

A large, stylized yellow letter 'Z' is positioned on the left side of the cover. The background features a network of grey lines and dots, and a large, faint grey gear icon is visible in the upper right corner.

MAGAZINE, 2016 EDITION

z magazine

Industry 4.0 — today, ZOLLER has solutions for the production of tomorrow

READY
FOR 4.0

EFFICIENCY BOOSTER

Expandable Measuring System for Every Requirement

TRENDS

Thread Tapping Tools and Cutting Edge Preparation Measured

WORLDWIDE

ZOLLER Advantages Around the Globe

HIGH SPEED

Tool Inspection at FRAISA

ZOLLER
expect great measures®





Dear Readers,

No manufacturing plant can now ignore the topic of Industry 4.0. No question about it - the future of machining is becoming more networked. The special challenge here is the tool. That is because, due to the increasing complexity of the end products to be manufactured, there are more tool variants and more frequent tool changes. Consequently, more than ever before, the tool has become the Great Variable in the production process. It is precisely here that ZOLLER has already performed pioneering work, with the intelligent linking of real and virtual tool data.

Our solutions can be networked with other systems, and grow in pace with the challenges of the future. Networked production is as complex as it is essential. To counteract this complexity, ZOLLER provides the highest levels of user-friendliness right across its product range. This is of decisive importance to process efficiency - at the end of the day you need to have dependable results - regardless of the individual operator and that person's training background. ZOLLER pays attention with every development to the need for a clear and intuitive operating structure. In addition, automated operations reduce the workload for users. This explains why ZOLLER systems are unrivalled in terms of their simplicity.

Of course, the best solutions are ones that combine futuristic technology and ease of operation. We shall be introducing you to a few of these solutions in the second edition of our Z.magazine.

I hope you really enjoy reading it!

Christoph Zoller
CEO, ZOLLER

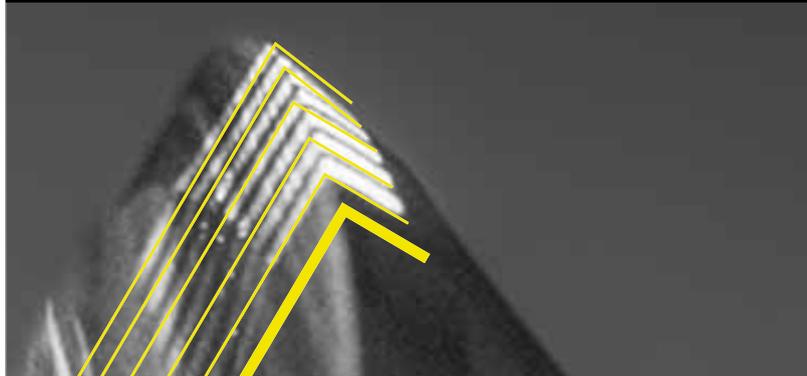
Z magazine

TITLE TOPIC

12 Ready for the Future: Solutions for Industry 4.0



30 FRAISA – High Speed Tool Measurement



26 Trend Topic: Cutting Edge Inspection

BASED ON PRACTICAL EXPERIENCE

30 High Speed Tool Inspection

The metal cutting tool manufacturer FRAISA is committed to fast, precise solutions

54 In Pole Position

This is how the Italian engine builder VM Motori retains its competitive edge

60 Efficiency Booster for All Cases

Precision Fit Solutions for Every Requirement and Every Company

2016 Edition



60 Efficiency Booster Made to Measure

38 ZOLLER Worldwide

TREND

08 Measurement of Thread Tapping Tools

»threadCheck« – the thread professional with added value

26 Cutting Edge Inspection

Simple solutions for a complex topic

ZOLLER UPDATE

06 Z.shortcuts

Brief messages from the world of ZOLLER

38 Z.world

Around the globe from a Pleidelsheim perspective

68 Z.sports

ZOLLER employees give it their all — at work and in sports events

SERVICE

22 Z.training

Here is how to leverage the full potential of your investment

58 Z.forum

Profitable Expertise on tap at the Metrology Practice Forum

SECTIONS

24 The Z-factor

Placing the focus on wobble compensation

70 Z.calendar

Stay in Touch with ZOLLER at these events in 2016

70 Imprint

Z shortcuts

CHEERS TO NEW PATHS IN TOOL MEASUREMENT!

At first glance, this might not resemble a meeting point for tool experts – but that’s what it is: The Wernesgrün Brewery. During the seventh Wernesgrün Tool Symposium, held from January 27–29, Bernd Schwennig and Nikolai Kanzler brought up the topic “Ready for 4.0”, including future-compliant solutions for sharpening and grinding businesses.



In his element: Bernd Schwennig highlights innovative solutions for companies.

GLOWING PROSPECTS

The conference Production 2020—Practical Viability of Industry 4.0 was held in the sparkling environment of Swarovski Crystal Worlds. This event, organized by ZOLLER Austria in collaboration with partner companies from prozesskette.at, featured ZOLLER solutions in a dazzling display of equipment used in the production facilities of Swarovski for many years.



Wolfgang Huemer [right] and Gerald Rackaseder [left] at the Austrian Premiere of a »smile / pilot 3.0« system with pivot-mounted tool inspection at the Swarovski Crystal Worlds venue.

ALREADY MORE THAN 500 WORKSHOP PARTICIPANTS

Whether alone or in joint events with partner companies, ZOLLER is very active in the fields of further education, training, and events. In 2015 more than 500 participants benefited from the expertise of the Pleidelsheim-based measuring specialists! Interest has remained high, so the range of Z.events offered is being extended in 2016.



Here, participants are in full concentration at the shared workshop between ZOLLER and Moldtech in Heidenhain. The title of the workshop was: “Motivated for Today’s Networked Production”.





ZOLLER UK STAYS IN THE FAST LANE

In 2014, ZOLLER UK was awarded the title "Best European Representative Outside the DACH Area" (the DACH area includes Germany, Austria and Switzerland). That is no excuse to rest on their laurels though. In 2015 our UK colleagues raised the bar yet again by hosting an exceptionally successful open house attended by over 50 companies and 100 participants. Keep going!



Leigh Tricklebank from ZOLLER UK has an exciting job. When he visited Mercedes AMG in the UK, he was able to admire the Formula 1 race car —up close and personal!

SPOT ON »titan«

In the summer of 2015 we got that Hollywood feeling. Here's why: The new ZOLLER high-end universal measuring machine »titan« made its stage debut in the product brochure, and also starred in a video. The name »titan« reflects more than its gigantic performance range—this universal genius also looks gargantuan. Are you curious? If so, take a look at the »titan« product brochure and let us know if you are as enthusiastic as we are about our versatile flagship model.

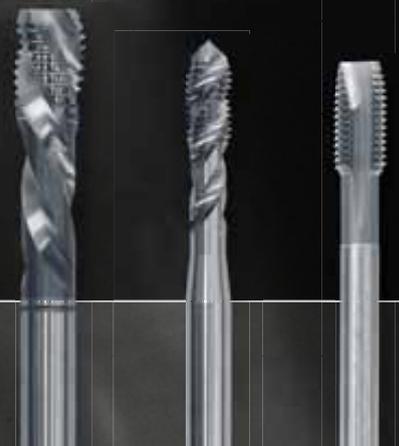


Here is a link to the video, and to a download of the brochure.



UPWARDS SPIRAL

Tapping tools are very versatile and in great demand. Regrettably though, they are hard to check with conventional measuring technology. This is why ZOLLER developed a measuring system specifically for thread tapping tools. One click is all it takes to measure even the tiniest geometries optically, without distortion, and in a fully automatic manner.



THE SOLUTION FOR EFFICIENT MEASUREMENT OF HELICAL TOOLS: »threadCheck«

The universal measuring machine »threadCheck« was developed specifically for tapping tools and features an additional axis. This marks real progress in production because »threadCheck« measures threaded tools as well as all other precision tools accurately and without distortion. And it does so simply and quickly.

All too often, mechanical or tactile measuring methods are only able to measure the small and complicated geometries of tapping tools in an imprecise and time-consuming manner. So the inventive Swabians at ZOLLER devised a better solution.

THREAD PROFESSIONAL OR UNIVERSAL GENIUS? BOTH!

»threadCheck«, the new ZOLLER universal measuring machine, extends the legacy of familiar functions from the globally tried-and-true »genius« series. The new system features an additional sixth axis and a fully automatic pivot-mounted optics carrier that eliminates all signs of helical related distortion. This makes the »threadCheck« a genuine "thread professional" capable of measuring all conventional metal cutting tools with absolute precision.

»threadCheck« is robust, versatile, and easy to use. With its functional, slimline design and the full cladding to protect it from dirt and extraneous light, this system can be located in a production environment without any problem. Operation is easy and requires almost no training. Simply click the mouse for high level automation and the proven, intuitive-to-use, »pilot 3.0« user interface with an expandable range of functions.

Globally unique: Even helical tooth flanks are measured easily. With specialist thread measuring programs, contour, shape, and profile at the radial relief point are located, focused, and output in a four-step operation. All to the highest standards of precision down to the micron level even when dealing with ultra-complex flank reliefs.

Particularly clever: Measurement of each individual thread tooth or specific group of teeth is summarized in the documentation. When remeasuring individual parameters, it is not necessary to measure the entire tool again. Instead, you can access the data of individual measuring processes in a targeted manner. Measuring results outside tolerance are color-coded, eliminating errors and scrap. This saves enormous amounts of time and demonstrates

HELICAL TOOTH FLANKS MEASURED EASILY

that documentation is not just a guarantee of quality for customers, protecting your company against complaints but also plays an important role in accelerating and assuring production processes. For this reason, the automatic output of seamless reports is a standard feature of »threadCheck«.



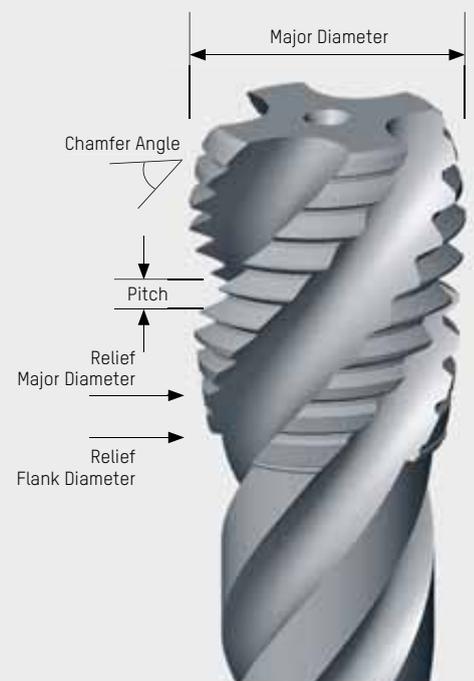


DATA AT A GLANCE PROCESSES UNDER CONTROL

»threadCheck« also transmits data to other areas of the production process via the ZOLLER database with interfaces to all commonly used third-party systems. This means that you always retain an overview of current actual data for individual tools, and these can then be recombined at various production stages. This is especially important with threaded bores. This just-in-time data is important because it is usually executed at the end of a sequence of manufacturing operations, which can result in very costly mistakes. Machine downtime as a result of input errors is eliminated.

»threadCheck« can be supplemented with a tool management system for recording and managing grinding wheels and grinding wheel packages. Detailed information about the grinding wheel packages can be set up, and tools can be assembled virtually from the comfort of your office via the TMS connection.

All in all, with this universal measuring machine for metal cutting and tapping tools, ZOLLER has once again created a solution for new developments in the manufacturing sector. And at precisely the right time. As always, the system is configured in a way that enables it to be adapted to suit additional requirements for efficient operations both now and in the future.



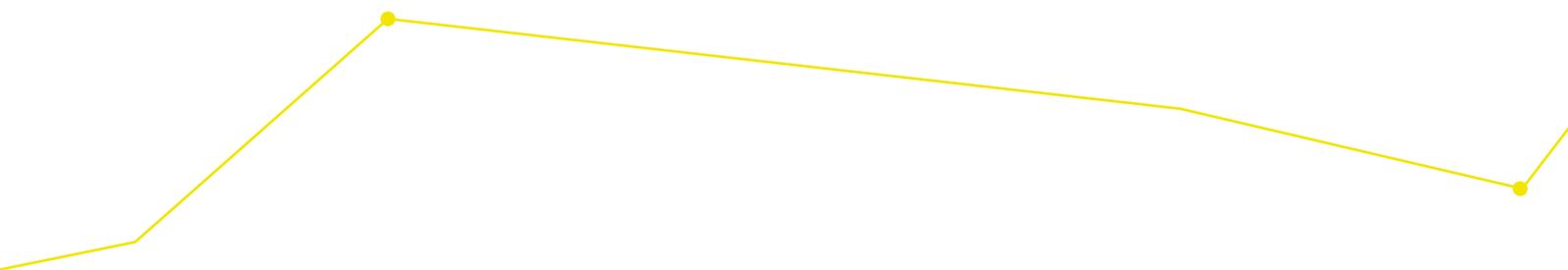
UNIQUE WORLDWIDE: THE THREAD PROFESSIONAL FROM ZOLLER

The micron-precise recording of tooth flank geometry features such as pitch, point diameter, flank angle, chamfer angle, back taper, relief etc., is an easy task for »threadCheck«. With the sixth CNC axis and pivot-mounted multi-sensor optics carrier, the system is perfectly equipped for contactless measurement of thread tapping tools, including gear measuring programs that are accurate in every detail to photographic standards.





READY FOR 4.0



The 4th industrial revolution has begun, and is apparent in the increasing number of networked manufacturing facilities leading us all towards the smart factory—the self-managing factory. The factory must indeed be “smart” because the bar is being raised ever higher, especially in the metal cutting sector where pressures on time, costs, and quality are rising continuously. The response is maximum flexibility that can only be achieved by networking machines together including the tools they operate. Z.magazine has tracked down the requirements to accomplish this.

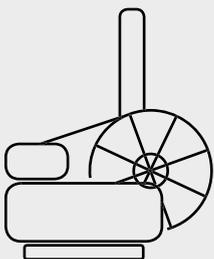
Something that is still relatively new for the manufacturing industry has already been a part of our lives for a long time: networking. Examples include automatic windshield wipers on cars that turn on when it rains, sports watches that check pulse and calorie consumption, and televisions that inform us of the next installment of our favorite series.

How can manufacturing companies benefit from the “Internet of Things” (IoT) and from “cyber-physical systems” (CPS)? The worlds of industry, research, and politics are collaborating in Germany under the general heading of Industry 4.0. With networked, intelligent production processes, the aim is to further advance the competitive edge enjoyed by German industry. As expected, ZOLLER is leading the way in the development of production advantages—in the form of fast, cost-effective, and environmentally tenable SOPs.

