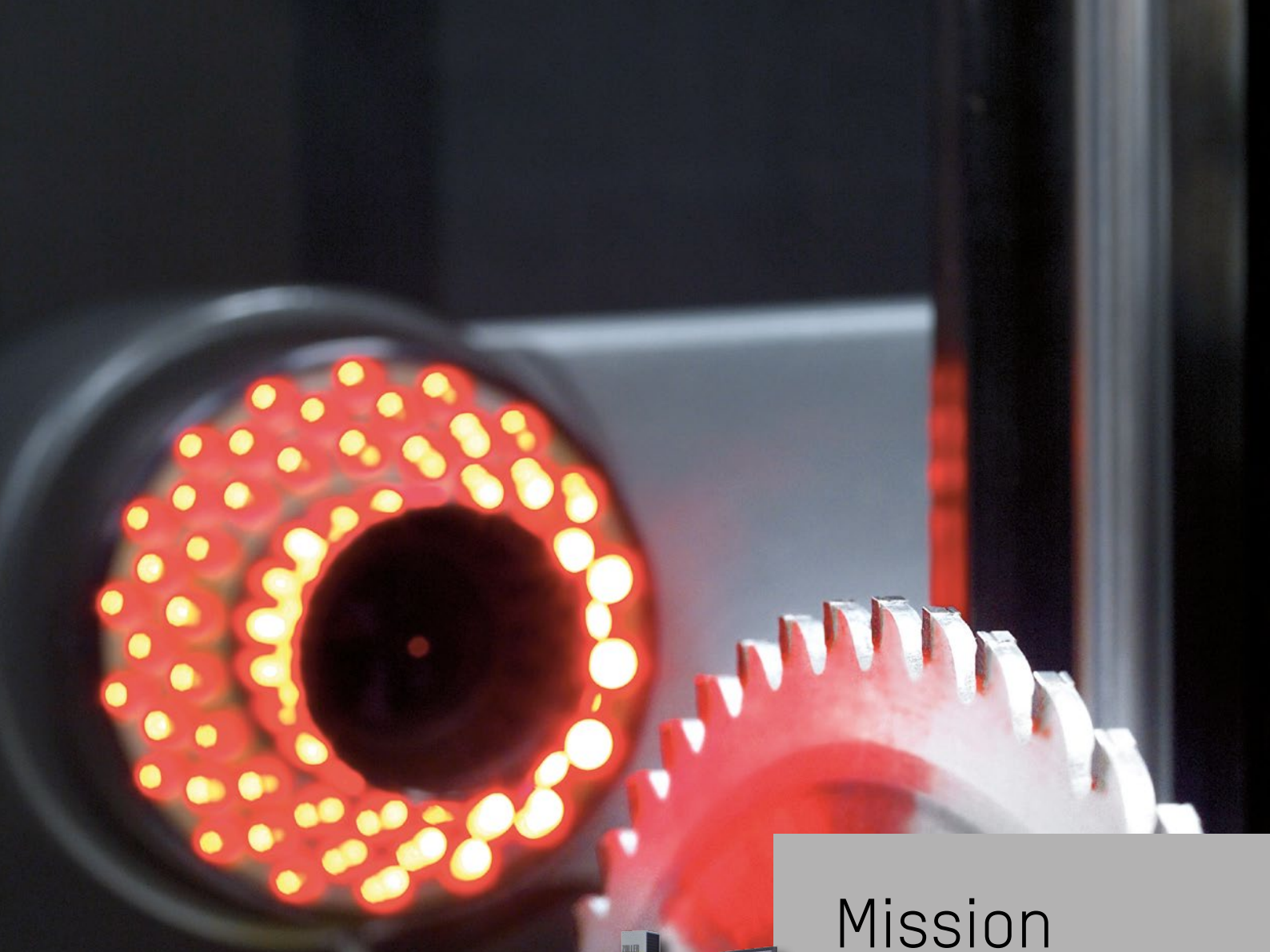
Simplicity pays: ZOLLER shows you how!



Example 5: »roboSet« as simple automation solution

Runs smoothly 24/7 – just by clicking the Start button of the ZOLLER »pilot« image processing system.





Mission inspection

Simple solutions for every measuring task.

Three of many ZOLLER measuring experts:



»pomBasic«
compact solution for a
universal tool inspection



»genius 4«
universal measuring machine
for cutting tools



»sawCheck«
micro precision measurement
of saw blades



easy
efficient
flexible

— From miniature tools to crankshaft cutters

— For complete or part measurement of all grinding parameters

— At the push of a button, including documentation

All ZOLLER inspection and measuring machines can be found at www.zoller.info

ZOLLER
expect great measures®

Zoller on tour

ZOT well received,



Great service: ZOLLER on Tour (ZOT) tours Europe. With tool presetting and measuring machines on board, so that interested customers can convince themselves of the advantages live with their own tools.



ZOT in Belgium: the simplicity of the ZOLLER machines and software were highly appreciated by a manufacturer of automotive parts.



ZOT in the city of romance: in Paris the ZOLLER on Tour team only had a single objective – to support customers in optimizing their manufacturing processes.



ZOT in the land of bulls and toreros: in October 2014, ZOLLER on Tour spent four weeks in Spain, including Barcelona, Bilbao, Madrid and Seville.

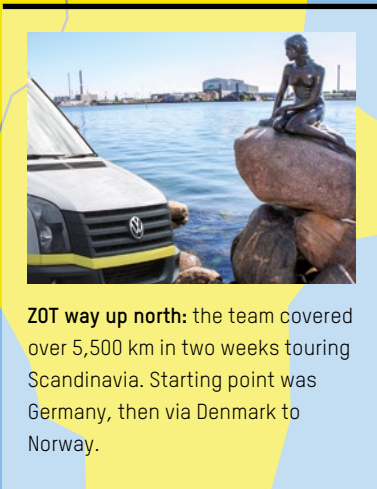
Spain

France

Switzerland

Finland

Norway



ZOT way up north: the team covered over 5,500 km in two weeks touring Scandinavia. Starting point was Germany, then via Denmark to Norway.

