The Must-Have for Professional Tool Presetting and Measuring

ZOLLER



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# smile

Benefits »smile«

# Success is a Question of Attitude

If you are looking to secure and expand your success, then »smile« is the solution. The advantage of these professional presetting and measuring devices lies in their simple, safe and ergonomic operation and in their versatility: With a comprehensive range of equipment options, »smile« offers solutions for every possible demand.

With »smile« you always benefit from fast, highprecision measurements and precisely set tools. This means more speed, less machine downtime and higher quality in your production. There are plenty of reasons to face the challenges of production with a »smile«.

# »smile«



| 02<br>08  | BENEFITS »smile«<br>QUALITY & ERGONOMICS |
|-----------|--|
| 18        | SOFTWARE                                 |
| 26        | APPLICATION SOLUTIONS                    |
| <u>36</u> | SERVICE & DATA                           |

# Heroes of the Workshop

Pass every endurance test: With a base made of a light metal alloy specifically developed for measuring instruments and equipped with high-quality brand-name components, »smile« devices are extremely robust and long-lasting. From mid-sized companies to large-scale production thanks to its various sizes, electronic and equipment options, »smile« is ideal for everyday use in every production environment - even right next to the CNC machine.





### Technical Data: »smile«

| Maximum Tool Length Z                            | Measuring Range, X Axis         | Maxim |
|--|---------------------------------|-------|
| 350 (13.8 inch) / 420 (16.5 inch) / 600          | 160 mm (6.3 inch) / 210 mm (8.3 | 320 m |
| (24.4 inch)* / 800 (31.5 inch)* <sup>11</sup> mm | inch) / 310 mm (12.2 inch)*     | 620 m |

\* optional 1) Measuring range Z axis 800 mm (31.5 inch) is only possible in combination with the table system. 2) With the selection of the optic carrier standard with tool inspection.



mum Tool Diameter D

Maximum Snap Gauge Diameter D

mm (12.6 inch) / 420 mm (16.5 inch) / 0 / 70 mm (2.8 inch)<sup>2)</sup> /100 mm (3.9 inch) mm (24.4 inch)\*

# Measurably More Profit

With »smile« you save time, reduce tooling costs and increase process reliability. How does it work? It's simple: With preset tools, you reduce set-up time on the machine and increase productivity. With optimally set tools you achieve longer tool life, and with defined outer contours you avoid machine crashes. In addition, the digital transmission of the tool data guarantees secure, error-free data input.

Still not convinced? With the central z.One tool database and the ZOLLER TMS Tool Management Solutions, you ensure that your maximum savings potential is achieved. In doing so, the search for tools comes to an end, and the tools are in the right place at the right time. With this combination you save on average EUR 25,000 per year per machine\*.

### \*Sample calculation:

Machine investment costs of €200,000 | Machine hourly rate €75

| = €25,000 | Profit per year per machine                                 |
|-----------|---|
|           | measuring devices   |
| +€15,000  | Productivity increase as a result of ZOLLER presetting and  |
| + €6,000  | Productivity increase as a result of ZOLLER tool management |
| €4,000    | Savings on tool costs per year                              |

With ZOLLER »smile« you can achieve a saving of EUR 15,000 per machine, per year and shift (EUR 25,000 with ZOLLER TMS Plus).





Wilhelm Rau, Technician at ZOLLER

# When it comes to quality, we're well ahead of the game...

... because at ZOLLER, we really only use the best components. I assemble "my" devices myself, calibrate them, check the electronics – and then, only when I'm 100% satisfied, does the machine get the seal of quality and my picture and name on it. I personally stand by the fact that the device is second to none. Our customers can be sure they're getting the best. I'm proud of that."