HERE IS AN OVERVIEW OF THE FOUR INDUSTRIAL REVOLUTIONS

1st

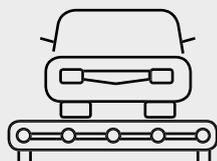
Introduction of mechanical production plant



1800

2nd

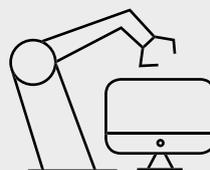
Work-sharing volume production with electric parts



1900

3rd

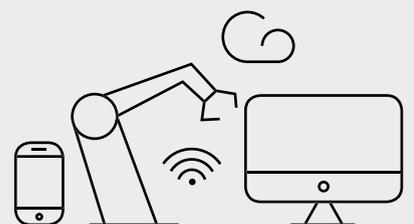
Automated production with electronics and IT



1970

4th

Internet of Things and cyber-physical systems



TODAY

DATA PLAYS A KEY ROLE AND ZOLLER HAS THE SOLUTION

Intelligent systems require information if they are to control and manage themselves. It follows that the generation, evaluation and availability of data is playing an increasingly key role in Industry 4.0. Since the Smart Factory of the future will need to have accurate data and a well conceived tool data management system. Particularly regarding tools, the process-reliable and end-to-end transfer of data is of enormous significance to the delivery of seamless operations. Also, the need to manage this tool data efficiently becomes greater as the variety of products grows because tools need to be changed more frequently, and because the number of new tool variants on the market is rising all the time.

To continue working profitably, tools must be identified quickly and clearly, and their data processed so it remains available at every stage of production. In this area, ZOLLER has already done pioneering work as an all-round specialist in the world of tooling. As a technology leader, ZOLLER solutions are always suitable for now as well as in the future. They can also be combined with one another, and extended as required, enabling them



to be integrated perfectly in existing production processes. The combination of ZOLLER tool presetters and measuring machines, along with TMS Tool Management Solutions, lays a firm foundation for the Factory of the Future. The central ZOLLER tool database, z.One, organizes all tool data throughout the entire life cycle of a tool, across all departmental barriers – from production planning to CAD/CAM, inventory, tool presetting and measuring, and to the machine. Standardized tool data are available today at many locations, and they can be imported in a time-saving manner—for example from Kennametal, GTDE, or CIMSOURCE.

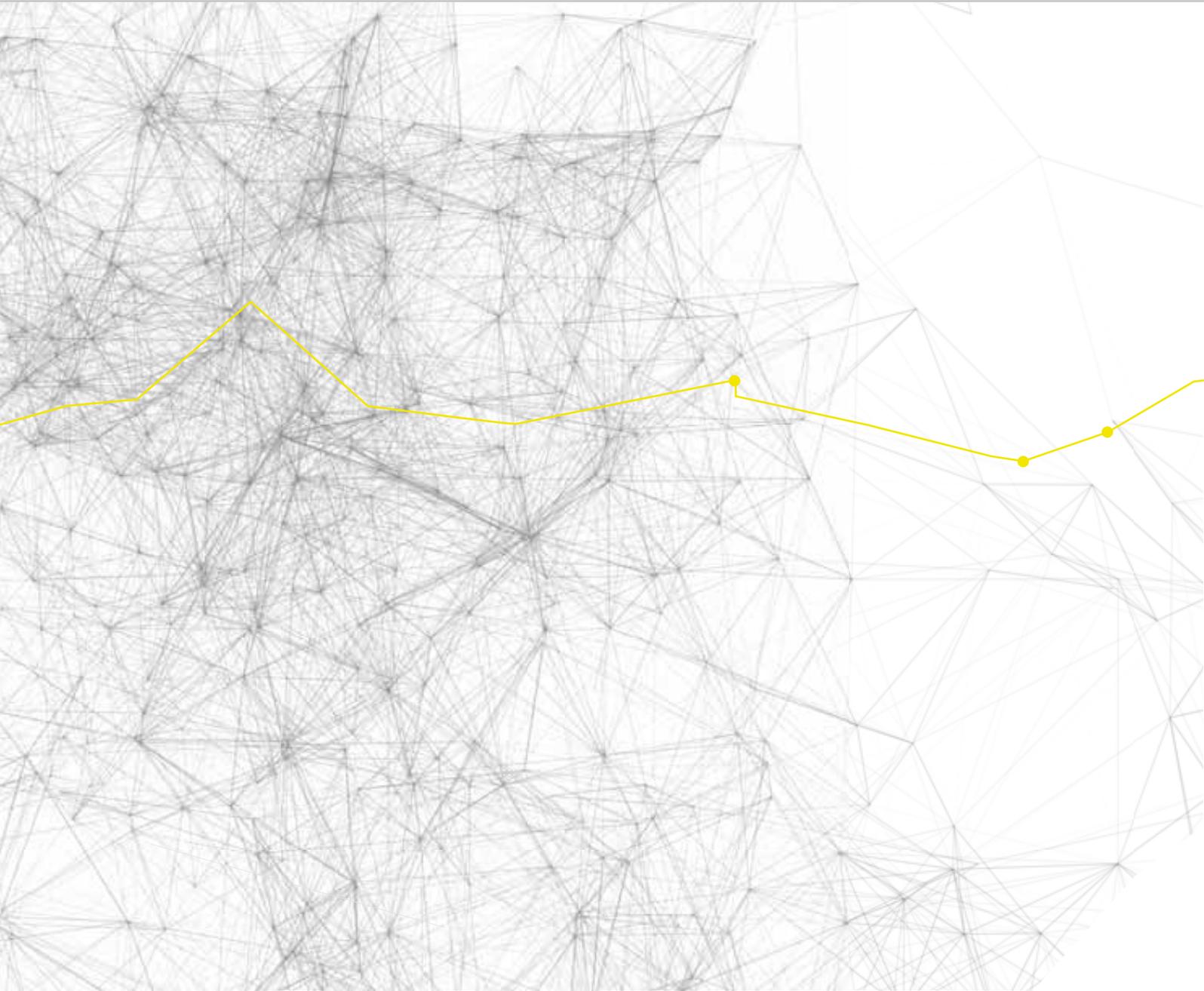
With the TMS Tool Management Solutions app SILVER version, tools can be moved into and out of a selected storage location.

INDUSTRY 4.0

What can we do to safeguard Germany as a manufacturing location in years to come? This is the question that gave rise to the term "Industry 4.0", coined during a project initiated by the German government to look at what the future might hold. Industry 4.0 is a term used for the growing together of the virtual and physical world to become an Internet of Things and of cyber-physical systems. The aim is the Smart Factory—a cost-effective and energy-efficient production facility that is capable of configuring and perfecting itself, thereby securing its own future. To achieve this goal, innovative technology companies like ZOLLER are working pedal-to-the-metal on laying the groundwork for Industry 4.0 in their in-house research and development (R&D) department as well as in joint projects with the tertiary education sector—this with financial backing from the German Ministry of Research and Education. SmartTool is an example of this type of project.



The Internet of Things (IoT) is already linking up different areas of life and sectors of industry.



1 1 1 0 0
1 1 1 0 0
0 1 1 1 0

The z.One tool database links real and virtual data. Their standard formats are easy to verify for DIN compliance and ensures that all participants in the production process receive the data required when it's needed, and at any location. Each physical tool gets a digital twin that can now be used for improvements in the spirit of Industry 4.0.

OPTIMIZE TODAY WITH THE RIGHT SOFTWARE

Here are three examples of software modules that will improve your production operations immediately:

1. With the ZOLLER »flash« software module, tools approaching the end of service life are detected and their status is identified by traffic light colors. A list of new tools to commission is created at the click of a mouse. Once data has set and measured, it is transmitted to the machines in a controller-compliant manner. The result is improvement in productivity through greater transparency.

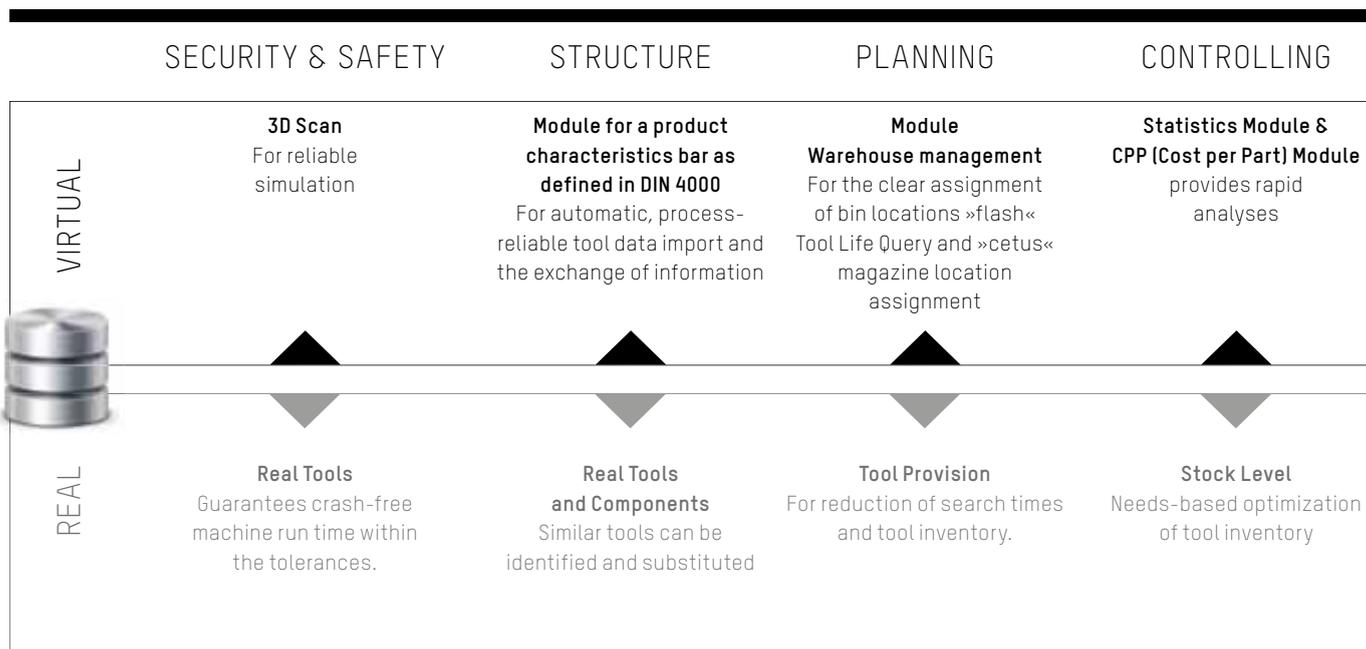
2. The ZOLLER »cetus« system was developed specifically for tool requirement optimization. This system enables the entire production workflow to be mapped out on the basis of setting sheets, and the net requirement for tools can be computed from this. This ensures a cost-effective way of providing tools. Also, thanks to optimized assignment routines, machines can be deployed with smaller tool magazines.

3. As an example of managing costs more efficiently, the ZOLLER Cost per Part (CPP) module compares budgeted and actual tool costs for each part by analyzing the length of tool service lives, and the reasons for replacement of tools and processes. Purchase prices are included in this calculation, together with the number of regrinding operations and the costs associated with these.

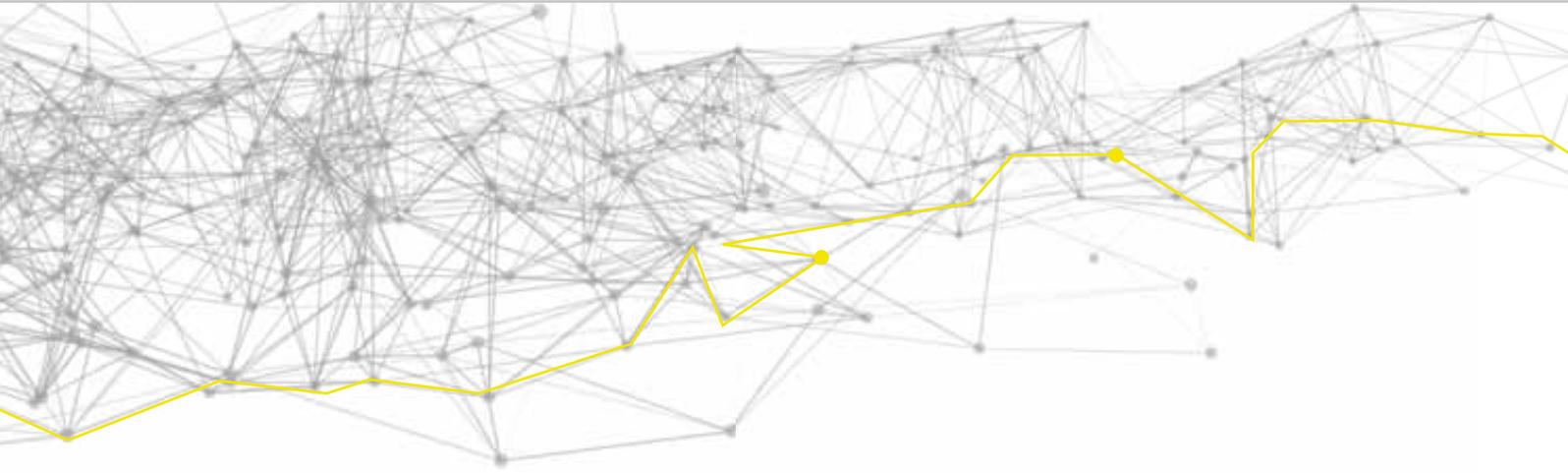
And it gets even better! Modules of this kind are only the opening chapter of Tool Management 4.0. Other more comprehensive possibilities are already in the development stage. The SmartTool is a good example.



Continuous optimization of the production process is based on the Cost per Part (CPP) analysis.



The intelligent linking of virtual and real data in the z.One tool database together with the TMS Tool Management Solutions software modules is an advantage at every level of any production operation.