Denmark



ZOT goes Berlinale: well close – while the film stars paraded on the red carpet of the 64. Berlinale, ZOLLER was busy visiting customers in Berlin and surroundings.

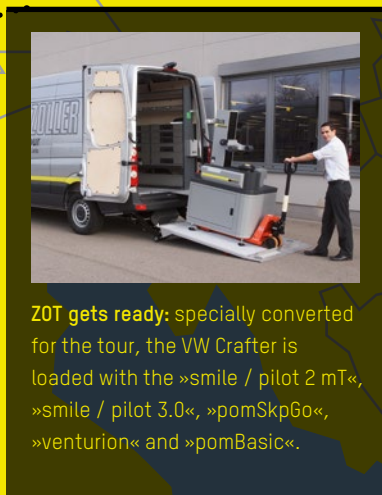
Germany

Ukraine



Pleidelsheim

Czech Republic



ZOT gets ready: specially converted for the tour, the VW Crafter is loaded with the »smile / pilot 2 mT«, »smile / pilot 3.0«, »pomSkp60«, »venturion« and »pomBasic«.

Hungary

Romania

Bulgaria

Italy



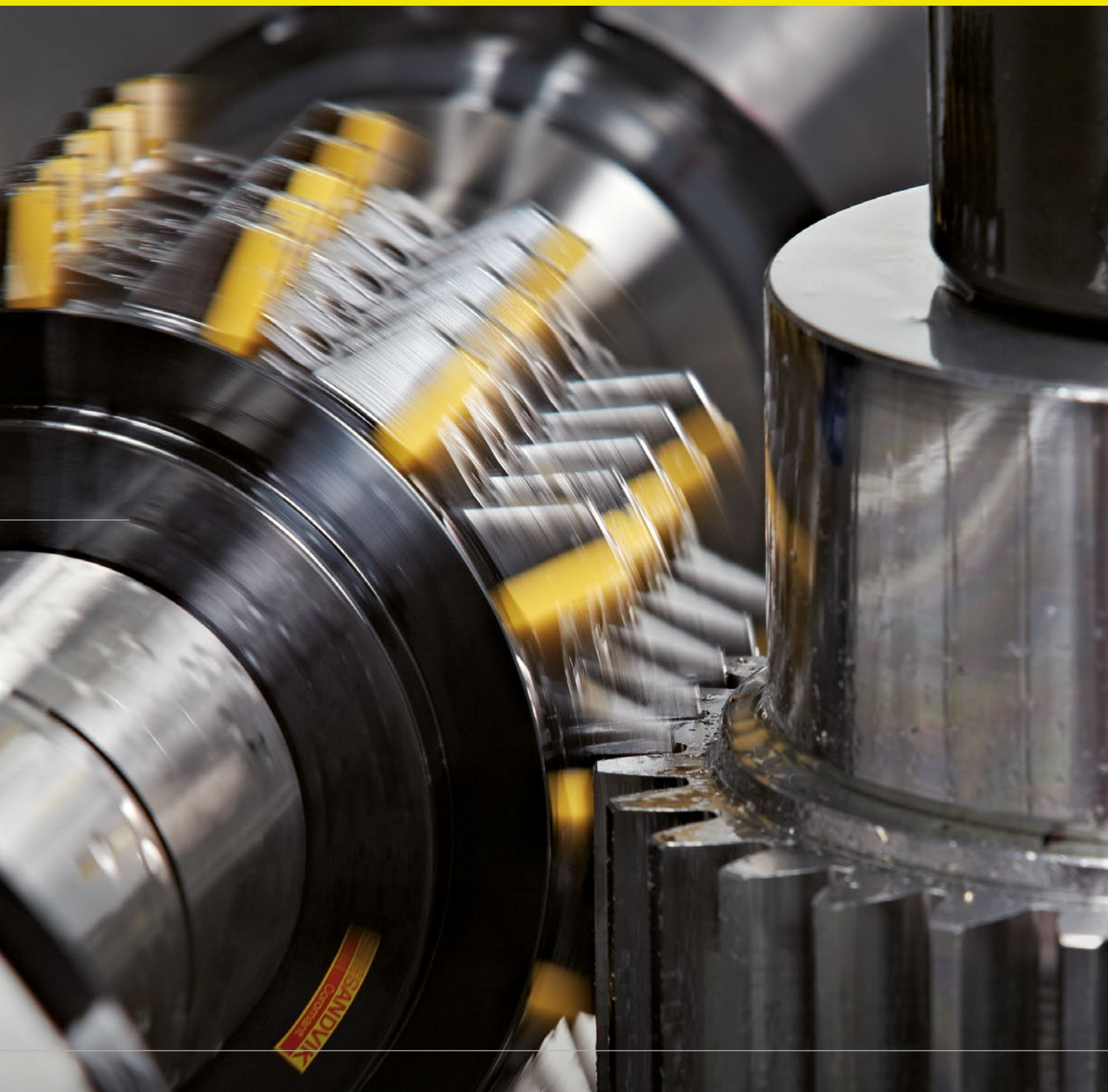
Solutions for form milling cutters have been added to the SANDVIK Coromant portfolio since 2012. Suitable measuring technology was the result of a joint project of the company with ZOLLER.

Check it out

Faster, safer and with perfect documentation: measuring technology for gear hobbing machines.

