werkzeuge

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Application Report
Wolf Formen- und Werkzeugbau GmbH

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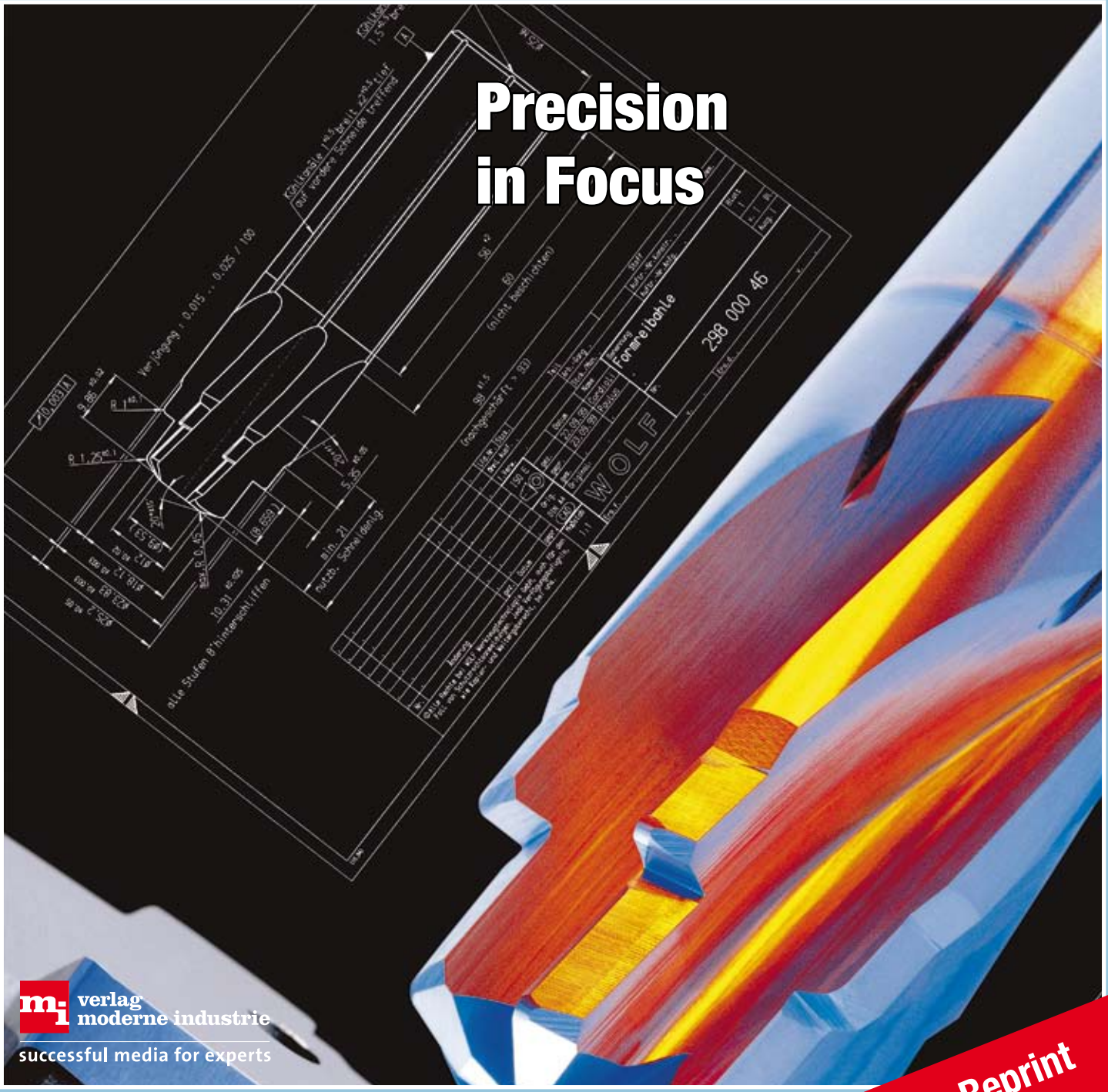
Precision in Focus