RESEARCH FOR THE SOLUTIONS OF TOMORROW

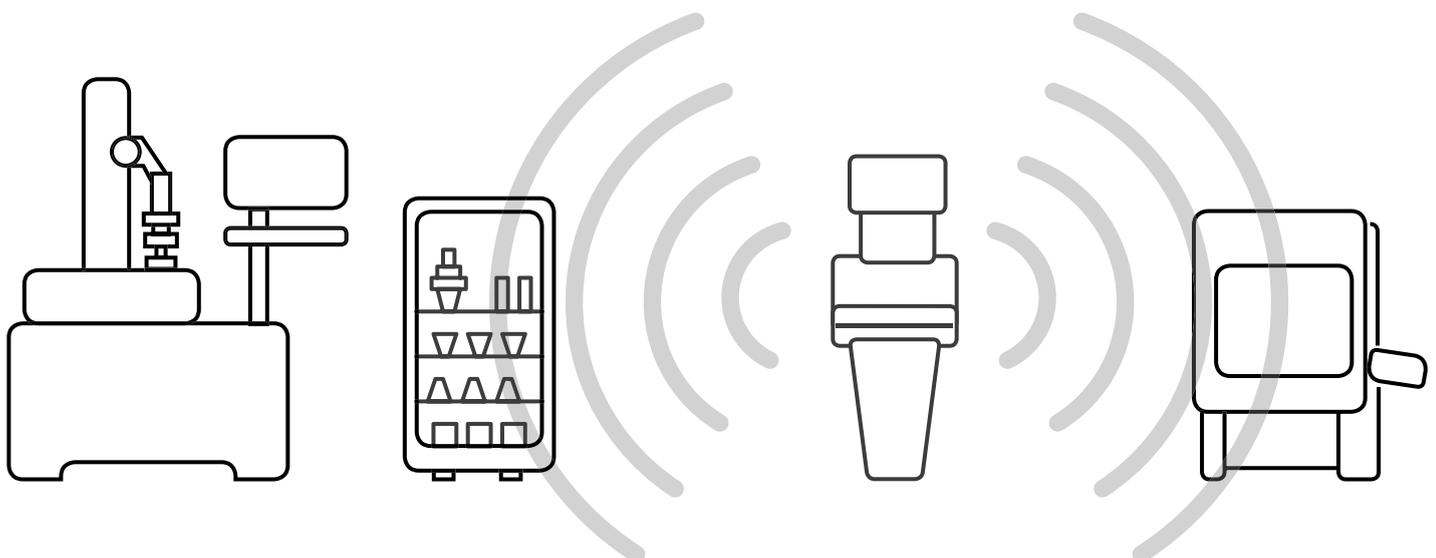
SmartTool: SmartTool is a project backed by the German Ministry of Research and Education. Companies like Heidelberger Druckmaschinen, Siemens, Gühring and ZOLLER collaborate here with the Institute for Production Management, Technology and Machine Tools from the Technical University Darmstadt. The project portrait describes it like this: "The aim of the SmartTool project is to develop a CPS comprising an intelligent tool system and its interaction partners in the tool circuit, such as the machining center or the tool measuring device. This intelligent tool system constitutes the core innovation on this project." This intelligent tool system is intended to optimize the complete tool cycle, from purchasing

to storage, assembly and production, and culminating in waste disposal. Any optimization of this kind harbors vast potential for saving money. Due mainly to the fact that the organizational overhead associated with the increased variety of tools and the more frequent tool changes can consume as much as one quarter of total production costs. The tool circuit becomes much more efficient when using a central database like z.One. When SmartTool is involved, additional information loopholes get closed. For example, where the tool is when not in its storage bay in inventory, on a tool presetter and measuring machine, or on the machining center. This is because SmartTool uses UHF tags** for identification purposes. These differ from the HF tags** currently in use. Their presence can be registered over greater distances. That makes it possible to track the

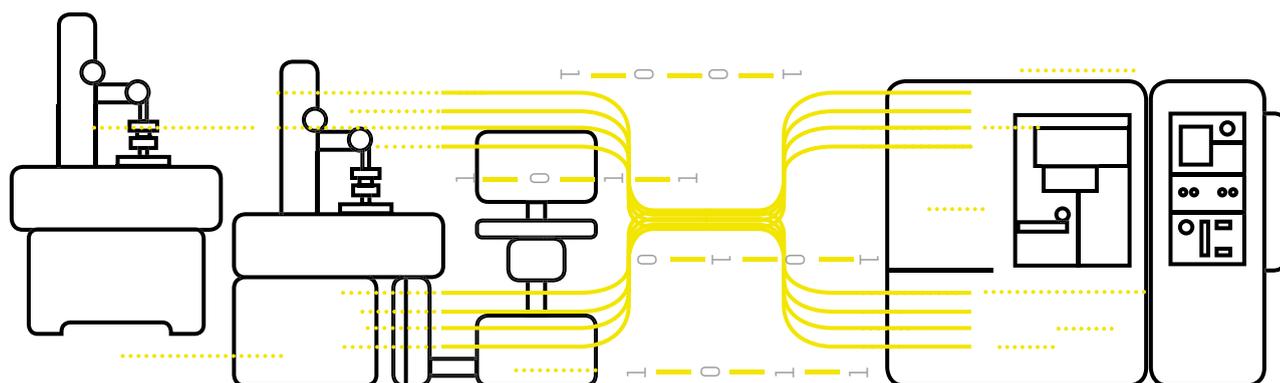
location of a tool on the tool carriage eliminating the need for searches, and shortening transport routes. However, that is not the only benefit of SmartTool. The new generation of sensors also records what is happening with the tool on the machine. The data collected, after post-operation analyses, can be used to reach conclusions about improvements. The data also supports automated decisions, for example, in respect to an optimum ordering strategy.

* See German Ministry of Research and Education [Bundesministerium für Bildung und Forschung] (publisher): „Industrie 4.0. Innovationen für die Produktion von morgen“ [Industry 4.0: Innovations for the Production of Tomorrow], p. 38 f.

** UHF(Ultra-High-Frequency) and HF(High-Frequency) tags are RFID transponders (Radio Frequency Identification) for „contactless“ (i.e. inductive) identification and localization of objects.



SmartTool: Seamless information to tool via UHF tag.



ZOLLER ensures secure data transmission to the machine.

MANY ROADS LEAD DEPENDABLY TO THE MACHINE TOOL

Worldwide, there is a large number of machine manufacturers who use various control systems. With ZOLLER, secure data transmission is possible regardless of the manufacturer via label, RFID chip, post-processor or higher-level production management systems. One of these involves encryption of the actual data in a data matrix code that is scanned by a scanner device connected to the controller on the CNC machine. Data transfer by means of an RFID chip is just as simple. The RFID chip is written with its actual data by a tool identification unit on the tool presetter and measuring machine. The chip can then be scanned automatically. Also, there is the option of using the post processor to prepare data for use by the controller and to transmit it to the machine controller by mouse click.

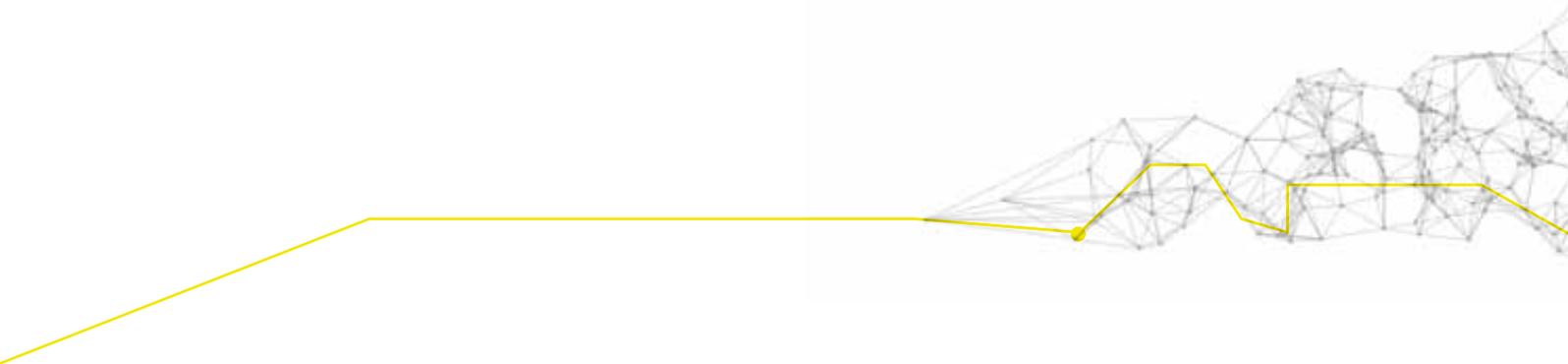
THE FUTURE HAS BEGUN

These examples make one thing clear: Without networking in production, it is scarcely possible to keep pace with current developments. To obtain maximum flexibility, documented quality, and a consistently fast pace without interruptions, you need to have a Smart Factory. First to benefit from this will be those who adopt the solutions created by pioneers of the networked factory.

An innovative company like ZOLLER always works in a consistently future-oriented manner. How can you tell? ZOLLER customers are introducing new systems in a flexible and rapid manner, and are able to respond immediately to unexpected challenges. At the end of the day this is what counts if you want to win in an endless competitive race to be the best.

Z.magazine discussed this with CEO Alexander Zoller. We asked him how his own company tackles the topic of Industry 4.0.





 Interview with Alexander Zoller,
CEO, E. Zoller GmbH & Co. KG

Where is ZOLLER positioning itself in the general environment of Industry 4.0?

We have always looked at the complete production environment as a whole and have sought to ensure that our products—software as well as machines—are capable of exchanging data in a seamless manner. ZOLLER can adapt to meet all requirements. These range from different formats to a variety of transmission routes and technologies, and our versatility and adaptability makes us unique on a worldwide basis. Regardless of whichever new system may come along at some future date, ZOLLER will be able to incorporate it. In that respect, from day one, we have made a tradition of thinking in a future-oriented way. Which of course also embraces the aims of Industry 4.0.

The topic of automation is of great significance for the Smart Factory of the future. What does ZOLLER have in its arsenal for this sector?

Well, we have our automation solution, known as »roboSet«, for tool inspection and measurement. And we supply this system together with a comprehensive set of documentation. In particular for companies with a high level of tool throughput, this system is ideal for the Smart Factory concept—tools are inspected 24 hours a day and machines can run non-stop. That delivers enormous benefits to production.

ZOLLER is also actively engaged in research. What do you perceive the real benefits of projects like SmartTool to be?

Cyber-physical systems enable us to optimize the tooling systems associated with increasingly complex production operations. The aim here is to have the required data available throughout the entire tool circuit—without duplication. A system like SmartTool simplifies this. As does the recording of performance-evaluating KPIs such as the throughput time of tools.

What specific contribution is ZOLLER making to Industry 4.0?

The latest version of TMS Tool Management Solutions, version 1.15, incorporates a full set of inventory records for individual tool components. This unique designation of components is an essential requirement for Industry 4.0, coupled with z.One, the central database from ZOLLER. The digital twin of the tool is available in a complete form, right across the board.

“Regardless of which new system may appear in the future, ZOLLER will also be able to incorporate it”

Alexander Zoller, CEO of E. Zoller GmbH & Co. KG

Generally speaking, why should companies choose ZOLLER as their partner for Tool Management 4.0?

I would cite three reasons for this: Firstly, ZOLLER solutions are easy to integrate in existing systems, and are easy to incorporate in the extended versions of the future. Secondly, because ZOLLER products can be combined with one another, and are based upon a modular structure. And lastly because ZOLLER offers expandable systems that are future-capable. All in all, we are able to offer our customers peace of mind with their capital investments. They will still be able to depend upon ZOLLER products in the future.

DISCOVER THE

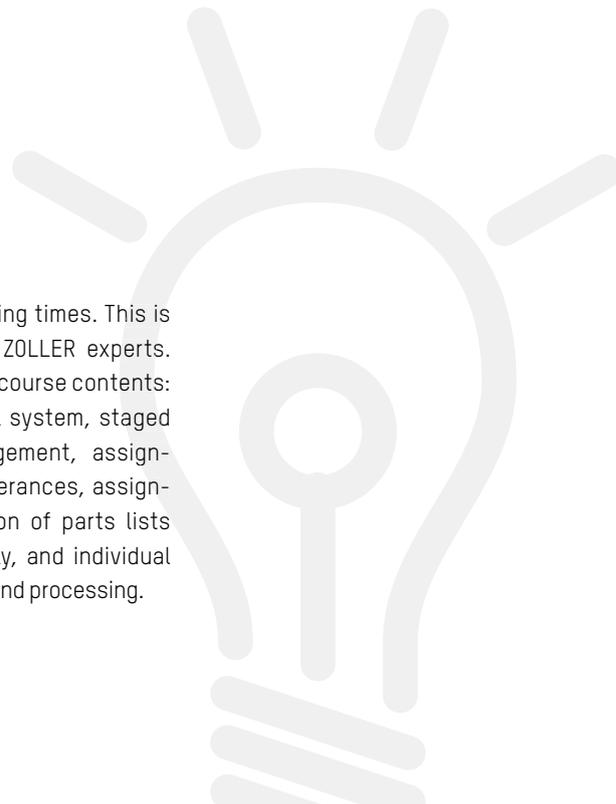
WOW

Z

training

A brand new feature in 2016 is Z.training. Of particular interest is this two-day training course for everyone who already owns a ZOLLER tool presetter and measuring machine, but who does not yet have tool management. Tool Management allows for compiling tool data and lays the groundwork for Industry 4.0. In addition, you immediately benefit from secure data trans-

mission and reduced tooling times. This is described thoroughly by ZOLLER experts. Here is an overview of the course contents: Fundamentals of the tool system, staged programming and management, assignment and checking of tolerances, assignment of graphics, creation of parts lists and graphic tool assembly, and individual component management and processing.



DISCOVER THE “WOW” IN YOUR TOOL PRESETTER AND MEASURING MACHINE

Leverage your know-how and gain an advantage. Optimize your operations!



The Z-Factor

Error? Cleared! With radial runout and wobble compensation for every machine.

PROBLEM

Many machines in continuous operation gradually develop a degree of concentricity error. This can lead to scrap and defective workpieces.