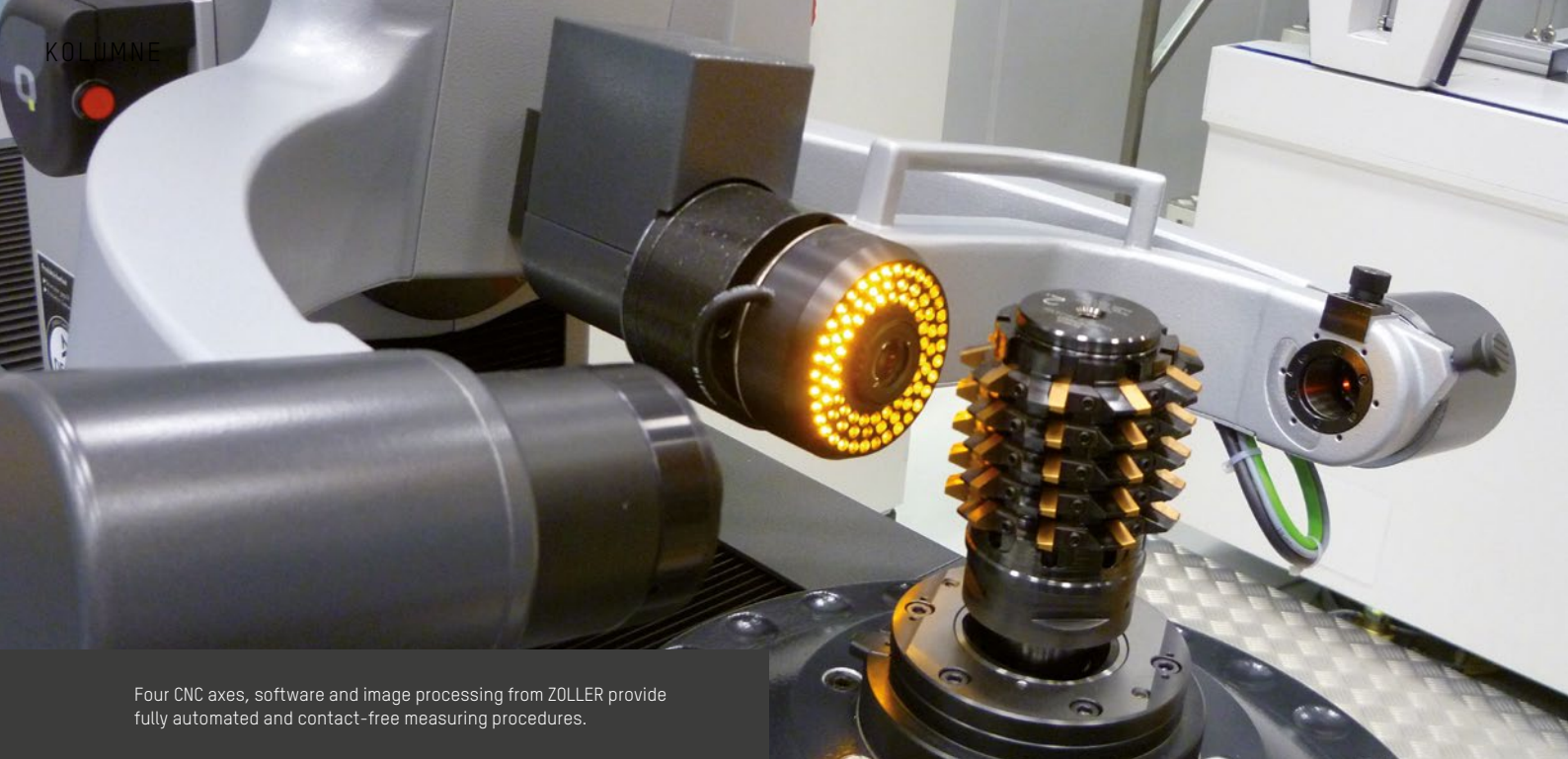
The innovative solutions from SANDVIK Coromant set standards in metal processing. When the company expanded its portfolio for form milling cutters in 2012, ZOLLER proved to be the right partner for developing the suitable measuring technology, including documentation according to DIN.

Longer service life, better cutting rates – the significant increase in efficiency was the best reason for SANDVIK Coromant to advance the technological change to indexable insert tools. However, a suitable measuring machine for the measurement and documentation of gear hobbing machines fitted with indexable inserts according to DIN was lacking. „Off-the-shelf solutions all had their drawbacks. Our idea is to develop the optimal solution together with a partner“, explains Axel Küpper, Senior Manager Global Sales & Application, Gear Milling Solutions at SANDVIK Coromant.



“Comprehensive measurement and documentation according to DIN gives the user safety.”

Axel Küpper, Senior Manager Global Sales & Application,
Gear Milling Solutions at SANDVIK Coromant



Four CNC axes, software and image processing from ZOLLER provide fully automated and contact-free measuring procedures.

→ The objective: increasing productivity

The requirement was „measuring faster in quality assurance to increase our productivity and to document all parameters according to DIN 3968 to give our customers that feeling of safety“, states Küpper. The response to these wishes was a special development of measuring machine and measuring program software by ZOLLER. The resulting machine, which has been in operation since 2012, was designed on the basis of the ZOLLER »hobCheck«. It is equipped with high resolution cameras for transmitted light and radial incident light measurement as well as 3D focusing. The swiveling, CNC-controlled optical carrier ensures complete measurement of the helical tools. Swiveling the optical carrier allows recording of the actual effective contour and thus gives a distortion-free image of the helical cutting edges in terms of tooth profile. As the focus is on large, complicated tools, crankshafts and gear cutters up to a weight of 250 kg, the measuring machine was equipped with a special spindle for loads.

Easy and quick: documentation according to DIN 3968

A comprehensive measuring program was developed for simple documentation. This measures and evaluates cylindrical hob cutters or form milling cutters fitted with indexable inserts according to DIN 3968. The data can then be compiled in an orderly documentation and handed to the customer. Among others, parameters such as concentricity/run-out of the hub diameters,