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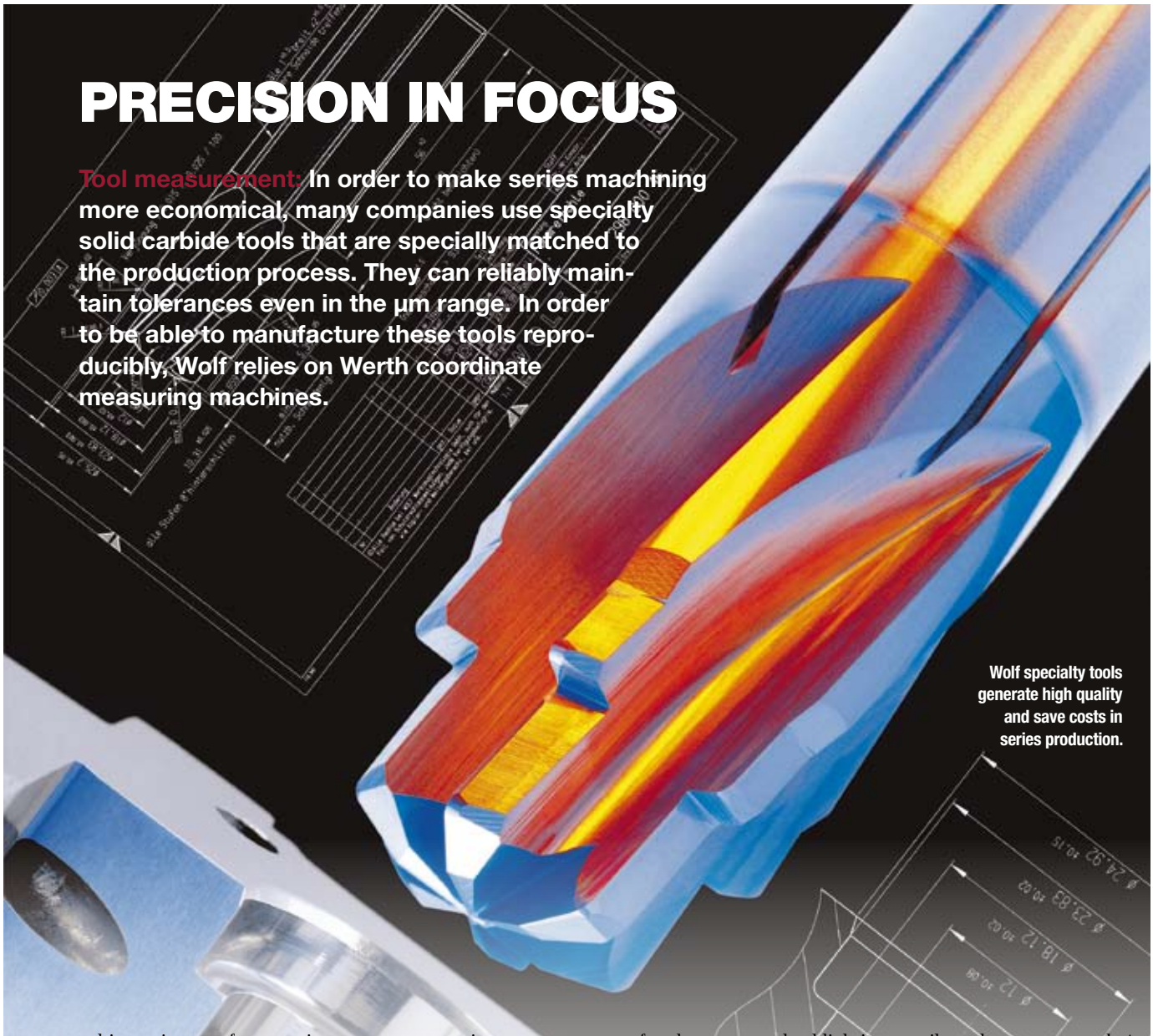
PRECISION IN FOCUS

Tool measurement: In order to make series machining more economical, many companies use specialty solid carbide tools that are specially matched to the production process. They can reliably maintain tolerances even in the µm range. In order to be able to manufacture these tools reproducibly, Wolf relies on Werth coordinate measuring machines.



Wolf specialty tools generate high quality and save costs in series production.