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|------|--------|---------|-----|
|------|--------|---------|-----|

12 Ergonomic Work

14 ZOLLER SK 50 High-precision Spindle

16 ZOLLER »pcs« High-precision Spindle

### Highest Quality for Long-lasting Precision



Uhing linear drives, clamping elements the basis for correct measurements: The tower is both easy to move and to securely and accurately clamp

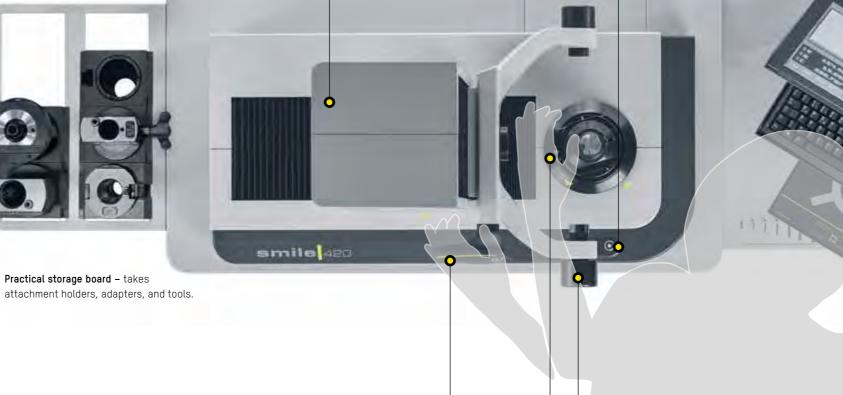
### Maximum Ergonomics for Better Work

Making work simple is an emphasis with »smile«: Everything functions simply and safely. Individual adjustments and 180 degree accessibility guarantee comfortable working with short routes.

Smooth-running device tower easy start-up – precisely tared without effort.

User-friendly membrane keyboard easy and safe to operate under workshop conditions, dust and dirt resistant and has a pleasant feel.





Ergonomic »eQ« one-hand control handle with one hand, the entire device tower can easily be adjusted in the X and Z axis. Furthermore, additional functions can be stored with the »eQ« (ergonomic & quick) release button, which make operation even easier and more convenient.



### Automatic light measurement -

In incident light measurement, the illumination intensity adapts automatically, so that the tool is optimally illuminated.

# movements.

Practical hand wheel - for easy and safe positioning of the spindle and for exact focusing of the tool cutting edge.

Easy to operate - the simple, graphical software interface guides the operator intuitively through the setting and measurement process.

Much runs automatically – the operator just has to press Start. And thanks to the practical help menu and detailed operating instructions in 18 languages, there are really no questions left smooth processes are guaranteed.



Adjustable control unit - can be tilted, adjusted in height and swivel. This allows every operator to optimally adjust his or her workplace with just a few hand

### ZOLLER SK 50 High-precision Spindle

Spindle for holding SK 50 adapters: That is why almost any tool receiving system can be easily and conveniently inserted into the spindle, without any conversion measures.

### Incorporated driver

(= slot nut) for precise positioning of adapters in the receptacle, so that the two calibration sphere pairs are exactly on top of each other.

Integrated calibration spheres on spindle and adapters for simple, fast and accurate determination of the spindle zero point.

Spindle hand wheel for convenient and reliable manual adjustment of the C axis.

> Zero-point sign - specifies the coordinates in the X and Z directions from the calibration spheres to the spindle center.

Further highlights from the ZOLLER SK 50 high-precision spindle:

- Spindle brake for pneumatic positioning of the spindle over the entire 360°, for example to adjust the tool.
- Spindle indexing for the defined fixing of the tool position in 4 × 90 ° in order, for example, to set turning tools.

• Fast adapter change in a maximum of 10 seconds.

• High axial and radial runout accuracy of < 2 µm.

Options: If required, the ZOLLER SK 50 high-precision spindle can be expanded to include auto-focus, rotary sensor (ROD) and vacuum clamp.

Vacuum clamp (optional)

Spindle brake Spindle indexing

Membrane keypad for control of pneumatic





SK 10 to SK 60 steep taper



Coromant-Capto from C3 to C8



HSK 25 to HSK 125 hollow taper shank



Kennametal



VDI cylinder shaft VDI 16 to VDI 60



Hydro expansion

## ZOLLER »pcs« High-precision Spindle (Power-clamping System)

The ball bearing cage in the spindle takes any attachment holder clearance-free and without conversion measures. When the appropriate tool holder is inserted, the tools are clamped via the clamping bolts in a power-activated, user-independent manner.

Spindle hand wheel for convenient and reliable manual adjustment of the C axis.