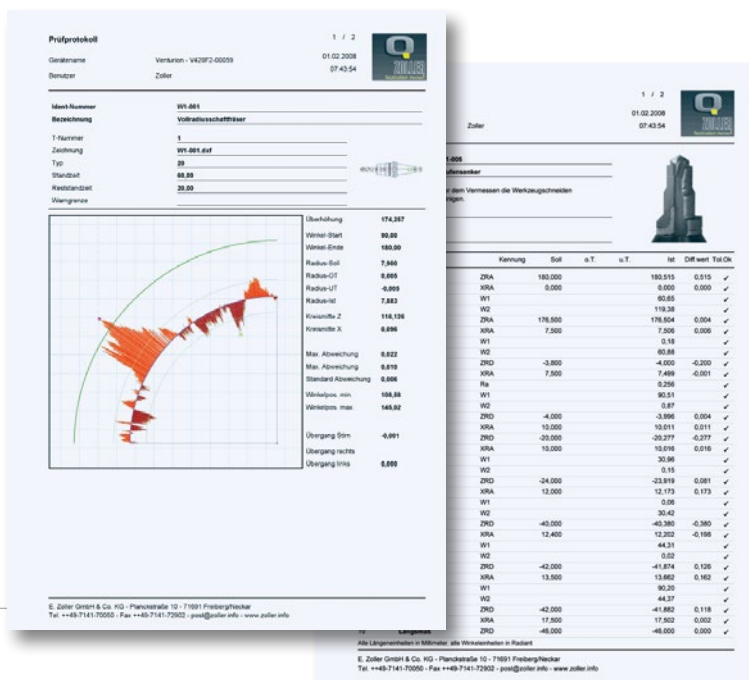
deviations in shape, tooth thickness and flute direction are determined. Giving the specified quality classes results in automatic tolerances of the individual parameters as well as classification according to the achieved quality class. „Individual cutting edges can also be measured selectively and included in the protocol – this saves considerable time as the measuring procedures for the entire tool often take several hours. This re-measurement function allows me to conduct specific re-measurements and update the protocol without having to start from scratch every time“, says Thomas Jäger, measuring technician at SANDVIK Tooling Supply Schmalkalden.

More speed through selective measurement of individual cutting edges

To give SANDVIK Coromant these advantages, ZOLLER pulled out all the stops. Christian Pfau, Head of Research & Development at ZOLLER comments: „We developed under great time pressure and partly entered new territory. Ideas and ambition were the order of the day, and owing to the close and excellent cooperation with SANDVIK Coromant, we came up with super results.“ The excellent cooperati-

Measurement of Coromant Capto tool shank

The tool shank developed by SANDVIK Coromant has become a significant benchmark in metal cutting. Meanwhile the market has opened allowing other manufacturers to manufacture this interface. To ensure the quality of the Capto tool shanks, ZOLLER has complemented its metrology program with a fully automated and contact-free Capto measuring option. Using the measuring program Capto Fored with photo-realistic entry dialog, the Capto tool shank is recorded at two levels over 360° each, aligned automatically to the face front and then subjected to a target-actual comparison with tolerance range using the »lasso« function.



Orderly and complete documentation of the measurements according to DIN 3968 – for documented quality, greater confidence for users and fewer complaints!



SANDVIK
Coromant

Manufacturer of tools & tool solutions
 98574 Schmalkalden, Germany

on was also confirmed by Mario Peter, project manager in Schmalkalden. He is delighted with the increased quality in quality assurance: „Faults are detected quickly, and an individual tooth can be re-measured quickly and without complications. This represents a clear increase in our productivity.“

Process safety for the user

Cross-company cooperation turned the purchase of a measuring machine into a joint development project and resulted in far more than a normal measuring program. A complete software was created, from graphical entry via intelligent measuring procedures to high quality optical documentation – with clear competitive advantages: increased productivity and complete documentation of the production quality in the new tool segment. This means greater process safety for SANDVIK Coromant and the subsequent user.

Author: Dr. Karin Steinmetzer
 Further information: www.zoller.info



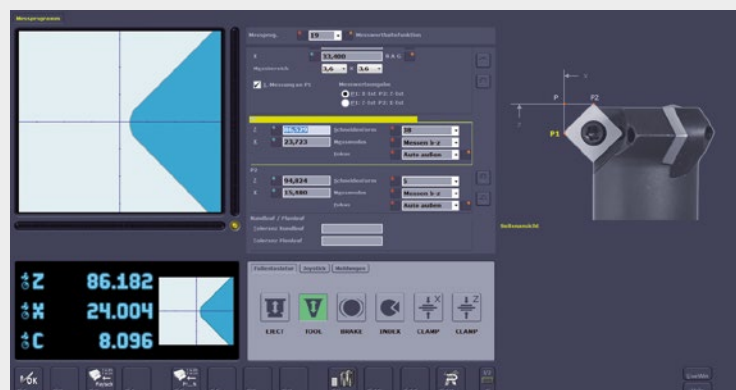
»hobCheck 800« from ZOLLER in action during quality control at SANDVIK Tooling Supply Schmalkalden.

Since 2007, some 220 engineers, workers and staff work on customized special solutions for metal processing at SANDVIK Tooling Supply Schmalkalden, a SANDVIK Coromant company. The coordinated infrastructure, state-of-the-art machinery and specialized IT solutions guarantee efficient and cost-optimized manufacturing from a lot size of 1. The quality and precision of the facility has been recognized repeatedly with the Thuringia State Award for Quality.

www.sandvik.coromant.com



Further information on »hobCheck 800« on the Internet!





Micro precision inspection and measuring

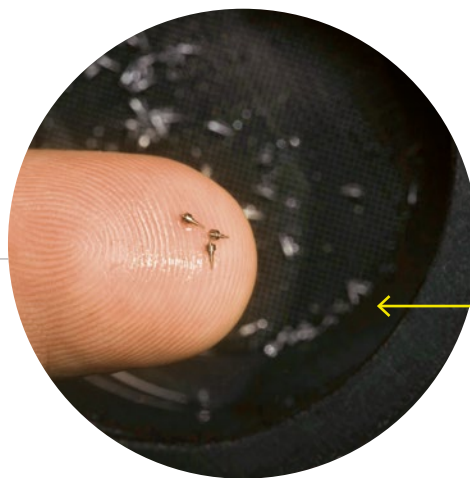
Things could not be more accurate!

The mechanical NOMOS Glashütte watches are world-famous. Absolute precision is required in the manufacturing of the valuable pieces. The extremely delicate individual parts used here are manufactured with tools from a size of 0.29 mm upwards. And, of course, they need to operate without a fault – and this where ZOLLER comes in.



Tool size: 0.29 mm

Miniature components are used for manufacturing the valuable NOMOS Glashütte time pieces. The tools required vary in size between 0.29 mm and 11.2 mm. Before the tools are used, they are subject to intensive inspection with the ZOLLER »smarTcheck«.