SOLUTION

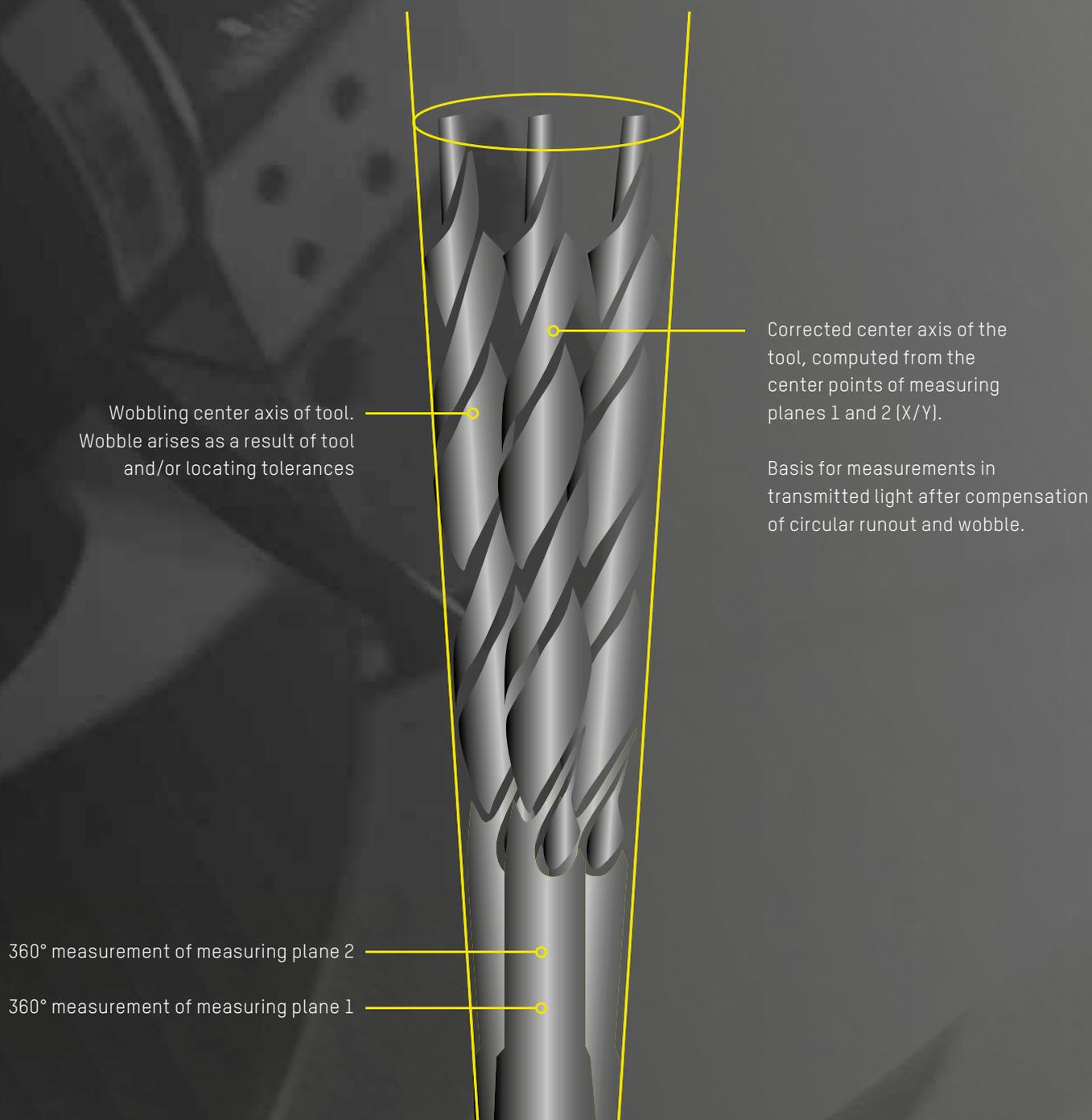
With the Machine Concentricity Compensation function in »pilot 3.0« image processing, the degree of concentricity inaccuracy is determined. This result is communicated to the tool presetter and measuring machine and computed in terms of the dimension of the tool in operation.

Here are the advantages:

- + Error-free contour scan on the rotating form tool
- + Measurement of the concentricity error on the tool blade without faults on the shaft (impurities on clamping surfaces)
- + Measurement of the real concentricity error on blade heads with prior compensation of the holder

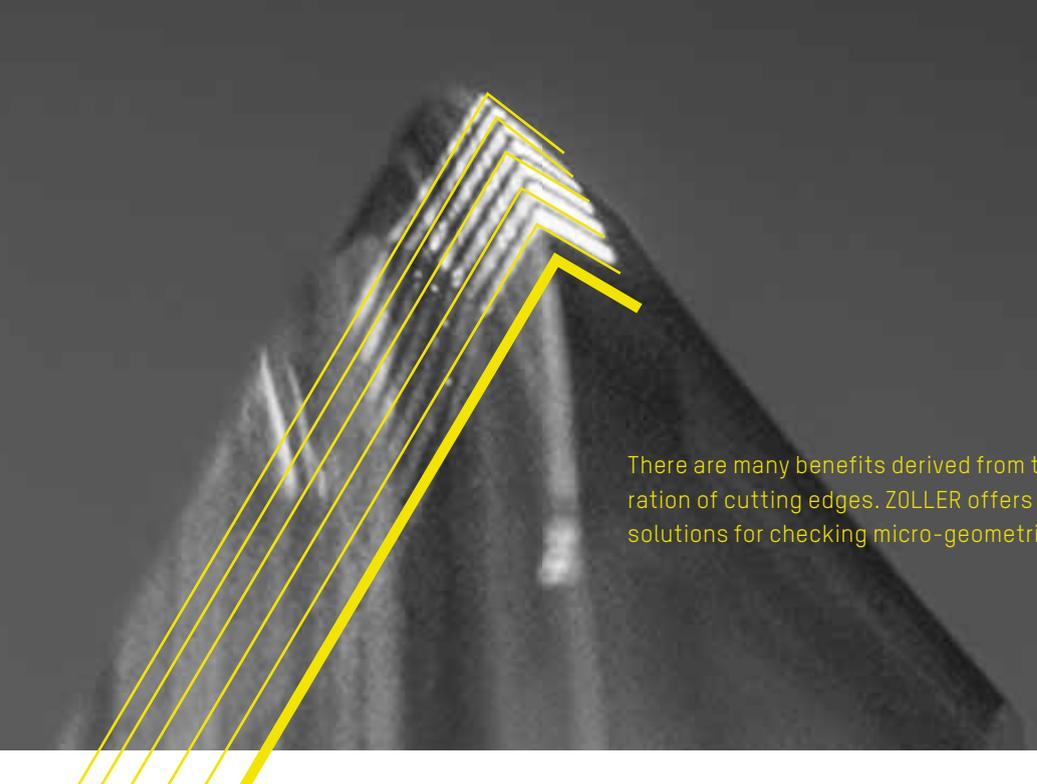
RESULT

The tool is always compared against the concentricity error of the machine, and correct machining of workpieces is assured.



COMING OUT AHEAD

Manufacturers wishing to get ahead of the international competition must have efficient operations. The way to do that is through innovative tool geometries and coatings, and advanced machining technologies. One optimization factor involves definition of the cutting edge preparation.



There are many benefits derived from the preparation of cutting edges. ZOLLER offers several solutions for checking micro-geometries.

If you asked an amateur what a cutting edge should be like, most would say it should be as sharp as possible. And it is true that sharp cutting edges require less applied force. However, sharp edges tend to break causing damage to the workpiece and increasing wear. This is why experts seek, through targeted cutting edge preparation to strike the perfect balance between sharpness and stabilization of the cutting edge. This involves rounding off the edges or creating a chamfer, and sometimes both of these together.

Safer. Faster. Cheaper.

In any event, cutting edge preparation delivers enormous benefits. The cutting edge is made stronger and is stabilized. Applied coatings adhere better, and the cutting chip flow is optimized, as are the lubricating properties and the temperature compensation. All in all, process reliability is increased, tool performance is enhanced, and tool costs are lowered due to significantly extended service lives.

The Architecture of Efficiency

Given the many benefits, it should come as no surprise that ever more ingenious cutting edge architectures are being developed and tested. Depending on the desired shape, edges can be ground, brushed, shot peening and WPC. The most efficient type of architecture—and whether it should or should not have a waveform—symmetrical or asymmetric—depends on the application and on the cutting materials being employed. Given all these possible options, the question remains as to how cutting edge preparations can be calculated, measured and verified—including radius, chamber, K-factor, form and chipping. At the end of the day, defective preparations lead in turn to the problems that they are actually intended to prevent.

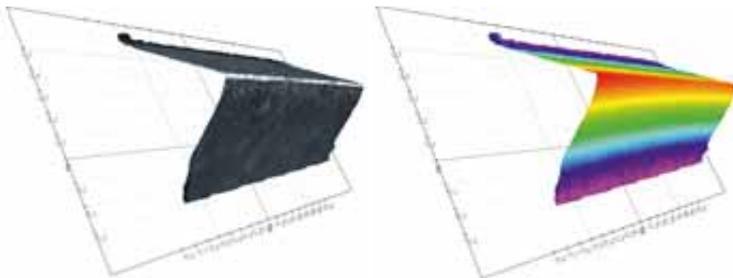
The measurement of edge rounding is possible without contact using the pivot-mounted CNC »Z3dCam« sensor from ZOLLER.



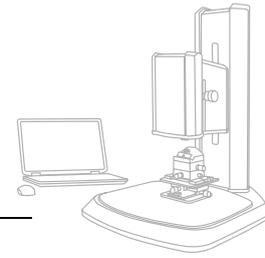
The Better Choice - Visual Measurement Methods

In principle, cutting edge preparations can be measured using visual or tactile methods. The tactile method can be imprecise and, in the worst case scenario, can even cause defects on the cutting edge. The visual method is always the preferred option. This involves projecting strips of light onto the cutting edge and measuring the distortion with a camera without physical contact. Users can now choose between lightweight, mobile visual measuring systems that can be employed flexibly in production environments, or universal measuring machines capable (in a fully automatic process) of measuring virtually every parameter of chip-cutting tools up to the cutting edge preparation stage. It is often advisable to combine both—the universal machine for final complete check and the flexible smaller device for quick intermediate measurement of cutting edge preparation. In all cases, it is important for these tools to be easy to use, and to output their measuring results to test reports so nothing stands in the way of productive manufacturing processes.

Optimum Cutting Edge Preparation Software: »pomSoft«



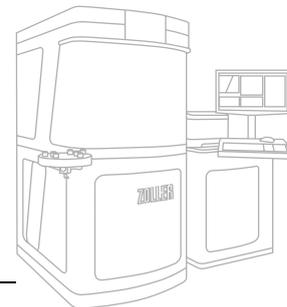
With »pomSoft« the cutting edge can be displayed in different modes—as texture for the immediate recognition of possible surface indentations and surface quality, or topographically to display the height profile of the cutting edge preparation at a glance.



»pomSkpGo«

Measurement of Cutting Edge Preparation "To Go"

For rapid cutting edge inspection directly in production, »pomSkpGo« is the ideal solution. Operation is easy, even for inexperienced operators, due to another in-house development: A tool holder, positioning aid, and live image for simple alignment and precise examination of the cutting edge. The results are of laboratory quality. They are also produced in the form of 2D and 3D analysis output and can be made available to the customer in comprehensive test reports. These reports include actual values, nominal data, tolerances, and bar charts. That creates trust and helps to prevent complaints from arising.



»titan«

Detailed 3D presentation

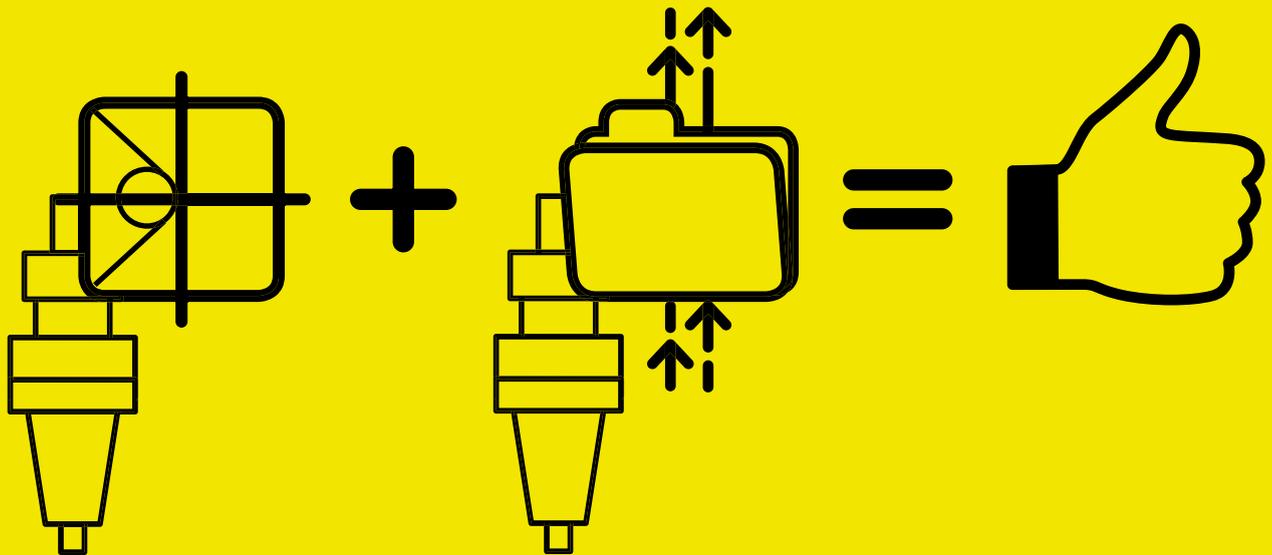


The operator can choose between live image and graphic representation. The live image option simplifies the positioning, alignment, and review process for the cutting edge.

Measures Every Precision Tool Right to the Cutting Edge: »titan«

»titan« is the high-end measuring machine combining decades of ZOLLER expertise in a single system. With up to seven CNC-controlled axes, a transmitted light and direct light camera, LED lighting, and the »Z3dCam« sensor specifically devised for this universal genius, every detail of precision tools can be recorded, including cutting edge preparation. The »titan« is fully automatic, operator-independent, and capable of precise repeatability. An automatic level control function and the vibration-damped base deliver absolute precision and this system can record, test, evaluate, and document every kind of cutting edge property, quickly and easily. With high rates of tool throughput »titan« can be combined with a »roboSet« to form a complete automation solution.

Simple Calculation



In the past, many people thought that presetting devices and tool management software were not related in any way. Then ZOLLER combined them both. The outcome: Greater safety, quality and productivity.

Expect great measures



ONE point of contact for software and equipment and ONE database for all steps in a process: The combination of ZOLLER tool presetters and measuring machines with TMS Tool Management Solutions creates an end-to-end solution, one that covers all bases from tool system to data transmission to the machine. That makes financial sense for you. We guarantee it.
More information: www.zoller.info/en/tms-plus

The perfect combination: ZOLLER tool presetters and measuring machines and appropriate software packages—for every application, for maximum efficiency.