Ball bearing cage for clearancefree and wear-and-tear-free mounting of attachment holders. Locking cap for exact positioning of the attachment holder.





Further highlights of the ZOLLER »pcs« high-precision spindle:

- Power-activated tool clamp consistent independent of the individual user.
- Spindle brake for pneumatic positioning the spindle over the entire 360°, for example to set the tool.
- Spindle indexing for defined fixing of the tool position in 4 × 90°, for example, in order to set turning tools.
- Attachment holder with integrated calibration spheres for simple, fast and exact determining of the spindle zero point.
- Fast attachment holder changeover in a maximum of 10 seconds.
- High changeover accuracy of attachment holders better than 1 µm.
- High axial and radial runout accuracy better than 2 µm as a result of clamped attachment holders.

Option: Can be expanded to auto-focus, rotary encoder (ROD) and length adjustment system if required.



Power-clamping

Spindle brake Spindle indexing

Membrane keypad for tool clamping



SK 25 to SK 50 steep taper



Coromant-Capto from C3 to C6



HSK 25 to HSK 63 hollow taper shank



Kennametal

VDI 16 to VDI 60 cylinder shaft



Hydro expansion



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Johann Hofmann, Head of ValueFacturing® at Maschinenfabrik Reinhausen GmbH and digitalization expert on ZOLLER's »pilot« measuring machine software

# The ZOLLER software is easy to use, open for the future, all round superior.

In terms of function, scope and connectivity, »pilot« is the superior software on the market. Along with ValueFacturing<sup>®</sup>, the ideal condition for digital production, »pilot« keeps all options open for the future while remaining simple and intuitive to use. Through the integration of »pilot« in ValueFacturing<sup>®</sup> we create maximum performance in our digital high-performance production.

20 »pilot« at a Glance

22 Photo-realistic Input Dialog »fored«

24 Fully Automatic Measuring with »elephant«



### Measuring Program Selection at a Glance – with »fored«

Unrivaled in its simplicity: The photo-realistic input dialog »fored« makes it easy to select the desired measurement, without prior knowledge. The optical user prompting precisely specifies all parameters that are necessary for the correct measurement procedure. This will guide the operator safely through the input.

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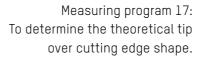
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Measuring program 1: For the measurement of single-blade reamers with support strip in snap gauge principle.



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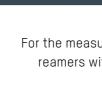
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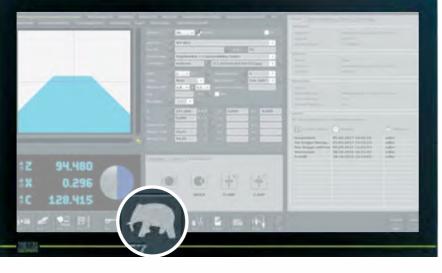


## 1,2,3, Finished – That's How Intuitive Measuring is with *»elephant«*

With »elephant« really every employee can measure standard tools - without previous training. All that needs to be done is to select the tool and the measuring task - the measuring takes place fully automatically. It couldn't be simpler.







Insert and clamp the tool, and start **»elephant«** - via the main menu or the lower menu bar.







Select tool category based on the graphical representation.