The town of Glashütte in the Erz Mountains is the Mecca of Germany's fine watch makers. Numerous renowned watch manufacturers are based here, including the NOMOS Glashütte watch makers. The company's watches and their timeless design are regular recipients of awards, for example, the „Watch of the Year“ or the „iF product design award“.

The world-famous watches are manufactured with a combination of manual craftsmanship and high-tech. Up to 95 % of the components are manufactured by the company itself. The tools have to meet the highest demands: „The pre-


cision requirements of the plate alone are 4 µm“, explains Frank Höhnel, manufacturing technologist at the watch maker.


Precision requirement: 4 µm

To make the plates, the map for the watch's design, up to 70 different tools from a size of 0.29 mm upwards are used to manufacture just a single side of the plate. In order to operate as efficiently as possible with these micro dimensions and a run time of the milling centers of up to eight hours per lot, the requirements for the tool center are correspondingly high.



NOMOS GLASHÜTTE

 Watch maker

 01768 Glashütte,
Erz Mountains, Germany



Paying a visit to NOMOS Glashütte:
Thomas Kloepfel from ZOLLER (left)
with Frank Höhnel, technologist at the
watch makers.

The owner-run company has been manufacturing its own watches for 20 years at the location of Glashütte, hence the name. 130 employees develop, design and make the watches themselves. Up to 95 percent of the individual components are manufactured by themselves – partly by hand as well as with CNC milling machines in conjunction with a high-tech measuring machine from ZOLLER.

www.nomos-glashuette.com



The NOMOS model par excellence: Tangent The design classic and winner of numerous awards for quality and form perfectly exemplifies the philosophy of the company: offering watch making at a fair price, with a life-long modern design.

Photos watch movements: NOMOS





Top: plates made on the milling centers ready for the next manufacturing step.

Bottom: the »smarTcheck« universal measuring machine enters a new dimension in accuracy

The task: increasing efficiency

„We have entered new dimensions with the »smarTcheck« universal measuring machine“, states Höhnel. The »smarTcheck« is used for goods receiving inspection of outsourced tools, the manufacturing process of special tools and for the continuous inspection of the tools. „We re-grind our tools up to fifteen times. Therefore, exact measured values for the tools are paramount to ensure repeatability during the manufacturing process“, underlines Höhnel.

The result: high process safety and time savings


The advantages of a measuring machine are obvious in his mind: „The human uncertainty factor is excluded, the machine is calibrated automatically every two hours and data transfer is absolutely smooth, transposed digits are a thing of the past. The manufacturing of precision components has speeded up and process safety has been increased.“

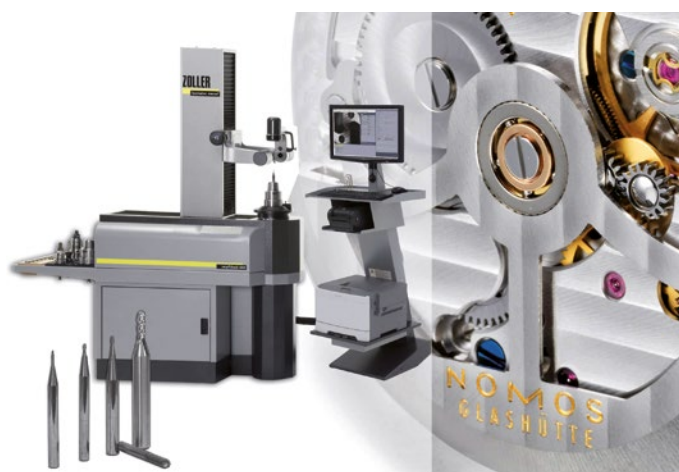
The decision: yet another ZOLLER machine

Prior to the »smarTcheck«, a manual ZOLLER »smile« machine had already been in use at NOMOS Glashütte for over ten years. Long years of good cooperation and local service for maintenance and calibration are a further reason why the watch makers continue to place their trust in ZOLLER.

„The main reason for deciding in favor of the ZOLLER machine was the high level of accuracy“, says Höhnel. This is because ZOLLER measures at the prevailing state-of-the-art technology – things could not be more accurate. And that is exactly what is required at NOMOS Glashütte.

 **Authors:** Dr. Karin Steinmetzer, Gerd Fahry

 **Further information:** www.zoller.info



Universal measuring machine »smarTcheck«

- All-rounder for the cost-efficient inspection and documentation of tools
- For measuring under incident and transmitted light prior to and after sharpening
- Simple to operate per mouse click
- Fully automated measuring in combination with the ZOLLER »pilot 3.0« image processing system
- Adapts to requirements through modular design