ZOLLER
expect great measures®



AT THE HIGHEST

STAYING AHEAD OF THE CURVE BY BEING FASTER

FRAISA is one of the world's most renowned manufacturers of metal-cutting tools, with very high technological aspirations. This very forward-looking company is headquartered in Bellach, Switzerland with offices in Hungary, Germany, and the USA.

SPEED **TOOL INSPECTION** **LEVEL**

SPEED

All products from its development center for milling tools, drills, taps, indexable inserts, and other types of tools stand out due to their maximum performance, precision, and quality. In turn, FRAISA selects its partners based on the value they place on high quality.

The production of precision tools should not only be considered from a manufacturing viewpoint. The measurement technology needs to be right too.

Kadir Kilic, manager of the high-precision grinding shop at FRAISA has this to say: "»pomBasic« makes it very easy to take measurements." "The large monitor with sharp resolution makes work considerably easier."



A NEW GENERATION OF TOOLS DEMANDS NEW MEASURING REQUIREMENTS

A new generation of tools takes current measurement technology to its limits. Issues such as variable increases in one tool, uneven pitch, different groove groups or differential angles of twist represent particular challenges for measurement technology. Benedict Lochmatter, technology coach at FRAISA, is constantly searching for solutions to meet new measurement requirements and demands. Most recently, an inspection solution was sought for the high-precision grinding shop. Ideally, this solution would be capable of recording front and circumference of the tool simultaneously. "We scoured the market and eventually decided that what we really needed was a new microscope. That is until we learned about the »pomBasic« at the ZOLLER booth during the Control 2014 trade fair. It was precisely what we were looking for," says Lochmatter.

FAST AND PRECISE

The ZOLLER »pomBasic« is impressive due to its rapid measurement speed, ease of use, and concise documentation. Kadir Kilic, manager of the high-precision grinding shop is very enthusiastic: "On the »pomBasic«, measurement is as easy as with the »elephant« technology, familiar from the »genius« universal measuring machine. Its large monitor with sharp resolution makes the work easier and more comfortable," he adds, "much easier on the eyes than working with a microscope. We can measure everything we need quickly. For example, I can rotate to look at the end of the tool, then measure the circumference. This type of rapid and automatic contour measurement is only possible with the

»pomBasic«,” adds Kilic. The monitor’s razor-sharp image allows the tool to flawlessly detect the tool’s contour and surface. Also, the background image can be saved and accessed to compare to a current measurement at any time. For a target-actual comparison, DXF contours can be stored and accessed if needed.

»pomBasic« is used mainly for in process measurements right in tool grinding production, i.e., for quickly inspecting various cutting tool geometries. All desired diameters and lengths of tools produced can be measured and inspected. Face geometries and circumferences are measured in quick succession. “Simply insert it and measure it quickly, that’s what matters to us,”

says Kilic. And it takes less than a minute to do this with the »pomBasic«—just insert the tool, position and measure it—test log and/or screenshot are also generated at the same time.

EASY TO USE – EASY TO LEARN

The »pomBasic« is set up centrally in FRAISA’s high-precision grinding shop and is used by many shop employees after just a brief training session. Technicians can configure the user interface to meet their own individual needs. “The »pomBasic« tool inspection machine is designed for use on the shop floor and is equipped with

The »pomBasic« tool inspection machine is located centrally in the high-precision grinding shop and, after minimal training, most employees can use it.



very easy to use and intuitive software, and it gains acceptance quickly and easily," explains Dieter Müller, ZOLLER application engineer who oversaw its installation and start-up at FRAISA. Even after just the first day of training, shop technicians were able to perform measurements on the »pomBasic« quickly, confidently, precisely, and independently.

**OFFERING BOTH MANUAL AND
AUTOMATIC MEASUREMENT PROCESSES**

Combining manual and automatic measurement processes is a particular advantage because all tool parameters required by the drawing can be precisely mea-

sured as specified. This means that in practice, all input or tool parameters entered from the grinding machine's profile program are checked and can be included in the testing log.

For each measuring task, at least three different measurement methods are available. For the manual process, a measurement is performed by manually moving the axes while the machine automatically measures the contours. Alternatively, the crosshairs can be used to determine the geometry. The basis for the measuring precision of »pomBasic« is founded on its robust, stable design and high-precision guides with integrated, protected length measuring system.



From left to right in front of the office headquarters at Bellach, Switzerland: Benedict Lochmatter, technology coach at FRAISA, Adrian Hangartner, head of production at FRAISA and authorized representative and Dieter Müller, application engineer at ZOLLER



PRECISION AT ALL PRODUCTION LEVELS

“Since we manufacture precision tools, it is important to us that we look at it not only from the manufacturing perspective, but also the measurement technology must be right,” emphasizes Adrian Hangartner, head of production at FRAISA and authorized representative. “We need the right grinding machine and the right measurement device.”

Precision goes without saying. Many measurement technology suppliers offer precision devices down to the micrometer. “But ZOLLER’s device has one additional advantage: speed,” says Benedict Lochmatter. Because those who want to stay ahead of the curve not only have to be precise, they have to be fast.

FRAISA: is one of the world’s leading manufacturers of metal-cutting tools



Metal Machining
 CH-4512 Bellach, Switzerland

FRAISA produces metal cutting tools for the global metalworking industry. The company was founded in 1934. Today, it ranks among the leading manufacturers in its sector. Long-term commitment and sustained development are values that characterize FRAISA’s corporate image. FRAISA stands for the highest possible technological requirements, creative engineering expertise, optimal quality and teamwork at all levels. Our goal is to help customers minimize their production costs through our high-performance tools and services and to maximize productivity in all areas. The bottom line is that the actual benefit for our customers matters to us.

www.frais a.com



FAST FIGURES

One thing is clear in the FRAISA report on the preceding pages: Anyone wishing to secure a competitive edge in this market must work precisely AND quickly. Professional tool measurement and presetting are genuine efficiency boosters in the production process, as these figures demonstrate.

To shrink a tool on the »redomatic« tool presetting, measuring, and shrinkage device, you only need

5
SECONDS

1500

MACHINE HOURS

EACH YEAR, H. BECK Machinery Ltd., Windsor, has achieved savings through optimization of its tool management system. It did this with the »smile« tool presetter and measuring machine, and TMS Tool Management Solutions from ZOLLER.

RESULTS ON THE FAST TRACK

25
PERCENT

OF THE TOOLING TIME PREVIOUSLY REQUIRED.

This is all that HE-Zerspanungstechnik needs since it started working with the ZOLLER »venturion«—saving cash and improving quality.

120
TEETH
MEASURED
IN 80 SECONDS

This is the »gemini« tool presetter and measuring machine from ZOLLER, specifically for crank-shaft millers.

15,000
EURO

are saved per machine annually on average by using a ZOLLER tool presetter and measuring machine. At an assumed hourly rate per machine of € 75. After all, everything runs fast and more smoothly when tools have been prepared correctly.

With the »ace« power-actuated high-precision spindle from ZOLLER, the change of tool position can be accomplished with a changing accuracy of 1 micron, and
WITHIN LESS THAN

10

SECONDS

75
PERCENT

FASTER. With TMS Tool Management Solutions, Bosch Rexroth in Fountain Inn, South Carolina, has managed to reduce transaction times for the retrieval of tool components from three minutes to 45 seconds.

1
MINUTE

INSERT THE TOOL, position it, measure it – including test report and screenshot: FRAISA can achieve all of this in just one minute with »pomBasic«.

380
DAYS

spent by interested parties and customers in 2015 on visits to www.zoller.info



WHEREVER MEASURING TECHNOLOGY IS INVOLVED, WE ARE PRESENT LOCALLY:

world

They say that the world is a village. And they are not entirely wrong. After all, it only takes a couple of clicks to communicate with people at the far side of the world. Provided that you speak the same language and can build on a shared basis of knowledge. Small talk about the weather is always possible. But what happens if you have to deal with a specific problem in the production operation of a company on the far side of the world? What happens if production conditions there are entirely different from where you are? What if that problem cannot simply be solved using solutions tested in-house and by providing a couple of tips over the phone? The answer: This is exactly what distinguishes premium providers from minimal providers. At that point, you are delighted that you opted for a technology leader such as ZOLLER, a company with a local presence for its customers wherever on Earth they may be located. Over the next few pages, we will show you just how actively engaged ZOLLER is around the globe. Enjoy the ride!

HERE, PRECISION HAS A HOME

The natural world begins directly behind the building – anyone who wants to walk in greenery at lunchtime is in the right location at the ZOLLER head office in Pleidelsheim. This little town in the regional district of Ludwigsburg, located close to the federal state capital of Stuttgart, offers ZOLLER employees a perfect combination of rural idyll and city flair.

pleidelsheim

Development as a Technology Leader

Perhaps this Town & Country balance is one of the reasons why the tool measuring and software solutions created by this company achieve the optimum balance between ease of use on the one hand and absolute precision on the other. Certainly the interna-

tional profile of the team also helps to ensure systems are developed here to meet the vast array of requirements of the global economy, and that offer genuine production benefits on a truly worldwide basis. From Swabian engineer to Japanese tool specialist, everyone is represented in the ZOLLER team.



ZOLLER Assembly Department.



At ZOLLER, "Made in Germany" means "Made in Pleidelsheim"

The headquarter site near Stuttgart is however not only the location where all the R&D takes place. Instead, it is also home to a complete assembly operation for tool presetters and measuring machines. All machines that are built here are of high-quality brand components, primarily from Germany. The manufacture of each ZOLLER machine can be traced back to the individual assembly operative – a guarantee of quality that is greatly appreciated by our customers.

ZOLLER Know-How is Passed on to Our Customers

It is this know-how, derived from decades of experience, that makes ZOLLER solutions so unique. Here we know precisely what it looks like inside the production facilities of our customers. And we also know how to support that expertly with systems that are simple and intuitive to use. Workshops and events do of course

also have a role to play. In 2015, Pleidelsheim organized more than 30 regional events attended by more than 400 people. And those are only the numbers who attended from Germany. We also deliver training courses around the globe. With great success that shows how great the need is for knowledge associated with tool management.

Z.events: New in 2016

Due to great demand, ZOLLER is launching a new event concept in 2016 under the heading of Z.events. This initiative commences with a series of three events: Z.connect, just as the name suggests, deals with solutions for networked production. Practice forums and sector meetings comprise Z.forum. And Z.training covers the numerous training courses about the various ZOLLER systems. With Z.events, ZOLLER is now even closer to its customers in 2016, including live demos, training courses, and a platform for experts to exchange views.



Bangkok: Participants at Lunch & Learn.



Korea: »threadCheck« starts its career in Asia.



Thailand: »genius 3« captivates with perfect measuring results.



Lunch & Learn in Asia

In Europe, the ZOLLER tool management workshops are now an established part of the landscape. On the subject of transparent production processes, Asia is also very far down the same road, too. The tool experts from ZOLLER explain how to achieve the level of data transparency required, and they demonstrate all the possibilities of TMS Tool Management Solutions, with specific reference to optimized production processes.

»threadCheck« Launches Its Career in Korea

The first ZOLLER thread professional is going into service at a leading international tool manufacturer in South Korea. This company exports various items, including thread cutting tools, to 75 countries and is obliged to comply with international quality standards. ZOLLER »threadCheck« really hits the spot for them and, of course, it did not do so alone. ZOLLER experts have worked on location to get the system assembled, installed, and up and running. They also trained the operators.

»genius 3« Delivers Delight!

It's nice when perfect measuring results make people happy. Our Thai customers are certainly enthused by our »genius 3« system. What certainly comes across well is the absolute dependability of ZOLLER's Made in Germany quality, and that they can trace everything back to the individual on the assembly line. This is also conveyed by the quality guarantee card displayed on the machine.

From Beijing to Bangkok, and From Jakarta to Singapore

ZOLLER also attends Asian trade fairs. For example, the team from ZOLLER enthused trade fair visitors at the CIMT (China International Machine Tool Show), at the Metalex trade fair in Bangkok in Thailand, and ZOLLER also attended Manufacturing Indonesia in Jakarta. The MTA in Singapore is also important. Every two years, on a site measuring over 15,000 square meters, all the leading representatives from Asia get together from the industrial machinery, metal-working, and precision machining sectors. Here, ZOLLER presented »smile / pilot 2 mT«, »genius 3«, and TMS Tool Management Solutions.

asia

Asia has many facets, and this is also true of its manufacturing sector. In the important markets of the future, such as Thailand and Korea, or with pioneers of efficiency such as the Japanese, ZOLLER is on location, offering solutions that are adapted to suit the needs of these respective markets.



Mike Ryuguchi in his element: At Metalex in Bangkok.

BIG in Japan

With a total of three new presentation rooms, ZOLLER Japan is advancing superbly thanks to committed employees, including Mike Ryuguchi, the Sales Manager at the Head Offices of ZOLLER Japan in Osaka. Z.magazine talked to him about the exceptionally successful year enjoyed in 2015.

>>> Mr. Ryuguchi, could you describe for us your overall impression of the last year specifically in respect of ZOLLER Japan?

The year was a very successful one for us. Indeed, the best year since ZOLLER Japan was founded back in 2010.

>>> What made it into such a success?

Certainly, there will be several reasons for that – the positive economic growth in Japan for example. And of course our strategy, which is to be local at several locations with offices and presentation

here we are directly in the highly developed epicenter of the Japanese automotive industry. The success of the last year is due in large measure to the high demand at this location for ZOLLER solutions.

>>> Keyword measuring machines: ZOLLER Japan primarily sells “advanced” ZOLLER solutions, rather than entry-level presetting equipment. Why is that?

This will be due in part to the fact that Japan also has a great many large-scale

form of documentation and end-to-end logging of results (i.e. reporting). Without this, it would not be possible to verify quality standards. Also, since Japan has many manufacturing facilities for precision components, the tools need to be correspondingly precise. And that has to be verifiable. The protocols (report documents) provide a guarantee—firm evidence—of what the end customer is calling for. Then yet another reason has a bearing on our success: Over the years, we have gained many satisfied »genius« customers, and word tends to get around.

>>> Is there anything that you have to take carefully into account in the sales process in Japan?

Not that much, I believe, except perhaps that large corporations tend to prefer dealing through just one agent. When I left a large Japanese corporation to join ZOLLER, and got to know the ZOLLER way of selling, my first thought was, “Wow, this is very German”. But I have to say this: It works! Sales is sales!

This is the best year since the founding of ZOLLER Japan in 2010

centers. Initially, we just had one office, in Osaka, but now we also have premises in Yokohama, close to Tokyo and in Nagoya – local presence. This means that we now have offices and presentation rooms in all three of the largest industrial centers in Japan. More and more interested parties are coming into our showrooms. Customers want to see the systems before they buy, and this is particularly true of the big high-end measuring machines.