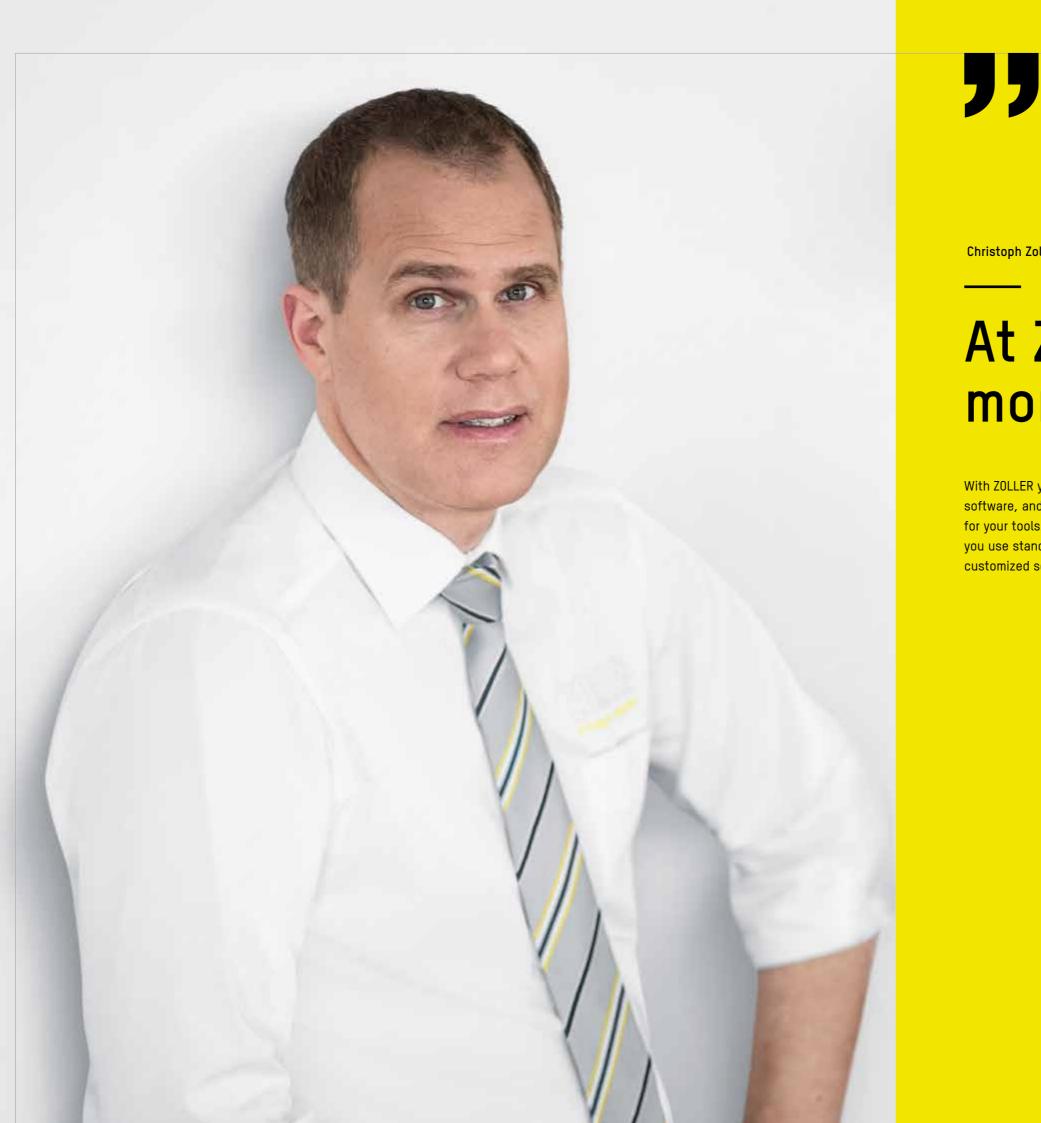
Select measurement task and measurement mode based on the determining parameters. The measurement starts without any programming effort.



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|---------------------|-------|--|--------|
| Theoretische Spitze | Th.S. | And in case of the local division of the loc | 96,511 |
| Neigungswinkel      | NW    |  | 44,94  |
| Längsmaß            | 2     | RA   | 96,511 |
| Quermaß             | x     | RA   | 0,000  |

# OK

Measurement results are displayed and archived on the screen. The output follows on the label, as control-oriented data output or in the editable »apus« test protocol.



Christoph Zoller, Managing Director at ZOLLER

# At ZOLLER there's more in it for you

With ZOLLER you get more out of your production. We combine hardware, software, and service for optimally coordinated individual system solutions for your tools. Whether you produce large series or small quantities, whether you use standard or special tools – with us you get everything for your customized solution from a single supplier. We call it: ZOLLER Solutions.