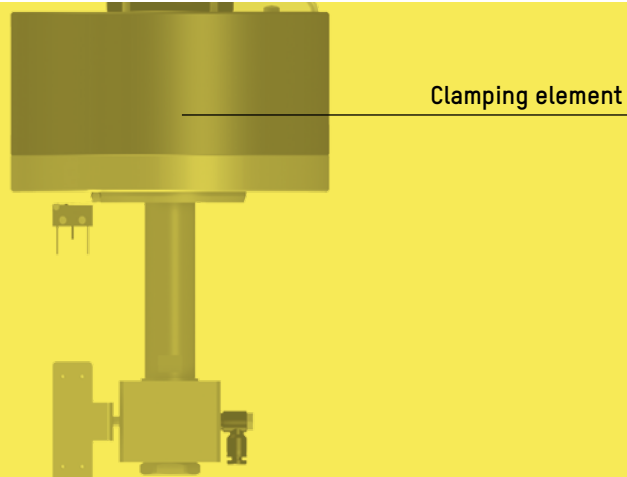
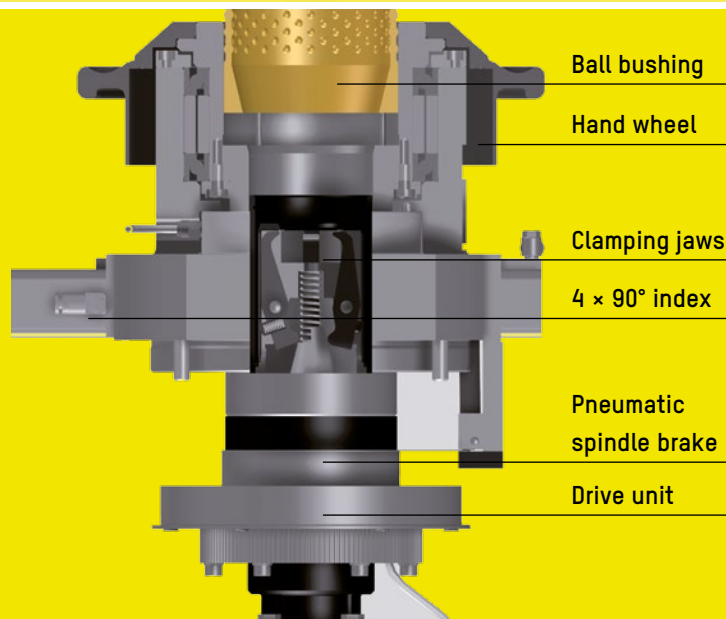
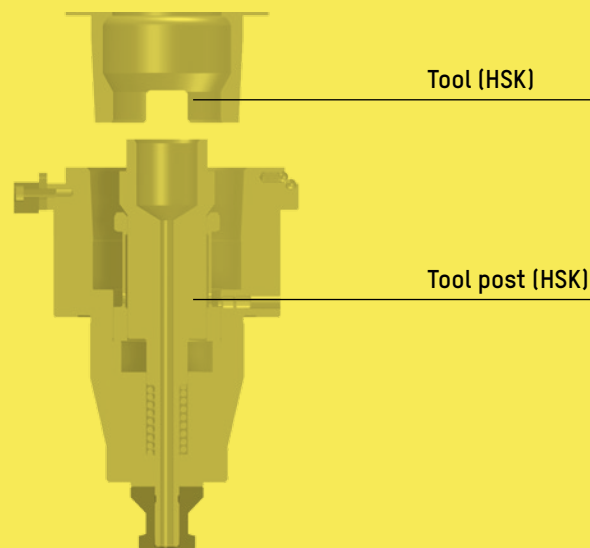
Further information on »smarTcheck« on the Internet!

The Z-factor

**In focus:
the »ace« high precision spindle**

In this column we always showcase a technical highlight from ZOLLER – today, the high precision spindle »ace«.

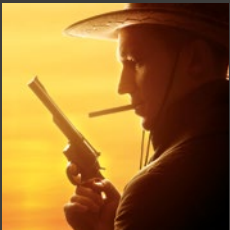
Since its inception, the »ace« spindle has been modified several times, yet the basic principle remains the same – and is as simple as it is brilliant: with its quick change device for tool posts, it can be used universally for steep tapers, hollow shank tapers, Capto and Kennametal – and always with extreme accuracy, with a concentricity of 2 µm.



- Tool post change via ball bushing: quick, absolutely free from backlash and with a guaranteed change precision of 0.001 mm.
- Tool cap-head bolts for steep tapers (ANSI, CAT, MAS-BT) as well as HSK, Capto, KM and VDI of various sizes can be clamped, from 7 to 30 mm in diameter and tension lifts of 122 mm axially and 11.5 mm radially.
- A change of clamping element is not necessary.

FÖPW visits ZOLLER Austria

Come and get your »lasso« out!



A worldwide hunt...

...for interesting news about ZOLLER: as of 2015, you can again find interesting posts on the ZOLLER Blog. It pays to have a look!

No, Ried in Austria is not Texas and as far as we know there is also no ranch with cowboys. But there is a ZOLLER Austria there and the members of the Austrian Association of Precision Tool Grinders (FÖPW) held their Annual Meeting there in 2011. One of the highlights was the »lasso« measuring function from ZOLLER which is used for the automatic analysis of contour profiles of tools. ZOLLER reported on this on their own blog.

November 2011

18 Process monitoring, quality control and documentation – every grinding and sharpening business is aware of the subject. Especially when it comes to complaints! In-process monitoring and quality control are becoming more and more important due to the increasing complexity of the tools, but also due to customer demands for inspected, documented quality products.

No reworking, no complaints any more!

So it was hardly surprising that the topic of inspecting tools, measuring and QA documentation was a central theme of discussion at the annual meeting of the FÖPW. Several solutions on the topic „Inspection & QA“ were presented to interested members of the FÖPW in a relaxed atmosphere at the ZOLLER presentation center in Ried im Innkreis.

Quality to convince customers and users

One highlight was the contour profile measurement with »lasso«. This allows scanning, measuring and automatic analysis of a target-actual comparison for any tool or workpiece geometry. Fully automated dimensioning according to target specifications then prepares the documentation – the tool has been inspected completely and the results are documented. This precludes tedious reworking and complaints and ensures quality which will convince you and your customers.

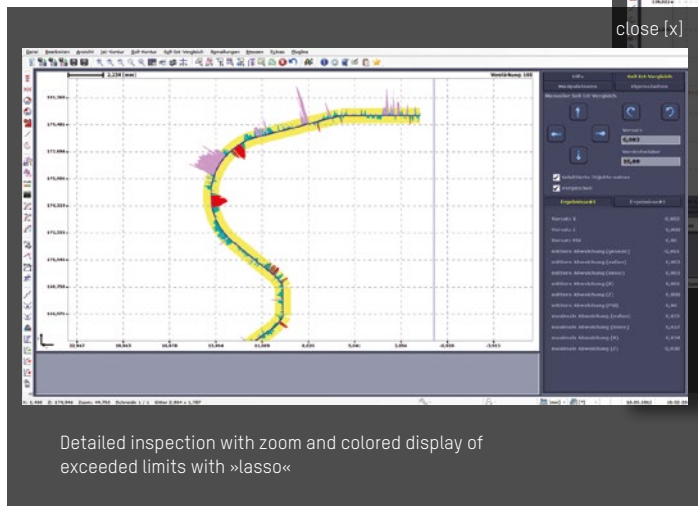
The ensuing discussions showed that the topics inspection, documentation and traceability in particular, were increasing in importance – above all, to enable high quality and cost-efficient manufacturing. To be on the safe side, always swing your »lasso«. Yee-haw!!!