>>> Is one of these offices particularly important for ZOLLER Japan?

All of our offices are superlatively positioned in strategic terms. Having said that, the third office in ‘Toyota City’ (Nagoya) has a special status – because

manufacturers, such as Mitsubishi or Sumitomo, and our big systems really do make financial sense for these players. In this sector this year, we have already sold a large number of »genius« equipment items. Manufacturers simply wish to err on the safe side, and ZOLLER »genius« offers this peace of mind in the





usa

When ZOLLER first ventured into the U.S. market back in 1997, almost nobody here knew what a tool presetter was. The pioneering work that ensued has paid off in the land of infinite possibilities. ZOLLER solutions are in demand now more than ever.



California: ZOLLER TMS Tool Management Solutions were presented at the ESPRIT World Conference 2015.

East Coast or West Coast? Both!

Ann Arbor, the twin town of Tübingen, Germany is about 40 miles West of Detroit, on the eastern side of the USA. As a university town, it has a lot to offer culturally – it's no surprise then that musical greats like Iggy Pop have made their homes here – just like ZOLLER Inc., one of our two branch offices in the USA. To visit the second ZOLLER branch office in this, the land of infinite possibilities, we had to travel right across the country to the West Coast: To Torrance in Los Angeles. Whether East or West Coast: At ZOLLER all are in agreement about all matters relating to quality, precision, and efficiency.

Sunny California – The ESPRIT World Conference

In 2015 the ESPRIT World Conference took place in Olympic Valley, California. As always the event organizer was DP Technology, an ideal venue for this get-together of the ESPRIT community's worldwide network of developers, dealers, and OEM partners, all associated with metal cutting production. The topic was Breaking Through Boundaries, a perfect match for ZOLLER TMS Tool Management Solutions. The event was presented by Dietmar Moll and was met with great interest from the participants.

ZOLLER On The Road

Who wouldn't enjoy a tour of the U.S.? Our colleagues from ZOLLER Inc. did just that in 2015, visiting many trade shows. In Dallas, they represented ZOLLER at AeroDef., then continued to the automotive metropolis of Detroit, for the GearExpo trade show. Their visit to AMTS (Advanced Manufacturing & Technology Show) took them to Dayton, then to West Allis where they attended the WMTS (Wisconsin Manufacturing & Technology Show).



The early bird Newcomers to the manufacturing sector are also interested in ZOLLER solutions – here in »smile / pilot 2 mT« in combination with TMS Tool Management Solutions.

They traveled to Wichita for the WITS (Wichita Industrial Trade Show), and to Columbus, Ohio for PMTS (Precision Machining Technology Show), and finished up in Massachusetts at EASTEC. Not bad when you see how you can get around the country as a ZOLLER employee!

So many trade fairs. Did any one stand out in particular? This was the question we wanted our overseas colleagues to answer for us. Michael Stepke explained that he was especially enthusiastic about one of the smaller events – EASTEC in Massachusetts: "One of the best local trade fairs in the USA," he enthused, explaining that the inspection solutions from ZOLLER really struck a chord with event attendees.

CLOSE TO THE CUSTOMER, DIRECTLY ON THE SYSTEM:

ZOLLER Inc. is not only represented at trade fairs. Outside the trade fairs, interested parties and customers are offered a wide range of events – networked together with renowned partners, right across the USA. In the numerous workshops, training courses, and Lunch & Learn seminars, the participants learn a lot while also exchanging news and views with trade colleagues.

2015 Events Continued Into 2016

Lunch&Learn: These popular events combine a shared lunch table in a relaxed atmosphere with an opportunity to discuss technical subjects – these are held in Europe as well as in the USA. In 2015 no fewer than 21 Lunch & Learn events were held with renowned partners such as Sandvik, Makino and Okuma, attended by more than 60 people and, in 2016 as well, events will be held with a variety of partners.

In every corner of the United States

To attract as many interested parties as possible, and to keep the distances they have to travel as short as possible, these events are not only being held at the Head Office of ZOLLER Inc. in Ann Arbor but are also arranged in five other cities including: Torrance, CA on the West Coast, in the East near the Great Lakes in Manson and Roselle, in the New York Area in East Hartford, and in the center of the country in Broken Arrow.

What Got Participants to Leap From Their Seats

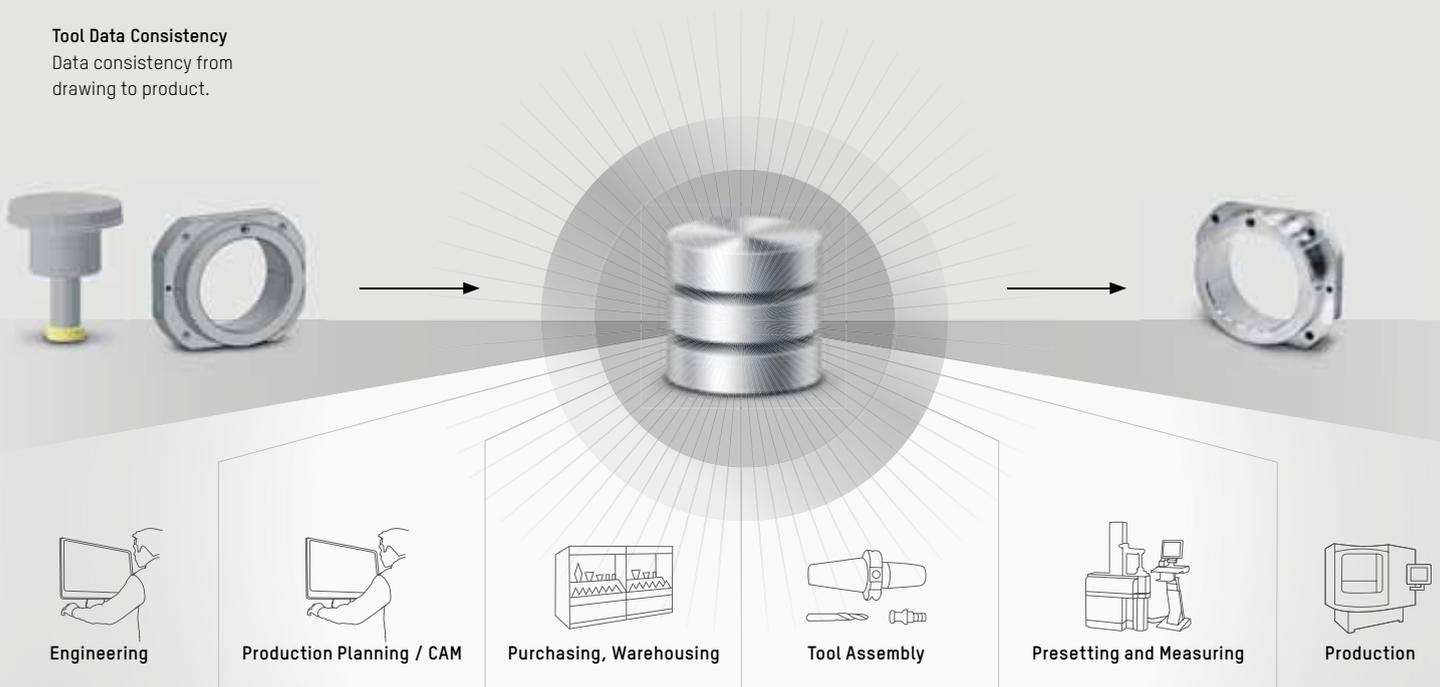
Attendees were most enthused about the possibility of experiencing ZOLLER solutions live, and being able to exchange ideas and information. Through the live simulation of the production process with TMS Tool Management Solutions, it became clear that data consistency is assured. There are various reasons for this consistency, in particular secure data transmission right up to the machine.

For the First Time in the USA

Measuring Technology in the Micro/Macro Area

On 1 May 2015, ZOLLER Inc. attended its first measuring technology workshop, entitled Macro and

Tool Data Consistency
Data consistency from drawing to product.





Micro Geometry of Drills and Reamers. Dr. Viktor Astakhov, a well-known tool expert and the author of relevant technical books on the geometries of cutting edges and tools, delivered the theoretical introduction and then led into measurement and inspection operations using the »genius 3« universal measuring machine, the »pomBasic« compact inspection tool and »pomSkp60«, the mobile inspection solution. Werner Lueken, the measuring technology expert at ZOLLER Inc., did a live presentation of how simple these tools are to operate, and of just how versatile their applications area - enthusing all 32 visitors!

Left: The well-known tool expert Dr. Viktor Astakhov delivering the theoretical introduction on the topic of tool inspection.
Right: Werner Lueken at the live presentation of ZOLLER solutions.



ZOT – ZOLLER on Tour in the USA

For customers who are too far away to visit a ZOLLER Inc. showroom, our sales team drove the ZOT vans around the country again in 2015. They are equipped with tool presetters, measuring machines, inspection equipment, and software solutions, including »pilot«, »pomSoft«, and TMS Tool Management Solutions.





Sweden: ZOT (ZOLLER on Tour) visiting well-known companies with »pomBasic«, »pomSkpGo« and »venturion / pilot 3.0«.



Berlin: Live presentation of the individual production steps with TMS Tool Management Solutions at a Lunch & Learn workshop.



Weinheim: ZOLLER at the opening of the new European headquarters of ANCA, the Australian manufacturer of grinding machines.

europa

Sometimes good things are close at hand – and that is why ZOLLER is on the starting blocks – naturally enough also in Europe, in terms of optimized production operations.

ZOLLER on Tour in Sweden

Not an elk in sight, but instead open doors at famous corporations such as Volvo and Sandvik. Once again in 2015, ZOT (ZOLLER on Tour) was on the road, presenting interesting tool presetters and measuring machines in customer's own production environments to illustrate the possibilities. On board were »pomBasic«, »pomSkpGo«, and »venturion / pilot 3.0«.

Lunch & Learn in Berlin

It could also have been called a hot spot: On September 3, 2015 tool manufacturers, suppliers, contractors, and high volume production manufacturers from Berlin and surrounding areas attended a Lunch & Learn called Esprit Meets ZOLLER at the energy and environmental technology qualification company QEU gGmbH. The participants were especially enthusiastic about the live presentation of individual production steps, including all the benefits of ESPRIT and TMS Tool Management Solutions.

ANCA: Opening of the New European Head Office with ZOLLER

The Australian grinding machine manufacturer ANCA has just opened its new European Headquarters in Weinheim. This was associated with a two-day in-house exhibition, ably supported by ZOLLER. The solutions presented »pomBasic« and »genius 3« remain in Weinheim as part of an ultra-modern exhibition in the head office.



Toulouse: Perfectly prepared for the arrival of visitors. The ZOLLER crew at the SIANE trade show.

At the SIANE in Toulouse

A few of our French colleagues went straight from EMO in Milan to Toulouse to attend the next trade show, the SIANE, a trans-regional industry exhibition event in Toulouse. On exhibition were »smile / pilot 2 mT«, »pomBasic«, »smarTcheck«, and TMS Tool Management Solutions.



FULL-BLOWN ZOLLER POWER AT THE EMO

Get in Touch – Solutions for Cost-effective Production. This was the ZOLLER motto at EMO 2015 in Milan, and trade fair visitors took these words literally because they were able to see for themselves just how easy to use ZOLLER equipment is. They also had the unique opportunity to get personal advice from the international ZOLLER team of experts, including CEO Christoph Zoller.



Impossible to miss: The ZOLLER stand at EMO 2015.

That Looks Good:

90 Percent of the ZOLLER Product Range on Location

Remarkable design and powerful technology – that is what was special about EMO 2015. From 5 to 10 October the machine tool manufacturers took over the tiller in the Italian fashion metropolis. At the ZOLLER stand, visitors were able to experience 90 percent of the product range. All they needed to know about tool presetting, inspecting, measuring and managing tools – with live action.

“Get in Touch” was the ZOLLER Motto and Agenda and Visitors Were Delighted!

“It really is that easy!” That had to be the phrase heard most frequently at the trade fair stand after visitors tested ZOLLER equipment for themselves. Not surprising, when you consider that the promise of simple operation has now become almost a throwaway phrase in many sectors. Which makes it a pleasant surprise that the promise is not only honored but is also backed up by the full works – an ergonomic equipment structure, a machine controller with intuitive operation, and carefully thought-out software. “In particular those who had never worked with ZOLLER before were really amazed when they found themselves able, without much by way of explanations, to measure different tools”, explained Vadim Zaiser, Applications Technician at ZOLLER. “This is why we called upon interested parties to bring their own tools along with them – then they are ideally equipped to judge just how simple the ZOLLER system is to use.”

The Result of EMO? Fabulous!

To enable all trade fair visitors to see for themselves just how simple this equipment is to use, and to ask any questions they had, the ZOLLER team had international



The trade fair motto of Get in Touch is one that visitors took literally, and convinced themselves live about the solutions from ZOLLER.

support. Representatives and colleagues from Switzerland, Italy, France, Austria, Great Britain, Spain, Turkey, and Israel were also in attendance in Italy. And it was all worthwhile, as Filippo Perletti from Italian dealership Multicontrol s.r.l. reported:

“The EMO was a great opportunity to present our customers with almost the entire range of ZOLLER products on a single, visually very impressive trade fair stand. Otherwise, you only get an opportunity like this at the head office site in Germany. That is precisely what pleased our customers best: The assembled ZOLLER Power, all on offer at one and the same time. And we were proud to be allowed to present the products. Then the icing and cherry got added to the proverbial cake: After the EMO, when we sent out the ZOLLER on Tour newsletter, every appointment slot got booked solid within a very short time indeed! All in all, the outcome of the EMO trade fair was really fantastic for us. We received a great many interested visitors, and many of them will shortly be visiting us on the ZOLLER on Tour vehicle.”



Solutions at a glance – lively interest was shown in the TMS Tool Management Solutions.



Having fun at work: Nadia Nuovo and Giulia Trostel (top left and right) with Julian Lüdecke, explaining the benefits of ZOLLER-TMS.

With powerful (engine) performance into the pole position

The Italian engine maker VM Motori S.p.A., since 1947 a manufacturer of high-performance diesel engines in Cento, is renowned for its powerful, flexible and low-maintenance engines. Today, VM belongs to the Fiat-Chrysler Group and is one of the most advanced industrial companies in the diesel engine sector. It is also one of the few companies that specializes exclusively in manufacturing diesel engines. Its current and most well-known product is the 3.0 liter, six cylinder diesel engine with 275 HP power and 600 Nm torque for the Maserati Ghibli III, which was launched on the market in August 2013.