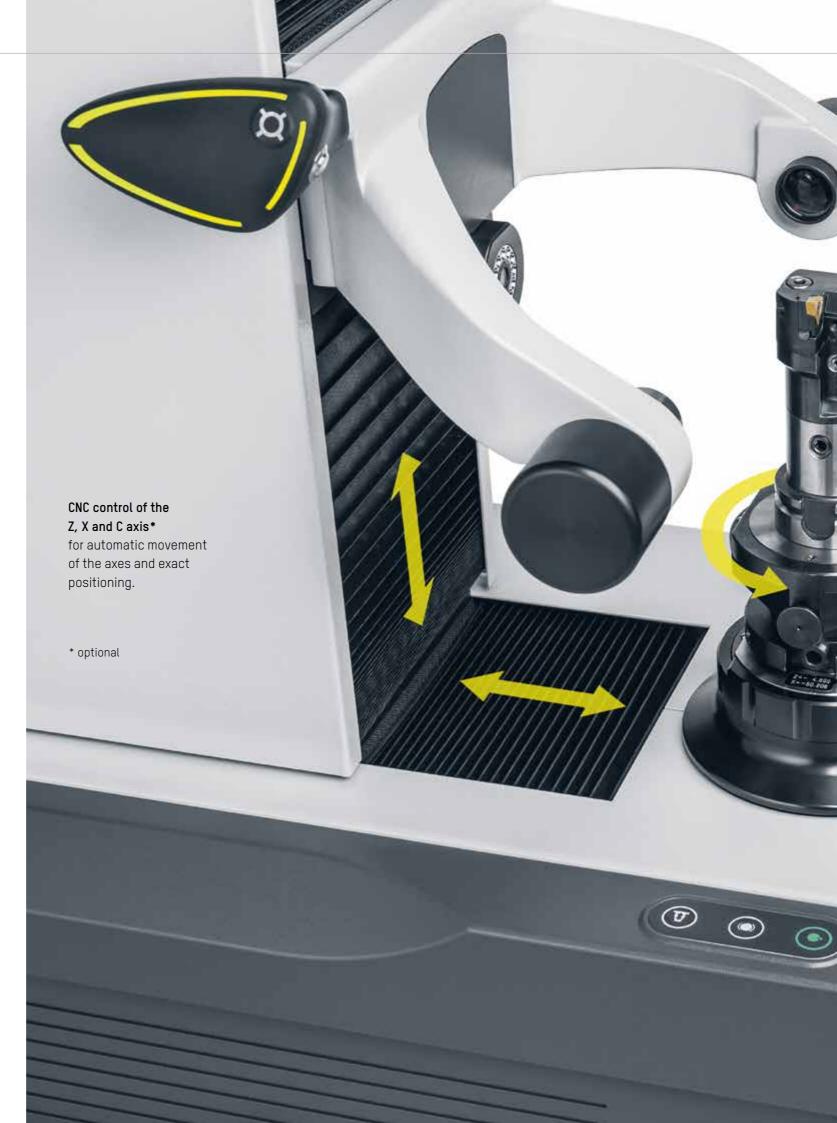
| Autofocus & CNC   |
|---|
| Data Transmission:<br>Software Package Data Transmission & RFID     |
| Tool Management: Smart Cabinets &<br>TMS Tool Management Solutions  |
| Tool Inspection: »smileCheck« &<br>Software Package Tool Inspection |
|   |

Application Solutions

# Manufacture Economically from Lot Size 1 – with Autofocus and CNC

Measuring at the touch of a button: With a »smile«, and with CNC axes and autofocus, every tool can be measured fully automatically. As a result, the measurement results are reproducible and independent of the operator: The tool is simply inserted, then the start button in »pilot« is pressed and the tools are automatically measured.

The Result: Measuring processes are accelerated, measuring results are reproducible, and the accuracy is so high that your first part is a good part, every time. That means: Lot size 1 without scrap and without sample parts. This is process reliability in its purest form and real efficiency.



Autofocus\* to automatically focus the cutting edge for accurate measuring results.

## Data Transmission – Reliable, Easy, Fast

Tool data is the basis of all production processes in modern production – from the CAD / CAM system, through setting and measuring, to the production of the workpiece. ZOLLER provides numerous interfaces both to CAM systems and to processing machines from a wide variety of manufacturers. In this way the data transmission and the communication of the different systems work together simply and reliably.