Author: Robert Auer
Further information: <http://www.cnc-arena.com/de/newsroom/zoller/blog>

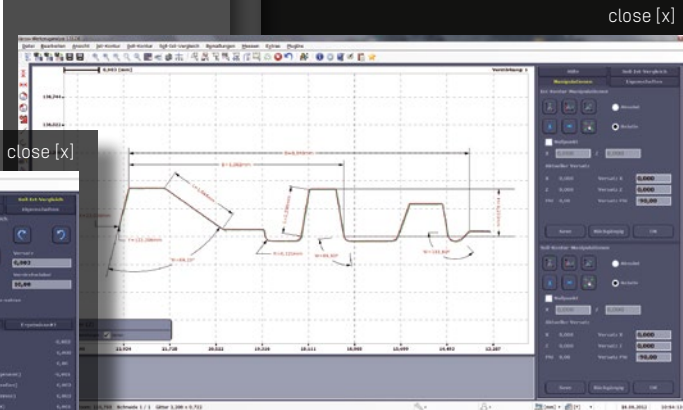
Bewerten: ☆☆☆☆☆ Rate This

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Detailed inspection with zoom and colored display of exceeded limits with »lasso«



Dimensioning with snap function or automatically from dimensioned DXF target contour with »lasso«



You prefer TV to reading? No problem! On our YouTube station »zollertv« you can find an abundance of videos, which will bring you the world of ZOLLER even closer:
www.youtube.com/zollertv

Contour profile measurement for tools and tool geometries: »lasso«

- Fast scanning, measuring and analysis
- Fully automated contour measurement with target-actual comparison
- Clearly arranged user interface, including integrated help function
- Easy definition of the contour range by entering the start and end points

ZOLLER SPOTLIGHT



ZOLLER Pacific Inc.:
in terms of mechanical engineering, California is one of the largest markets in the USA. This is precisely why ZOLLER runs an office in Torrance on the West Coast including showroom. Andreas Diel from Sales: „Things are a bit different here than in Germany. At least I have never before seen customers visit the office in boxer shorts and Hawaiian shirts. That’s California.“

CALIFORNIA

IMTS, Chicago:
here ZOLLER was not only present with its own stand, but also presented measuring and tool management solutions on the stands of partner companies such as BALLUFF and Sandvik. »toolMax« was received enthusiastically in the USA – on the stand and beyond!



ILLINOIS

USA

JAPAN



Tokyo, Japan:
spectacular demand for ZOLLER solutions at the JIMTOF, for example, »smile«, »3dCheck« or TMS Tool Management Solutions – and a full success for the team on-site!



INDONESIA



Jakarta, Indonesia:
a further representative office was opened in 2014. In addition to Indonesia, the Philippines and Malaysia are also handled from here. ZOLLER was also present at the Manufacturing Indonesia in Jakarta.

INDIA



Bangkok, Thailand:
the ZOLLER team at the Metalex trade fair in Bangkok. Another important future market in Asia.



THAILAND

Bangalore, India:

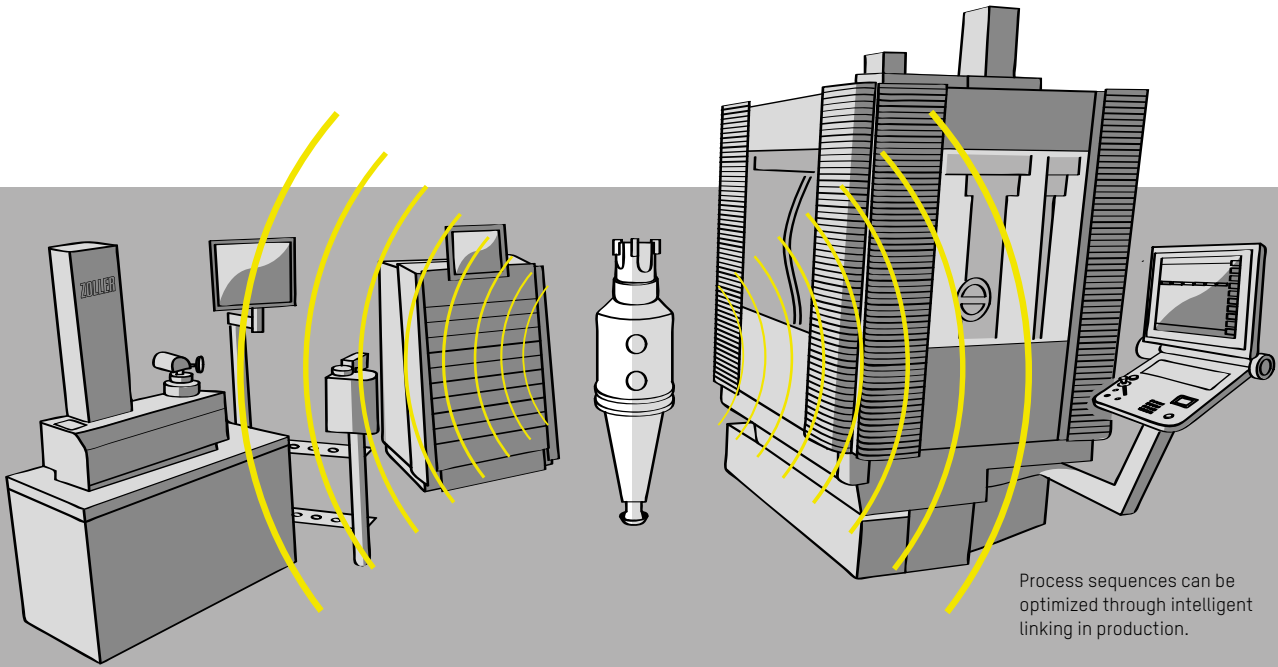
the IMTEX is held every two years in India's third largest city with over 8.4 million inhabitants. And, of course, ZOLLER is a part of it. In particular, the specially designed »indiSet« for India in green-orange is highly appreciated. While talking about special: in India it is customary to inaugurate cars with a local ceremony. And ZOLLER's two new TATA company cars were no exception [Top photo].



