

Ready for 2004

WENZEL finishes the year 2003 with a positive result even though the aimed at target will not be completely reached. The longest economic crisis of the previous 50 years has also had a negative influence on the WENZEL sales figures and slowed down the targeted growth. However, we are

looking at the future with optimism and want to continue our course for growth next year. We have already started in the right direction this year and several key positions have been filled to support our future expansion. In the interest of more proximity to our customers the expansion of our decentralized

service structure in Germany has continually been enforced. Since September two employees working as application and service engineers in Leipzig are available which brings, in addition to the mother company, the WENZEL customer service to a total of 8 decentralized locations in Germany. (FW)

WENZEL Group continues to grow - Entering the world of gear metrology

Wenzel Präzision GmbH, Wiesthal, is continuing its expansion course and has, with effect of September 15th, 2003, founded WENZEL GearTec GmbH. With this subsidiary, which is 100% owned by WENZEL, the company wants to establish itself in the market of

gear metrology. Initially, WENZEL GearTec will have 10 employees, all with many years of experience in gear metrology. The company will be managed by Hans-Helmut Rauth who also has substantial experience in leading positions in gear metrology.

Within the next few weeks WENZEL GearTec is planning the introduction of a complete line of gear measuring machines with the required mechanical components produced in the mother plant in Wiesthal. In addition to offices for

design & development, sales and administration the Karlsruhe location will be expanded to be used as service base and demo center. Apart from gear measuring machines WENZEL's coordinate measuring machines will also be available for demonstrations and training.

The WENZEL group employs more than 320 people at nine locations in seven countries. (FW)



Fig: Wenzel GearTec GmbH

Villa Marburg opens extension on November 14, 2003 with 16 rooms and 3 suites

The fact that one cannot only dine exquisitely at the Villa Marburg, but also have professional functions and parties over there, has been a well known fact for the last two years.

But most of the time, event organizers and companies require more than twenty rooms for their meetings.

A larger number of rooms are usually also required for family reunions. It was

therefore necessary to build additional rooms.

In September 2002 the pit for the extension was excavated - and now, after only thirteen months, the last craftsmen have left the elegant new building - just in time for the first event in the new premises: a conference with eighty guests.

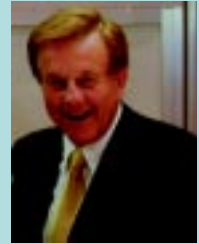
The three-storey building - with additional conference rooms, a sauna and a

beauty parlour - is connected with the main building by a roofed path and will surely be used by many WENZEL customers in the future as well. (WW)



Fig: Villa Marburg I and II

*Dear customers,
dear employees and
friends of Wenzel!*



To be moving forward constantly and to invest counter-cyclical - this has always been WENZEL's formula for success.

Following this motto we have set course for the future in the last few months.

I am especially pleased with the fact that our second supporting leg, the hotel and conference center, has had such great success and that we have been able to complete the second phase of construction already. Soon we will start building a new administration building in Wiesthal. Always moving forward - looking ahead.

Yours sincerely,

35 years WENZEL

In October 1968 Werner Wenzel founded WENZEL Präzision with three employees. This event was celebrated on November 7th, 2003, with the staff including families, about 350 guests. As opposed to previous parties the event took place without the usual presence of politicians and other persons of the public life this time.

Innovation symposium at WENZEL - Always one step ahead of competition



Fig 1.

WENZEL held its innovation symposium on November 17th and 18th, 2003 for the second time. This year's theme was called "Coordinate metrology in BIW and sheet metal applications." During this event about 50 visitors, mainly decision makers from the automotive industries (e.g. BMW, DaimlerChrysler, Opel, Porsche, Volkswagen) and aerospace companies (e.g. Eurocopter) caught up on the best available technology at present, with the first day at the Wiesthal headquarters consisting of theoretical lectures and practical demonstrations in the pro-

duction halls. The center of interest was the non-contact measuring system "Phoenix" developed by WENZEL, a hybrid sensor based on image processing and laser technology (Fig. 1).

The second day of the event took place in the conference hotel Villa Marburg in Heigenbrücken under the motto "What does the future bring?". After introductory lectures the requirements of users of future metrology were determined and discussed during the course of a discussion forum (Fig. 2). "Crucial to our success of the past years has always been close contact with our



Fig 2

customers. This is the only way we can make sure that our product developments meet the expectations", according to Werner Wenzel,

chairman of the management board.

During interviews with the "Bayerische Rundfunk" (Bavarian broad-casting corporation) the participants confirmed that this is exactly what they like about working with WENZEL. Andreas Sperka of BMW in Dingolfing commended the close cooperation with WENZEL. Specific requirements were quickly implemented due to the lean management structure and short reaction times. Volker Hohn of DaimlerChrysler in Bremen added that the management at WENZEL was always addressable when problems occurred and his company was always helped without hesitation.