### Possibilities for Data Transmission

### Everything for easy tool data transmission

- »zidCode« for »pilot« for quick and easy transmission of tool data without a network connection. The data is transmitted with a QR code and read in directly by scanning on the machine.
- Label printing standard layout easy means of data output, 10 different layout variants are available including company names.
- **Control-specific processing** of the actual data for transmission to the CNC machine via USB stick, network, DNC and / or serial interface.
- **»apus« test reports** for the documentation and output of measured values, incl. editing function for changing, deleting and hiding tolerances, nominal values and designations.
- Transmission via network and DataMatrix code on the tool holder\* the actual tool data recorded by »smile« is stored in the central database z.One. As soon as the tool is detected on the CNC machine, the data is sent from the database or via the host computer system to the machine control.

\* only possible with available machine-side conditions

### **RFID Technology**

Absolutely secure and optimal for companies with modern machinery – tool identification and data transmission with RFID technology

- Each tool holder is equipped with an RFID chip. The actual data is then saved and can be read in at the machine.
- The RFID chip is described with a tool identification unit on the presetting and measuring machine using the data and other information prepared for control purposes and automatically read by the machine tool.
- Available in three versions:
  1. automatic, 2. manual, 3. as a hand-held device.





# Tool Management – Better Organization for Greater Efficiency

With ZOLLER TMS Tool Management Solutions and Smart Cabinets you have your tools and the related data under control, thereby increasing the efficiency of your processes. The data from the central z.One tool database can be used as early as the work preparation phase in order to simulate production processes with the CAM system and to generate setup sheets. In order to find the tools, components, and supplies you need right way, your clearly defined storage location is displayed three-dimensionally in storage location management. With the »quickPick« storage module, articles can be quickly picked up and deducted.

Good to know: So you can really benefit along the whole line, alongside the ZOLLER Smart Cabinets you can easily integrate your existing cabinet and lift systems from other manufacturers into the TMS Tool Management Solutions and continue to use them.





»keeper«

»twister« In the spiral output cabinet, small parts can be optimally stored and separately dispensed.

### The tool cabinets with vertical extensions for the storage of complete tools and tool holders.



Tooling sheet















»toolOrganizer« The intelligent cabinet for tools and tool components.

The central z.One tool database guarantees the uniform tool database right up to the machine.

## Tool Inspection – Comprehensive Control in Transmitted and Reflected Light

Equipped with an additional incident light camera, »smile« can also be used for tool inspection. In combination with the right software package, extensive tool analysis can be carried out easily and quickly in the transmitted and incident light.

ZOLLER

Presetting, measuring, and inspection machine »smileCheck« with swiveable incident light camera

### The »smileCheck« Presetting, Measuring, and Inspection Machine

The swiveable incident light camera can be used to record additional tool parameters, geometry data, and cutting contours, both radially and axially. The LED ring light with adjustable light intensity optimally illuminates the tool so that the tool contours are precisely displayed.

### **Cutting Edge Inspection**

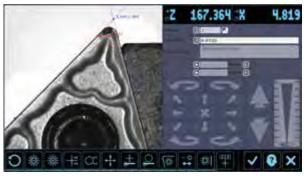
Cutting edge inspection can be used to check wear on the cutting edge of the tool. The movable crosshairs, the dimmable incident light and the freely placeable radius make analysis particularly easy. For complete documentation, images can be saved and printed during cutting edge inspection.

### Center Height Measuring

For turning tools, the radial position of the tool cutting edge (center height) is the essential parameter for exact turned part production. The center height can be determined on a vertical measuring device with the aid of the horizontally aligned center height measuring camera.