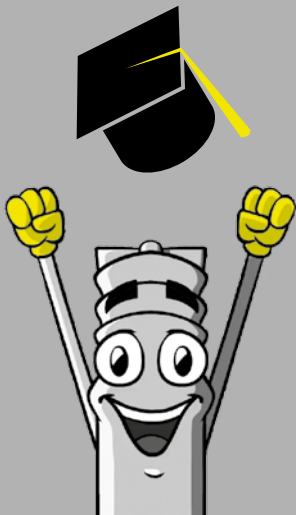
Asia

Smart Tool – pretty clever!

The next step in direction of Industry 4.0



Process sequences can be optimized through intelligent linking in production.



What would happen if tools could simply report their location instead of have to be searched for? If they could issue a warning signal when exceeding limits before ending up in a crash? Or could communicate with processing and tool presetting machines making identical data available everywhere and optimizing processes? Correct, that would be pretty clever! This may soon be possible with Cyber-Physical-Systems (CPS) – the technical university Darmstadt is presently working with partners from industry on developing these smart tools. Also involved is ZOLLER, together with companies such as Heidelberger Druckmaschinen AG, Siemens AG, Gühring and Haimer.

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Zoller GmbH & Co. KG | Tool presetter and measuring machines
 Gottlieb-Daimler-Straße 19 | D-74385 Pleidelsheim
 Phone: +49 7144 8970-0 | Fax: +49 7144 8060-807
 post@zoller.info | www.zoller.info

Editorial team

E. Zoller GmbH & Co. KG
 ABSICHT AG

Design | Production

ABSICHT AG
 Christophstraße 38 | 70180 Stuttgart
 Tel: +49 711 620098 0 | Fax: +49 711 620098 20
 office@absicht-ag.de | www.absicht.ag



»titan«

Unrivalled flexibility and accuracy, the high-end inspection and measuring machine for all precision tools.

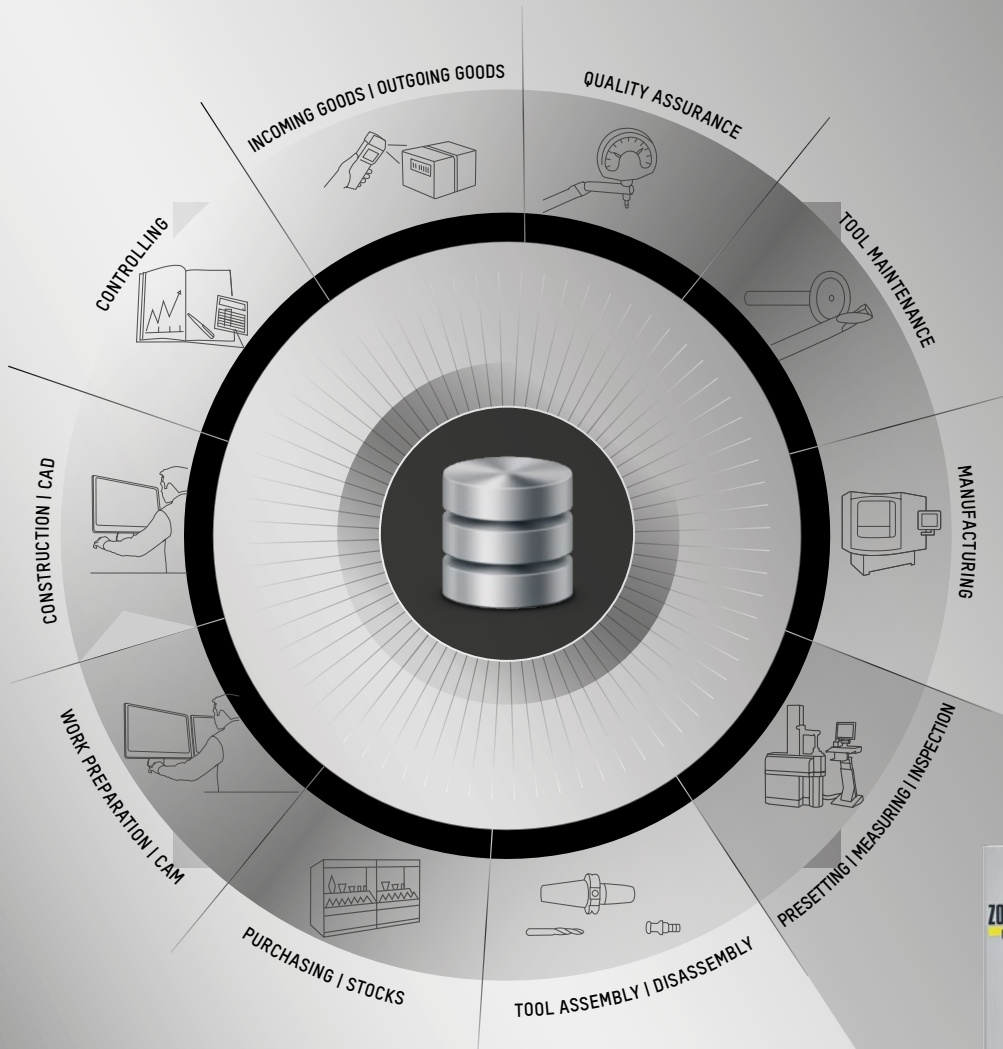
- Automatic measurement and documentation
- Vibration-damped base
- Multi-sensor optical carrier



flexible
accurate
easy



ZOLLER
expect great measures®



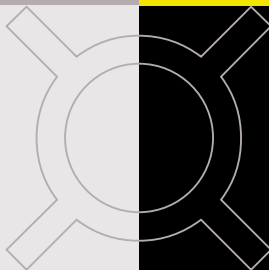
z.One
 ONE data base
 for EVERYTHING



Your team for maximum efficiency!

ZOLLER tool presetting and measuring machine and TMS Tool Management Solutions

Your big PLUS is the consistent process solution – from easy tool file generation to transferring the actual data to the machine controls. With only one contact partner and one data base. For smooth, efficient processes.



ZOLLER
 expect great measures®