In a concluding interview the participants showed their overall contentment with the innovation symposium so that Frank Wenzel, member of the management board, has already announced that this has definitely not been the last event of this sort at WENZEL. (FW)

+++Ticker+++

Lamborghini commissions floor-level duplex horizontal arm machine in October 2003. Further orders planned

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The new BMW plant in Leipzig, Germany, will be equipped with WENZEL measuring machines

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In June 2003, WENZEL sales partner Gruber, Austria, delivered its 100th WENZEL measuring machine

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WENZEL dealer Klostermann sold its 200th measuring machine in August 2003

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Audit by PSA Peugeot Citroën in June 2003 successfully passed with 98%

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Russian quality certificate awarded - release for deliveries to Russia

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Wenzel in Brazil

Expansion has become an established slogan at WENZEL.

True to the motto „WENZEL - a global player“ Wenzel Precisão Centro Técnico do Brasil Ltda. recently moved into its new facilities. The office has a total area of about 130 square meters. The company is situated in



Fig: Office space

the town of Vinhedo, about 80 km from São Paulo. With its 80000 inhabitants it has with time become one of the best organized cities in Brazil.

Its location near the highway allows quick access to all major Brazilian cities, e.g. Rio de Janeiro, Belo Horizonte and many more.

For this reason many reputable foreign companies have also settled here. The reasons for WENZEL to choose this location are obvious: The growing demand for coordinate measuring machines in Brazil.

Another important factor for



Fig: Office building

choosing this location is the fact that the crime rate is practically zero. One could compare Vinhedo with a health resort in the countryside. (MEs)

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Metrosoft CM 3.50 features Offline Programming Power

Wenzel proudly presents its new Software Version Metrosoft CM 3.50. Besides its well-known over-all performance level – such as automated measuring of geometry, comprehensive free form surface functions, superb graphic protocols – Metrosoft CM 3.50 will particularly emphasize off-line programming: It's very easy: just click on the element to measure. All relevant parameters such as number and distribution of inspection points, circle or cylinder section, probing depth, safety distance etc. can be selected. Metrosoft CM displays the distribution of inspection points together with the probe path and intermediate positions. This way you can generate the complete part inspection program **offline** by using the available CAD data. The user benefits are evident: You can generate, display, execute and edit inspection programs and sequences, all offline without locking-up your CMM and even without the need for an

expensive additional CAD workstation!

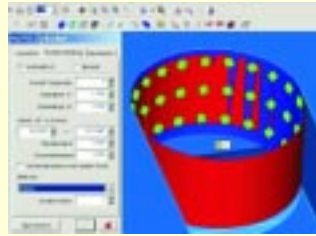


Fig 1: Automatic generation and display of probing points

This performance is completed by new functions related to the ISO 1101/ASME standard for form & position tolerances. This includes processing of multiple relations between elements, limiting elements, MMC & LMC (maximum & least material condition). A special multi-colour graphic display shows the results at one glance.



Fig 2: Parallelism with tolerance zone and limit planes

Various enhancements such as DMIS program editing, extended statistical functions, sophisticated temperature compensation routines with multi axis monitoring etc. round up the new Software Version. Metrosoft CM 3.50 also features a DME Server for the CMM-OS interface to CMM's and peripheral units, incl. multi machine mode.

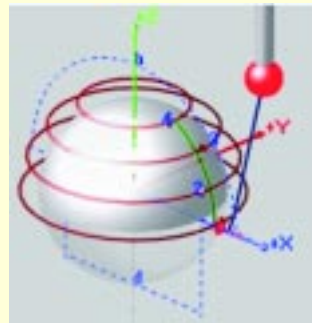


Fig 3: Scanning 3D Preview with Online Display

New software modules widen the CMM flexibility for the Renishaw SP25 and SP80 scanning probes with the related probe changer units included

comprehensive calibration and processing functions.



Fig 4: Multiple probe changer unit ACR3

Various improvements round up the over-all performance of Metrosoft CM 3.50, such as additional statistical functions, read-in of q-DAS files and inspection plans, as well as sophisticated temperature compensation with sequential monitoring for large CMMs. (EHo)



Fig 5: Multiple statistical evaluations with graphical output

EasyLock – Innovative clamping system

In the course of permanent cost reduction and shorter cycle times the requirements for clamping systems have also been increasing in the area of flexibility, changeover time, investment costs and storage space minimization. The system „EasyLock“ with its specific features combines these characteristics in a special way. In x-direction movable cross-beams are

mounted on a base frame. On top of those in y-direction movable telescope columns are mounted allowing the z-direction to be adjusted as well (Fig. 2).



Fig 2.

For quick positioning of the movable elements all axes are equipped with charts. (Fig. 3 + 4). In the head of the columns a fine tuning mechanism is integrated for all 3 axes (Fig. 4). Depending on the work piece and the location one may mount different clamps and clamping devices at the head.