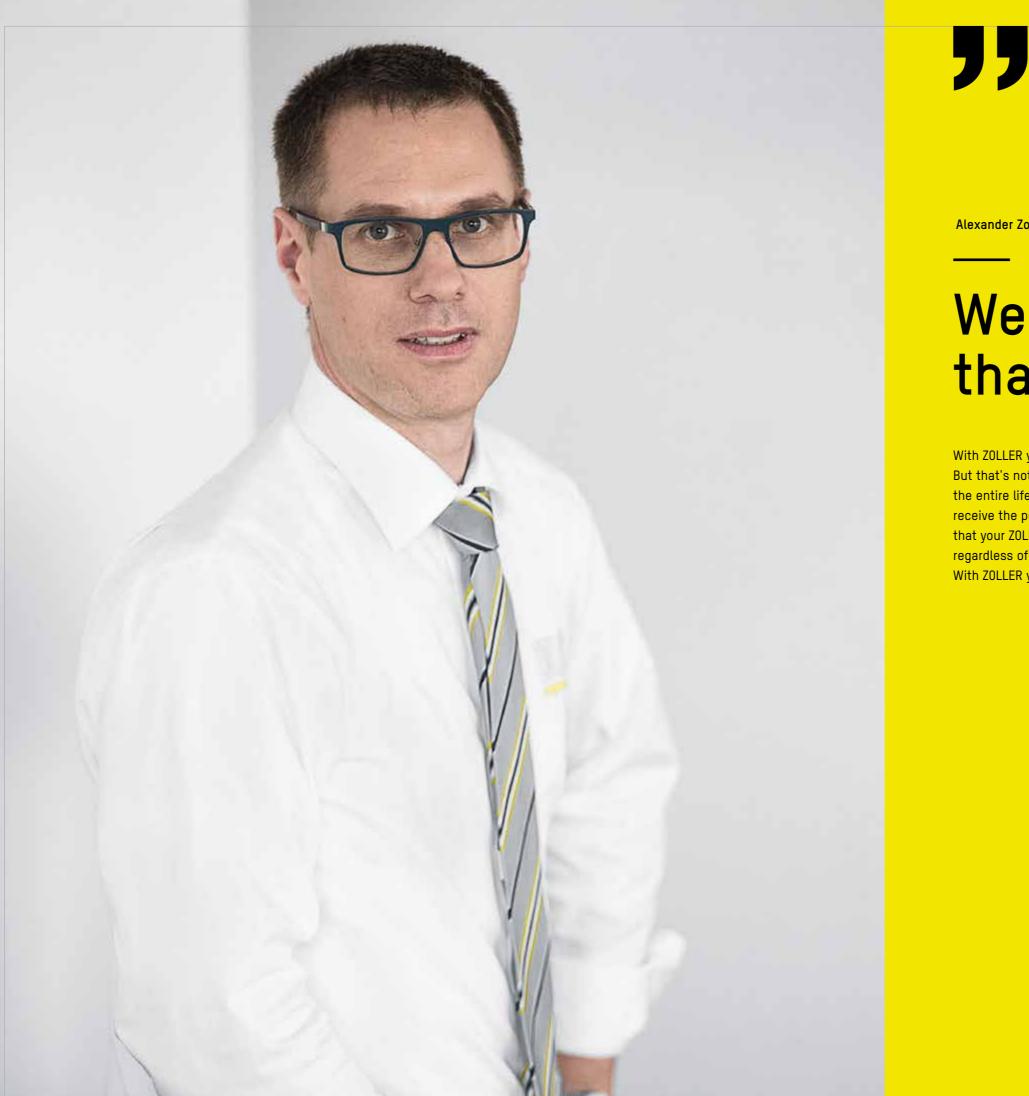
The face of the tool is displayed and measured in the »metis« tool analysis software.



Cutting tool inspection in »pilot 1.0« software



Center height measuring camera on the optics carrier with LED ring light



Alexander Zoller, Managing Director at ZOLLER

# We make sure that it works!

With ZOLLER you get excellent products. That's something you can rely on. But that's not all. We also offer you unique manufacturing know-how over the entire life cycle of your ZOLLER products – around the globe. You receive the perfect solution for your individual requirements. We ensure that your ZOLLER products are seamlessly integrated in your production, regardless of which systems and machines you work with. In other words: With ZOLLER you're making chips, guaranteed.