Making virtue of necessity, or better: founding a company to meet a need – this applies especially to Wolf Formen- und Werkzeugbau (Molds and Tools) GmbH, which was founded in the year 2000 and is part of the Wolf Group. It started with the manufacture of tools for cutting and bending systems. Synergistic effects were soon brought to bear, and forming, bending, and punching tools profited from the coating expertise of the sister company Wolf Beschichtungs (Coatings) GmbH. Today, Wolf Formen- und Werkzeugbau is broadly positioned. Its catalog ranges from 3D milling to contract eroding and construction of bending and punching tools and plastic injection molds, to the manufacture of near-series prototype parts for the automotive industry.

In order to be able to expand further, a new building was contracted in 2002. At the same time, the production equipment was brought up to the latest standard. This included a Werth VideoCheck IP 3D coordinate measuring machine with multisensor technology. It allows rapid measurement of two and three-dimensional geometries. With the image processing sensor, 2D features can be captured and evaluated precisely. For measuring cylinder shapes or undercuts, for instance, the VideoCheck IP also has a motorized, tiltable mechanical probe. The multisensor device thus has the ability to combine various measurement methods, using direct and backlighting, tactile or laser-supported. A 2D BestFit software package also enables graphical comparison of scanned profile data against 2D CAD data.

With the use of ToleranceFit software, which allows tolerances to be taken into consideration, the machine can also be used as a modern profile projector.

Horst Wolf, managing director of the Wolf Group, explains: "This kind of measurement system is a very important piece of equipment for us. The automotive industry, especially, requires proof that parts meet dimensional requirements, whether they are made of plastic, sheet metal, or solid carbide. For punching dies, in particular, which are also checked using ToleranceFit soft-

The basis for the high precision of Wolf's tools is the VideoCheck V HA multisensor coordinate measuring machine, which is equipped with WinWerth software.

The use of precision air bearings and a solid granite base has resulted in precision levels that allow measurement of tools with tolerances in the range of a few microns.

ware, safety is the primary concern. If a die does not have the correct amount of clearance, and the punching unit is damaged, this quickly results in high costs, and it is unclear who has to pay them.

With all of this advancement and growth, Wolf Werkzeugtechnologie GmbH is the strongest component of the Wolf Group, with a share of sales of about 50 percent. Its specialty is special cutting tools made of solid carbide, especially step drills and other multiple tools for production processes. In order to be able to produce these precision tools – which can have precisions of up to ±3 µm, according to Horst Wolf – the right high-tech measuring machine is a necessity. Based on good experience from mold and die building, the decision-makers at Wolf Werkzeugtechnologie GmbH decided on a multisensor coordinate measuring machine from Werth Messtechnik, Giessen: the VideoCheck V HA.

The use of precision air bearings and a solid granite base has resulted in precision levels that allow measurement of tools with tolerances in the range of a few microns. Together with a maximum scale resolution of 10 nm and 3D error compensation, maximum measurement errors (MPE) of up to 0.25 µm can be obtained, with traceability to national standards.

Each micron is documented

Additional touch-trigger and measuring probe systems, laser probes, or the patented Werth Fiber Probe (with a probe sphere diameter as small as 20 µm) can be combined with the image processing sensor. The flexibility that this provides ensures that all features of various tools, such as hobs, saw mills, reamers, taps, step drills, twist drills, grinding and dressing rollers, or inserts, can be measured.

Detlef Ferger, sales manager at Werth Messtechnik, points out a special feature: "Our machines are specified on the basis of ISO 10360 and VDI/VDE 2617. This means that our measurement systems are traceable to the length standard at the German National Metrology Institute (Physikalisch- Technische Bundesanstalt - PTB). The measurement results are therefore absolutely reliable."

This is an important point for Wolf Werkzeugtechnologie, as Wolf explains: "On this basis, we can document every µm for our users, with an appropriate neutrality of the measurement results.

The Werth coordinate measuring machine serves as a reference machine for measurement equipment comparisons with the user, which is then assigned an appropriate contract tolerance.

"In the future, tooling technology will depend not just on the micron, but on the tenth of a micron. When I look at the increases in requirements over the last three or four years, then I see Werth Messtechnik, with its high-precision tool measurement machines, right in line with the trend of the times," Wolf concludes. ←

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