With a workforce of 1,350 employees, VM Motori produces more than 130,000 engines, primarily for the US market. Though the company focuses on passenger car engines, it also produces, in lower quantities, industrial and ship engines.

The production facility at the Cento location is organized according to lean management principles. There, crankshafts and engine blocks are produced primarily using large, heavy crankshaft cutters and reamers for highly precise components as well as milling cutters developed especially for FCA/VM Motori. These special tools require particularly qualified measurement technology and, accordingly, place very high demands on the mechanics and the software. That's why, more than ten years ago, the company began relying on ZOLLER products to efficiently set and measure its machine tools.





The »gemi« measures crankshaft cutters rapidly and reliably.



Alberto Verri (left), head of the toolroom at FCA/VM Motori, discussing the reamer measurement with Filippo Perletti, head of the Italian ZOLLER branch office Multicontrol

Today, the tool room at FCA/VM is home to two ZOLLER »venturion 600« machines as well as to a »gemini« unit. "The experience we gained with our first ZOLLER tool pre-setter was very good - and it is still running today without any problem, 24 hours a day. Above all, we have been

100 cuts a minute

convinced by its ease of operation, and by the »pilot« software", said Alberto Verri, Toolroom Manager on the engine block and crankshaft production line at FCA/VM. The worldwide local service support coverage was a reason for continuing to place confidence in ZOLLER as business growth required the company to expand its tool presetter and measuring machine facilities. "To measure the crankshaft cutter, we were looking for an easy-to-use machine specifically for this type of machine tool," explains Verri. An important requirement was and is that the measuring procedure be able to be performed reliably and quickly.

The special and extremely ergonomic mechanics of the »gemini« are designed to handle these heavy tools simply and conveniently. They are easy to load from the

front and come with an enclosed protective housing to keep the operator as safe as possible during operation.

At FCA/VM Motori, the »gemini« is particularly important for the pre-owned crankshaft cutters and those newly equipped with cutting blades. "This enables us to manage its precision throughout its entire service life. In the past, cutting blades were not always correctly installed. Not until now have we been able to reliably correct errors and thereby ensure that the machines are equipped with crankshaft cutters correctly measured and preset," is how Stefano Mestieri, machine operator, summarizes the essential benefit of the »gemini«." It is also very fast, measuring 100 cuts per minute.

FCA/VM Motori uses the »venturion 600« for the highly productive, yet difficult-to-set reamers, which are frequently used in the automotive industry. Also, all other tools for the production line individually produced for FCA/VM Motori are preset and measured on both »venturion« measuring machines, radial runout and axial runout are also checked. Conceived for the future, with the »lasso« measuring program, the external contours also have to be checked because the tools are sup-



The »venturion 600« is used to set reamers and milling cutters of all types and models.



plied without a test report. All measurement operations take place independently of the operator and without physical contact. Any wobble that may occur is compensated for automatically. "The Balluff Industrial RFID ensures that all relevant tool data are transmitted to the machines accurately. The data are ‚written‘ directly and without contact to the tool holder and immediately stored on the data medium, thus ruling out data input errors," adds Filippo Perletti from Multicontrol, ZOLLER's branch office in Italy. "It is now a more integrated and reliable process: the machines are set and measured, then the data are transmitted via the Balluff RFID to the control system for 30 machines," says Verri, describing the complete integration of the ZOLLER tool presetter and measuring machines into production process on the engine block and crankshaft production line.

Due to its strong performance, reliable processes, and working with partners like ZOLLER, FCA/VM Motori has for years successfully defended its pole position among diesel engine manufacturers in Europe, both in the tool-room as well as in the production process, but most importantly, up to 275 horsepower on the interstate.

VM Motori S.p.A.

 Manufacturer of diesel engines
 44042 Cento, Italy

VM Motori S.p.A., founded in 1947, is a manufacturer of advanced high-performance diesel engines. This Italian company, based in Cento, belongs to the Fiat-Chrysler Group. VM Motori is known as one of the few companies to specialize exclusively in the manufacture of diesel engines, and is particularly renowned for its strong track record of innovations.

Engines from Cento stand for flexibility and robustness.

www.vmmotori.it



VM-Motori plant in Cento, Italy.

Practical Forum on Measurement Technology

On November 26, 2015, the first ever Z.forum took place in Pleidelsheim. Topic: Modern Measurement Technology for Gear-Cutting and Thread-Tapping Tools. Once Christoph Zoller had welcomed the participants, Christoph Schniering from Schumacher Precision Tools explained the requirements facing optical measure-

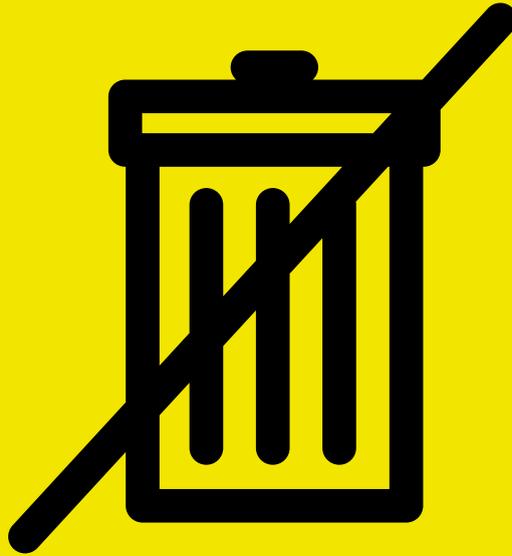
ment technology from the viewpoint of a thread manufacturer. Jörg Federer, Application Manager from Numroto, then presented the NUM software for manufacturing and regrinding a vast array of tools. After a guided tour of the assembly operations, ZOLLER measurement technology solutions were introduced to people in small groups. And there was plenty of opportunity for these experts to exchange views with one another.

The participants were really enthusiastic: "This should happen more frequently – you really do go home a lot wiser." Needless to say, the next practical forum is already at the planning stage.

Exciting exchange between specialists at the first Z.forum.



Scrap? Disposed of!



Previously, many thought they could keep their scrap levels within defined limits. Then they did the math again, and ever since, they have worked with ZOLLER.

Expect great measures



ZOLLER tool presetters, measuring machines and inspection equipment are all very precise. At the same time, they are so easy to operate that errors of management are virtually impossible. The result: No scrap, no returns, and instead satisfied customers and employees.

More information on www.zoller.info/en/genius

»genius 3« – the universal measuring machine
for precision tools

ZOLLER
expect great measures®

EFFICIENCY BOOSTER

FOR **ALL** CASES

Leveraging areas of potential in manufacturing: With precision-fit solutions to suit all aspects of tool management, every requirement and every company.

Today, no-one doubts the fact that precisely tested and set tools play an important role in the delivery of seamless production processes. However, quite which measuring system is the right one for your own company is a great deal less self-evident. There are a few things to bear in mind here. Which tools are being measured? Where is the system being set up? Which functions are necessary, and what can be dispensed with? Should consideration be given at one and the same time to a tool management system? Do I have employees who can operate the system? What happens if new requirements arise? Questions upon questions. We already know one thing: There is an optimum solution for every requirement in every company – from the Mini-Must-Have up to the Maxi-Universal-Machine.



The robot grips a tool, brings it into the cleaning system, lets it blow dry, then places it in the measuring machine. The darkened door closes, and the fully automatic measurement process can then be followed on the monitor. Any tolerance deviation is highlighted on screen, the robot retrieves the tool immediately after the measurement and quarantines it. Which does away with the source of error. With the next tool, all data are within tolerance, the robot allows it to receive lettering in a laser system, then places it on the relevant pallet. This finishes the complete measurement, including the recording of data for test records and machining simulations.

Automated quality assurance:
With »roboSet« ZOLLER is setting new standards in terms of efficiency – 100% inspection, conducted 24 hours a day, 7 days a week, including complete test records.





Dieter Müller, Applications Technician for Measurement Technology at ZOLLER: "We support our customers in finding a precisely tailored solution for each set of individual challenges presented to us. In this process, customers benefit from our decades of experience, and from our insight into their specific sector. This enables us to choose solutions from Day One that they can, at some future date, expand and adapt to their changing needs."

The men who observed the entire measuring process on the ZOLLER stand at the EMO in Milan in 2015 are amazed. Actually they came here to look around for a new presetter for their production facility. The fact that ZOLLER can also offer them solutions for tool inspection, together with suitable software, and can even offer a fully automated version of the entire system, comes as news to

"With this complete range of produces for tool management we have struck a resonant chord."

Dieter Müller, Applications Technician at ZOLLER

them. This surprise is not altogether unexpected. At the end of the day, over the last few years, ZOLLER has really done a great deal in this product spectrum. "Yes, every now and again, we still get

surprised inquiries about how long we have been manufacturing high-end inspection equipment," grinned Dieter Müller, Applications Technician at ZOLLER, "But word has pretty much got around by now that we do far more than simply produced presetters. And the positive reactions to our complete range of tool management products are confirmation of the fact that we provide customers with what they really need." Certainly, this positive feedback also has a lot to do with the fact that the production sector is getting a lot more complex – having a single point of contact for the tool sector makes life a great deal easier. Also, because the demands for precision are rising all the time, and since seamless documentation is now expected in accordance with applicable standards, demand for solutions associated with tool inspection are rising constantly too. "Now, even companies that, even a short time ago, viewed this area as a 'burdensome evil' and as an additional cost factor, are now investing in measuring

equipment that employs the latest technology", stated Müller as he described the situation. For companies with a high level of tool throughput, an automation solution like the one described above sounds almost too good to be true. There are also solutions for the ever more ingenious tool geometries – such as »titan« for the fully automatic measurement of cutting edge preparation, or »threadCheck« for thread-tapping tools.



»3dCheck«



»titan«



»threadCheck«



We have even pushed forward into the third dimension with »3dCheck«. “We really do offer appropriate solutions for an incredibly diverse array of tool types and requirements”, emphasized Müller, then continued: “Often, these solutions are devised in close collaboration with the customers who ask us to assist them.”

“The solutions arise in cooperation with customers.”

By way of example, it was this that gave rise to the development of our »pom« series. Driven at the end of the day by the rising demand for measuring solutions that can be employed directly in production. “Today, it is really important to be able to measure and inspect tools, and to produce documentation, directly beside the grinding machine. This does away with long distances into and out of the metrology room. Which in turn means

that downtime on the grinding machine is kept to a minimum”, said Müller, describing the benefits of the »pom« series. The latest family member is »pomGenius«, the little brother of the »genius« universal measuring machine, now with 958 units in service around the world and with an identical range of functions, specifically designed for shank tools measuring up to 32 mm.

Automation, new tool geometries, comprehensive documentation: smaller businesses often feel bypassed by the endless new possibilities of measuring

Basis for success: The right attitude

technology, saying: We don’t need such high-tech equipment. “Especially for companies in the SME sector that still work with dial gages, this is however an area with a vast potential – and for comparably modest investments”, stated

(continued on p. 67)



The ZOLLER »pom« range was specifically developed for flexible use in the production process: Robust, precise, and simple to operate.

On the right: »pomZenit« – the measuring and inspection station for milling head manufacturing.

e.g. BAYHA GmbH:

SMALL SOLUTION, BIG IMPACT

BAYHA GmbH is located in the attractive small town of Markgröningen near Stuttgart. This family-owned Swabian company specializes in the production of bespoke, ready-to-assemble CNC components and complete sub-assemblies. Over the last 20 years, through quality and schedule effectiveness, BAYHA has built itself a good market position. To maintain and further extend this position, the production processes are being optimized continuously – in 2015 for example, it invested in an innovative ZOLLER presetter. “Previously, we were using a tool presetter with dial gage. But it was simply not precise enough, and it was too time-consuming”, said Junior Boss Benedikt Bayha as he explained the decision to upgrade their tool management systems. At the AMB 2014 in Stuttgart, which he attended with his father, ‘Senior Boss’ Ulrich Bayha, he gained an overview of the equipment available on the market. As well as measurement of the X and Z axes, they were particularly interested in being able to transmit data to the machine. “With the last of these requirements no-one except ZOLLER offered this in their entry-level models”, stated Ulrich Bayha: “Since we use Hermle and hyperMill, we did not want to have a standalone solution. Instead, we wanted a product that could be integrated seamlessly in our systems environment, and that had all interfaces

on board as well.” Finally, a decision was taken in favor of »smile / pilot 2.0« from ZOLLER – this entry-level model for professional tool measurement rapidly established itself as a genuine efficiency booster for production operations: This was because, through the transmission of the complete set of tool data records to the machine, operations are not only a great deal faster, they are also more reliable than back in the days of dial gages and manual transfer of data. Today, program and tool data are simply transmitted from the server to the machine – and in no time at all, chips are flying!



Resource-intensive data input is now a thing of the past, thanks to »smile / pilot 2.0« – now the tools are set up effortlessly, and they are set up professionally. This includes controller-compliant data transmission to the machine.



Example of Hoerbiger Kompressortechnik GmbH:

DREAM TEAM IN ACTION

Hoerbiger Kompressortechnik GmbH is headquartered in the idyllic Allgäu region. This company, in the globally active Hoerbiger Group, produces lamellar valves for pressure and brake air compressors as well as components for high-precision hydraulic pumps. The ZOLLER »venturion 450« has been firmly integrated in production operations for many years. It ensures that machines only ever use tools that have been pre-set perfectly. This created a perfect set of conditions for Andreas Bräutigam, the Production Planning Manager and his colleague Andreas Schlachtbauer, a production technician in Production Planning, to take on the tool management project. Under the banner of Industry 4.0 – and its actual meaning – and the concept of paperless production (i.e. dispensing with printed tool setting sheets), we looked around the market in mid-2014 for a tool data management system”, reported Bräutigam. Ultimately, the decision was taken to use the TMS Tool Management Solutions system from ZOLLER. This decision was taken because the software satisfies all requirements, and because you can be sure that service and quality are exactly right. Added to which we had already clocked up some good experience with »venturion 450«. Now, many sectors of Hoer-

biger Kompressortechnik benefit from this software solution. “One benefit of the ZOLLER tool database is that we can program directly with hyperMill. We have immediate access to the 3D data of tools and holders. All of which means that we no longer have to do the same job twice or three times over. This gives us a central tool database, which in turn gives us an overview of all tools – at a glance”, stated Bräutigam. In particular, the automatic loading of tool lengths in these machines is worth it, in his opinion: “This is really the greatest loading advantage, since operators no longer need to key in tool lengths by hand. Instead, this data can now be loaded directly into the NC program by a sub-routine.”