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40 Technical Data

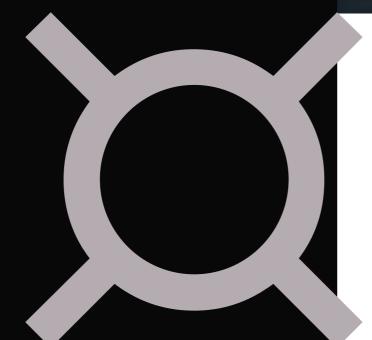
42 ZOLLER Worldwide

SERVICE & DATA

# **ZOLLER Service**

Your goal is maximum efficiency for your production. Our goal is to support you with well-designed system solutions. We also offer you a comprehensive service to achieve this. Whether in personal consultation on-site, or when developing perfectly tailored solutions for your individual requirements. If you choose ZOLLER, you not only get excellent products, you also get unique production know-how on your side. And of course, competent contact partners to answer questions at any time – over the entire life cycle of the ZOLLER products. Make use of the ZOLLER know-how to optimize your production processes.





# **ZOLLER** Solutions

With us, you get more than excellent products. You get individual system solutions connected with your tools. To do this, we combine hardware, software and services. Everything from a single supplier. Everything for your success. We call it: ZOLLER Solutions.

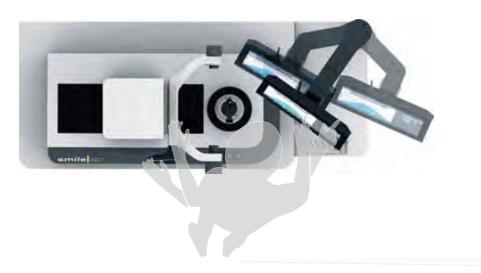
Alexander Zoller | Christoph Zoller

### Integrated Control Unit

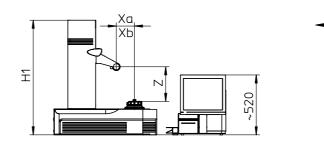
For health-conscious and comfortable working, the integrated control unit can be customized according to the needs of different operators: Height, swivel and tilt angles can be flexibly adjusted.

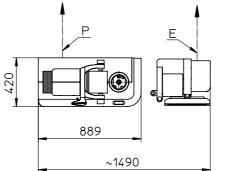
### Installation Dimensions with Monitor Bracket

| Dimensions »smile 320« Table Version |                |                  |  |
|--------------------------------------|----------------|------------------|--|
| Z (mm)                               | Xa (mm)        | H1 (mm)          |  |
| 350 (13.8 inch)                      | 160 (6.3 inch) | ~870 (34.3 inch) |  |





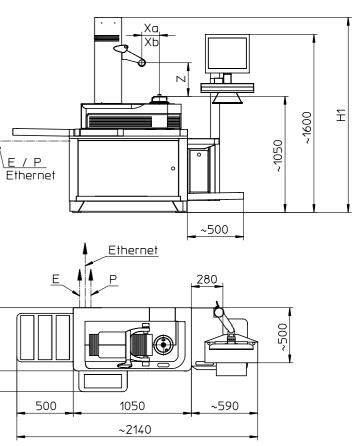




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Note: P air connection E electronic connection

| Dimensions »smile 420 / 620« Table Versions |                |                 |                      |
|---|----------------|-----------------|----------------------|
| Z (mm)                                      | Xa (mm)        | Xb (mm)         | H1 (mm)              |
| 420 (16.5 inch)                             | 210 (8.3 inch) | 310 (12.2 inch) | ~1050 (41.3<br>inch) |
| 600 (23.6 inch)                             | 210 (8.3 inch) | 310 (12.2 inch) | ~1250 (49.2<br>inch) |
| 800 (31.5 inch)                             | 210 (8.3 inch) | 310 (12.2 inch) | ~1450 (57.1<br>inch) |





# At Home in Germany around the World for You

ZOLLER quality is "made in Germany" and there for you, anywhere in the world.

Our company has its own locations and branches at 85 sites in 62 countries guaranteeing we are close to customers and can provide first-class, personal customer advising in local markets.

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# zoller Solutions

More speed, higher quality, reliable processes – with ZOLLER you get more out of your production process. We combine hardware, software and service to create optimum system solutions for presetting, measuring, inspecting and managing tools.

Presetting & Measuring Tool Management Inspection & Measuring Automation Everything from a single source. Everything for your success. Everything with ZOLLER Solutions.



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