With these features pre-defined configurations may

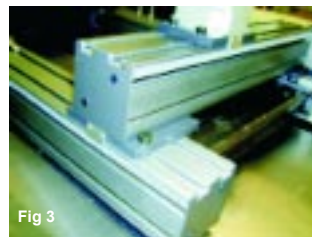


Fig 3

be reconstructed within a short period of time and alterations may altogether be executed very easily. Contrary to some other systems on the market Easy Lock may be used horizontally as well as vertically (Fig. 1). With the help of a configuration program, into which the data records of the pieces may be read in, one may, with automated help at the computer, pre-plan the clampings and generate

construction manuals, even without a real work piece at hand. To simplify the work piece measuring programming the CAD data of the clamping may be exported and for example, imported into the offline programming system GRIPS of Metromec. (TWe)



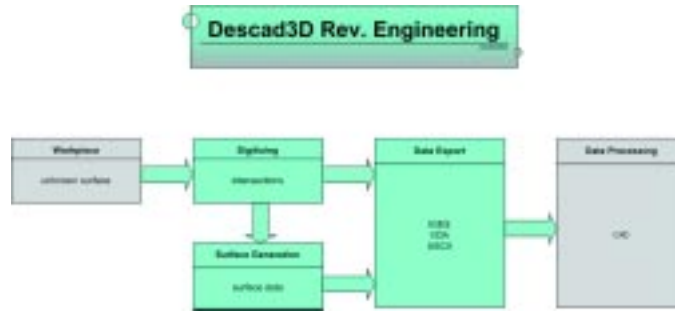
Fig 4



Fig 1

Descad3D Reverse Engineering

With the module „Reverse Engineering“ the software Descad3D was amplified in particular with functions for digitizing of unknown surfaces and outlines. In collaboration with DaimlerChrysler (plant Mettingen) methods especially helpful for tool making (e.g. digitizing of cutting edges) were integrated in Descad3D together with the conventional digitizing strategies (e.g. parallel and radial intersection lines of a surface). In particular with the measuring probe system SP600 on the probe head PH10 the



surface of a work piece may be scanned very quickly. With the intersection line data attained the shape of the surface may be calculated and exported for further processing in a CAD program.

The features are in particular:

- Definition of an unlimited amount of digitizing jobs possible
- Graphic support upon job set up
- Selectable scan strategy:

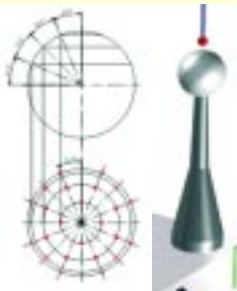
- o Parallel scanning
- o Radial scanning
- o Polyline scanning
- o Outline scanning
- o Cutting edge digitizing
- Simulation option
- Automatic processing of all jobs
- Automatic generation of scanning protocols
- Surface generation from cutting data (Fig) (MEB)



Annotation of acceptance and confirmation check for coordinate measuring machines according to norm DIN EN ISO 10360

Probing Error P

The probing error P is determined by twenty-five equally distributed touch points on a ball standard ($P = R_{max} - R_{min}$). MPE_p is the highest value accepted and set by the manufacturer.



Scanning

Probing Error THP
The Scanning Probing Error THP is determined via four scanning lines (A-D) on a ball standard. (THP means Scanning with high density of points on a given course). The highest permissible value of the scanning probing error is MPE_{THP} .



Length measuring error E

(bridge design machines)
The length measuring error E is determined for horizontal arm machines via parallel gauge block or step gauge block. In doing so every gauge block (at least five) is measured in seven different positions parallel to the axis and in volume (Bidirectional, single point scanning). The highest permissible value of the length measuring error is MPE_E .



Length measuring error E

(horizontal arm machines)
The length measuring error E is determined for horizontal arm machines via ball bar test. The highest permissible value of the length measuring error is MPE_E . (BKi)



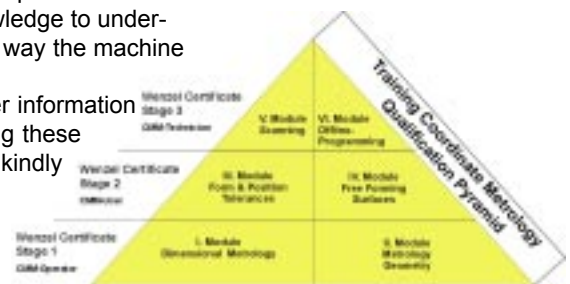
Seminars

In addition to our popular basic seminars „Metrology Geometry“ and „Free Forming Surfaces“ there is a growing and steady demand for the specialized modules of „Form & Position Tolerances“, „Scanning and „Offline-Programming“. To meet our customers' demands we have expanded our seminar program, apart from the existing seminar Form & Positi-

on Tolerances and integrated the topics „Scanning with a measuring probe“ as well as Offline-Programming. These form the tip of our qualification pyramid. It is also an interesting fact that many companies, besides application competence, continue putting greater emphasis on employees' machine competence. An employee should not only be able to operate

the software but also help himself in case of machine malfunctions. These seminars will impart the necessary knowledge to understand the way the machine functions. For further information concerning these seminars kindly contact:

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Exhibitions until April 2004:

++ 03. - 06.12.03 Euromold, Frankfurt (D) ++ 20. - 22.01.04 Nortec, Hamburg (D) ++ 27. - 30.04.04 Metav, Munich (D) ++