Today, the database already contains the records for 1200 components. From these, tools are generated in many variants. For example, a drill bit can now be stored against five different applications, and tool-holder combinations with a good track record can be defined firmly. With this ZOLLER solution, the company is able not only to win a great deal of time, but also to set new standards in terms of quality. Moreover, as and when new requirements arise, this modular system can be extended at any time.

Thanks to the TMS Tool Management System, Andreas Schlachtbauer of Hoerbiger Kompressortechnik GmbH is able to access all tool data and to transfer it into hyperMill
 [photo: German trade journal ‚fertigung‘ [production]]



»venturion 450«



TMS Tool Management Solutions SILVER



The professional entry to tool measurement: »smile«, here in the version with innovative touchscreen technology »pilot 2 mT«.

Müller, providing food for thought. A good example of what can already be achieved with a professional entry-level tool presetter and measuring machine is provided by BAYHA GmbH – here, processes have been made faster, ease of operation has been enhanced and quality standards have risen (see User Example on p. 65). As well as ease of operation, the modular structure of a device of this kind delivers some key benefits to newcomers to measurement technology. This is especially true where people are uncertain about the scope of functionality that may be required in future. Quite simply you start out with the solution you require

at the present time, and upgrade to meet changing requirements, for example with new measuring programs or tool management. This is what Hoerbiger Kompressortechnik GmbH did with

Open for the future

TMS Tool Management Solutions (see User Example on the left). Müller summarizes the benefits of the modular system in these terms: “Our customers really benefit from the fact that ZOLLER solutions can, as it were,

be ‚bolted together‘, and can all be interconnected via a central database. Regardless of whether you are dealing with an entry-level experience of professional tool presetting and measurement, or with complex measuring requirements, and no matter whether you are dealing with individual components or long production runs: Our systems can be extended, changed or stocked up at any time to meet new requirements.” Viewed in this light, ZOLLER therefore not only offers measuring systems for current needs but also keeps all options open for future requirements. Seriously clever, these solutions with growth potential!

ASKED FOR

ZOLLER offers a vast array of different solutions associated with tool presetting, measurement and management. Is there any one thing that is true of all ZOLLER products?

CHRISTOPH ZOLLER: Every ZOLLER product offers the same high standards of quality, flexibility, simplicity and service: The high-caliber processing and quality of finish of our devices is the key to their ability to function very precisely over long service lives – and this is true from the entry-level device right up to the high-end machine. This modular layout assures the adaptability to meet new requirements. The simplicity of operation makes companies independent of highly qualified specialists – an important argument for many customers, because the shortage of skilled employees is only going to get worse. Also, in the event of something not being sufficiently clear, all our customers around the globe have to do is to call upon our superlative service support, available on location. All in all we offer our customers system solutions with a secure future.



Zsports

SUCCESSFUL STROMBIKE MARATHON 2015

Once again, two ZÖLLER teams took part in the Strombike event. The route, despite featuring a lot of asphalt and unsurfaced roads, was a very diverse one. It wended its way through one of the scenically loveliest regions of Baden-Württemberg. Of course, our teams tackled the 50 and 75 km routes with real bravura. Congratulations!



The ZÖLLER teams at the Strombike event were able to enjoy the scenery in magnificent weather.

REAL HEAD-TURNERS

ZÖLLER employees are high-energy individuals — in their leisure pursuits as well as at the workplace. There are competitive cyclists, marathon runners, soccer players, beach volleyball players — and the list goes on. Their choice of sports activity is as individual and multi-faceted as they are but all have one thing in common: Their shirts and tanktops feature the Z.sports-look.



The distinctive colors employed by ZÖLLER - black, silver and neon-yellow also look great when they are being worn by our sports people!



3 DAYS 162 KILOMETERS [100+ MILES] 5345 METERS OF ASCENT (16,000+ FEET)

These were the KPIs for the first of our mountainbike teams at the marathon through the Zillertal (Valley of the River Ziller). The second team clocked up a very respectable 120 km and 3580 meters of altitude (70+ miles and almost 12,000 feet). Great performance guys!



A really strong team, from the left: Markus Müllner, Jörg Seiter, Frank Hartstein, Michael Haas, Hans-Georg Weilbach.

FINAL SPRINT AT FULL POWER

At the end of the season, our cyclists were able to put pedal to the metal once again: The mountainbike team attended the MTB marathon on September 26 in Oberstdorf and Philipp Benner took part in the Rothaus RiderMan. His event involved him riding his racing bike in three stages around the southern Black Forest between September 25 and 27 over a distance of 221 km (130+ miles) with 3070 (almost 10,000 feet) meters of ascent.



Philipp Benner at the Rothaus RiderMan.

ZOLLER STAYS ON THE BALL

Z.sports is also represented on the soccer field. Our lads are out there, having fun and filled with enthusiasm. And even though they were not able to win the 1st Freiberger MSH Sports Cup in September 2015, they are still staying very much on the ball!



Really enjoying things. Top, from left: Nikolai Kanzler, Tugay Dedeli, Dennis Wittke, Ingo Wolff. Lower row from left: Christian Katsos, Anastasios Tsaousidis, Jordi Ventura.



Zcalendar

STAY IN TOUCH!

Trade fair, practice forum or workshop – ZOLLER is there for you at all times.

Visit us at one of these events and experience the innovative ZOLLER solutions live.

We look forward to seeing you!

IMPRINT | Z.magazine | 2016 Edition

Publisher

E. Zoller GmbH & Co. KG | Einstell- und Messgeräte
Gottlieb-Daimler-Str. 19 | D-74385 Pleidelsheim
Tel: +49 7144 8970-0 | Fax: +49 7144 8060-807
post@zoller.info | www.zoller.info

Editorial

E. Zoller GmbH & Co. KG:
Dr. Karin Steinmetzer | Giulia Trostel
ABSICHT AG:
Nicole Dewald

Concept | Design | Production

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

Photographic acknowledgements

Titel: © julvil/Fotolia.com | 4–5 Table of Content:
© julvil/Fotolia.com, © rudi1976/Fotolia.com |
6–7 Z.shortcuts: © Tatiana Shepeleva/Fotolia.com,
© Anatoly Maslennikov/Fotolia.com | 8 Trend:
© GHotz/Fotolia.com | 12–21 lead article: © julvil/
Fotolia.com, © etoileark/Fotolia.com, © jppgn/
Fotolia.com | 38–53 Z.world: © rudi1976/Fotolia.com
(38), © nicholashan/Fotolia.com (42), © MAXFX/
Fotolia.com (46), © Marco2811/Fotolia.com (51) |
68–69 Z.sports: © Dmitry Naumov/Fotolia.com,
© by-studio/Fotolia.com | all other pictures: ZOLLER

Status March 2016 | Changes and errors reserved
| This magazine is subject to legal copyright | All
rights are retained by the publisher

>> MAY

May 10 - May 13

INTERTOOL

Vienna, Austria

At this production technology trade fair, ZOLLER Austria will be presenting solutions associated with tooling applicable to a wide range of industrial sectors.

May 10 - May 13

AEROSPACE & DEFENSE MEETINGS

Sevilla, Spain

ZOLLER will present the perfect combination for an efficient manufacturing process: the »venturion« tool presetter and measuring machine in combination with TMS Tool Management Solutions.

May 11 - May 12

MAKINO'S INTERNATIONAL AEROSPACE WORKSHOP

Kirchheim unter Teck, Germany

Experience exclusive presentations and live demonstrations on Innovative Manufacturing Strategies for Titanium Structures in the Makino technology center.

May 12 - May 13

SCHWANOG TECHNOLOGY DAYS

Obereschach, Germany

The 4th SCHWANOG Technology Days this year focus very much on the notion of dialog.

May 23 - May 27

METALLOBRABOTKA

Moscow, Russia

At this leading international trade fair for the machinery industry in Moscow, ZOLLER will be presenting leading presetter, measurement and inspection devices as well as software for efficient tool management.

May 25 - May 28

METALTECH

Kuala Lumpur, Malaysia

Experience innovative ZOLLER solutions at the METALTECH international trade fair.

May 30 - Jun 4

BIEMH

Bilbao, Spain

At BIEMH, ZOLLER will be presenting solutions for efficient tool management and new devices for tool inspection.

>>> JUNE

Jun 6 - Jun 10

ESPRIT WORLD CONFERENCE

Naples, USA

Meet us at the ESPRIT World Conference and learn about the latest advancements in manufacturing cutting edge technology! ZOLLER will present solutions for tool data management including tool pre-setting, measuring and inspection machines!

Jun 7 - Jun 10

MACH-TOOL

Poznań, Poland

Experience ZOLLER products at one of the largest international trade fairs for machine tools in Europe.

Jun 8

MAV EXPERT MEETING 2016

Wiesbaden, Germany

Ten leading specialists will answer all your questions and prepare you for the future at the MAV expert meeting on "Setup Time Reduction" at Matsuura Machinery in Wiesbaden, Germany. ZOLLER will present "Optimization of Setup Times – Industry 4.0 in the Shop Floor".

Jun 14 - Jun 17

EPHJ

Geneva, Switzerland

At the international trade fair for the horology and jewelry sector Springmann will be presenting the ZOLLER »venturion« with premium camera 1:1 HR70, ideal for pre-setting and measuring micro-geometries on tools.

Jun 16

ESPRIT-ZOLLER: READY FOR "THE NEXT GENERATION"

Pleidelsheim, Germany

Experience a live, on-site demonstration of the ZOLLER-Esprit interface for complete and simplified tool data recording in 2D and 3D formats. All tool information and graphics are transferred easily from ZOLLER TMS Tool Management Solutions in the Esprit CAM system.

Jun 16

Z.CONNECT

Hanover, Germany

Ready for 4.0 – Workshop ,Tool Management' for an intelligent production facility.

Jun 16

Z.TRAINING

Pleidelsheim, Germany

In this 2-day workshop you will learn how to use this individually configurable tool library on your tool presetter and measuring machine or at an external workplace to create the basis for efficient tool management.

Jun 30

Z.CONNECT

Pleidelsheim, Germany

Ready for 4.0 – Workshop ,Tool Management' for an intelligent production facility.

■ international trade fairs and events

■ internal events

2016

>>> JULY

Jul 5 - Jul 8**MTA**

Ho Chi Minh City, Vietnam

Discover the ZOLLER solutions for efficient production.

Jul 6 - Jul 7**MANUFACTURING AND ENGINEERING NORTH EAST**

Newcastle, UK

Visit ZOLLER at the Metro Radio Arena, stand no. A9.

Jul 22**Z.CONNECT**

Pleidelsheim, Germany

Ready for 4.0 – Workshop ‚Tool Management‘ for an intelligent production facility.

>>> SEPTEMBER

Sep 12 – Sep 17**IMTS**

Chicago, USA

Experience at the ZOLLER Inc. ‚hands-on‘ session the future of modern production - from leading tool measuring technology to production organization to smart automation solutions.

Sep 13 – Sep 17**AMB**

Stuttgart, Germany

At the leading international trade fair for the metal machining sector, held in Stuttgart, ZOLLER will be presenting the very latest software solutions for process optimization as well as its new product portfolio.

Sep 27**VHS “THEME DAY INDUSTRY 4.0”**

Denkendorf, Germany

Bernd Schwennig, Head of Sales at ZOLLER, presents the topic “Ready for 4.0 – Tool Data in Dialogue” at the VHS Esslingen school theme day in Denkendorf.

Sep 29**Z.CONNECT**

Hanover, Germany

Ready for 4.0 – ‚Tool Management‘ workshop for intelligent production.

Sep 30**Z.CONNECT**

Pleidelsheim, Germany

Ready for 4.0 – Workshop ‚Tool Management‘ for an intelligent production facility.

>>> OCTOBER

Oct 3 – Oct 7**MSV**

Brno, Czech Republic

ZOLLER Austria presents inter-sectoral leading solutions on tool presetting, measurement, inspection, and management at the MSV international engineering fair in Brno, Czech Republic.

Oct 4 – Oct 6**TOOLEX**

Sosnowiec, Poland

Meet ZOLLER Austria at the TOOLEX International Fair of Machine Tools, Tools and Processing Technology in Sosnowiec.

Oct 4 – Oct 8**BIMU**

Milan, Italy

Trade fair for machine tools, robots, automation and accompanying materials on the new trade fair site of Fieramilano.

Oct 18 – Oct 20**SIANE**

Toulouse, France

ZOLLER France presents leading solutions for measurement technology and efficient tool management.

>>> NOVEMBER

Nov 3**Z.CONNECT**

Pleidelsheim, Germany

Ready for 4.0 – Workshop ‚Tool Management‘ for an intelligent production facility.

Nov 15 – Nov 18**PRODEX**

Basle, Switzerland

At the international trade fair for machine tools, tools and production measurement technology, ZOLLER technology will be presented at Springmann.

Nov 16 – Nov 17**METALMADRID**

Madrid, Spain

Visit ZOLLER Ibérica at METALMADRID.

Nov 17 – Nov 22**JIMTOF**

Tokyo, Japan

At the International Machinery Trade Fair, ZOLLER Japan will be presenting solutions for efficient tool management as well as leading measurement technology and new tool inspection products.

Nov 23 – Nov 26**EMAF**

Porto, Portugal

At EMAF, the International Fair of Machinery, Equipment, and Services for Industry, ZOLLER Ibérica presents leading ZOLLER measuring technology.

Nov 23 – Nov 26**METALEX**

Bangkok, Thailand

At this, one of the most significant trade fairs in Asia, ZOLLER is being represented, and is showcasing its tool management solutions and new tool inspection devices.

Nov 25**Z.CONNECT**

Pleidelsheim, Germany

Ready for 4.0 – Workshop ‚Tool Management‘ for an intelligent production facility.

Nov 30 – Dec 3**MANUFACTURING INDONESIA**

Jakarta, Indonesia

At this trade fair for machinery and industrial plant technology, ZOLLER will be presenting leading presetting, measurement and inspection devices as well as software for efficient tool management.

>>> DECEMBER

Dec 1**Z.CONNECT**

Hanover, Germany

Ready for 4.0 – Workshop ‚Tool Management‘ for an intelligent production facility

You will find details of this and other events at:
WWW.ZOLLER.INFO

Positive attitude



Previously, lots of people thought that it was difficult to measure tools. With ZOLLER, this view has changed rapidly.

Expect great measures



»smile« — one of many proven ZOLLER measuring instruments

It couldn't be easier: With the tool presetter and measuring machine »smile / pilot 2 mT« including intuitive touchscreen technology you can measure tools quickly, independently of the operator.

More information from: www.zoller.info/smile