

Precise message

Since entering the CMM market in the early 1980s, Wenzel has grown to become a major player in the market. Andrew Allcock visited the company on its 40th anniversary to learn how

“Fifteen years ago Wenzel was not well known; now it is one of the key players in this industry and is well recognised by both customers and competitors.” That’s how Frank Wenzel – son of the founder and like his sister, Dr Heike Wenzel-Daepler, a joint managing director of the business – summarises the higher profile of the Wenzel name today.

Mr Wenzel made the comment during the company’s 40th anniversary celebrations, held at its manufacturing base in Wiesthal, Bavaria, a few kilometres from the walking/nature trail tourist destination of Heigenbrücken, the founder’s home town and where the original Wenzel Precision was established.

Wenzel, claiming to be the fastest growing CMM company in Europe, reckons to have a 10 per cent share of the global market for CNC CMMs. The company



A recent investment, this machine can both grind and drill holes in Wenzel CMM granite tables

UK CMM deal

Described as a low-cost, medium level CMM, the Xorbit X087 features X, Y and Z axes of 800, 1,000, and 700 mm, respectively.

It is supplied with a free Renishaw toolchanger to complement the PH10/TP200 probe system; has Metrosoft measurement software, a new PC and printer; and it comes delivered, installed and with full training for £34,040. Wenzel UK has committed to a stocking programme and so the machine will be delivered from stock starting September.

produced its first computerised CMM in 1985 and now exclusively makes CNC equipment.

Wenzel is the largest customer for Renishaw probes – a fact that was underlined by the attendance of Renishaw founders Sir David McMurtry and John Deer, together with assistant chief executive Ben Taylor, at the celebrations. Wenzel is also working closely with Renishaw in testing product updates and developments of its Revo 5-axis head.

Wenzel’s recent growth has been remarkable. Order intake for the 524-employee worldwide group was 14 per cent up in the first half of 2008, with turnover up 7 per cent. For Wenzel

Precision, the 285-employee manufacturing company in Wiesthal where some 600 CMMs are made annually, order intake is up 38 per cent and turnover 32 per cent up for the first half of 2008. The group intends doubling its 2005 global turnover of €50 million by 2010.

In the UK, order intake was up a phenomenal 80 per cent in the first half of 2008, compared with the previous year, reveals Martin Hawkins, UK & Ireland sales manager. The UK subsidiary is adding further impetus to this aggressive increase in market share with an attractive CMM package deal that will run until the end of the year (see box item, left).

But the global company’s growth

philosophy is very definitely organic rather than acquisitive, although acquisitions in areas of related strategic technology or material supply have, are and will be made, Mr Wenzel underlined. Indeed, the company announced two such acquisitions during the celebrations (see box, page 22).

Explaining this performance, employees often talk about 'Wenzel values'. These take in family ownership, a precision engineering heritage and in-house manufacture of all key components rather than assembly-focused operations. Another differentiator from competitors is the company's use of granite for elements such as machine tables, bridges and vertical rams rather than aluminium. A flexible response to customer requirements and low total cost of ownership are other principles.

FROM THE BEGINNING

Established as a precision measuring instruments manufacturing concern, Wenzel produced its very first CMM in 1980. A purely mechanical affair, it used the vernier system to read off position. It was mechanically accurate; there being no possibility of computer-based error compensation. It was, of course, based on a granite construction (for its thermal stability and low co-efficient of thermal expansion), with the necessary flat surfaces



An LHF gantry type CMM shown here with a wind turbine gearbox component

produced by scraping – inspection vee blocks, for example, feature hand-scraped surfaces – and hand lapping (see picture, page 22), an already established craft within the company.

But although other CMM makers have abandoned granite moving elements in favour of aluminium (although often retaining granite tables), relying upon error mapping to deliver accuracy, Wenzel has remained firm – even acquiring its own granite supplier in 2006 to secure material availability. "Today's aluminium CMMs are typically built by unskilled personnel and have no accuracy whatsoever until error mapped into specification," it says.

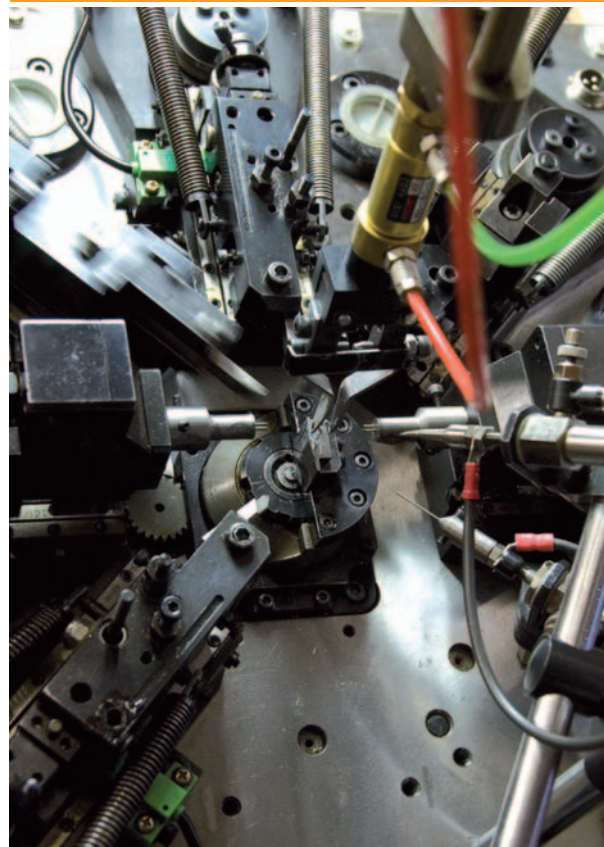
While Wenzel applies mapping of the 21 sources of error in a three linear axis system to deliver finest accuracy, that error correction is applied to a fundamentally accurate, thermally and dimensionally stable structure. As it points out, not only does aluminium react faster to temperature change than granite but its thermal growth is 23 microns per metre per °C compared to granite's 6.5. (The figure for carbon fibre is 0 and Wenzel uses this in its horizontal arm machines to make the arms lighter, incidentally.)

With all machines calibrated at 20°C, the question is what happens when temperature changes? And what if temperatures at various heights in a factory are different? In addition, within the small print of many CMM specifications there is a note about the temperature gradient that the machine will withstand – change in temperature/unit time. There can be few user companies that measure such things.

As Wenzel UK managing director Andrew Woodward offers: "If the machines are in a temperature-controlled environment, then there's little or no difference; but most aren't, and that's where the issue lies."

A simple test to establish repeatable error (as opposed to non-repeatable error) is to measure the same workpiece at different intervals during the day over a period of time. Once non-repeatable error is seen, then doubt creeps into every inspection report, says Mr Woodward.

Wenzel makes a final point. Most CMM



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Strategic acquisitions

Wenzel's first strategic acquisition was CMM software expert Metromec – now Wenzel Metromec – in 1999. In 2002, it acquired WKP BV, a manufacturer of precision measuring instruments with which Wenzel had worked since establishment. This gave the company wider reach and a calibration laboratory.

In 2003, Wenzel snapped up GearTec GmbH and has developed a strong gear test and measurement capability. Indeed, it claims a 29 per cent global market share in this area, manufacturing around 60 gear measuring machines/year, making it around 11 per cent of the company's annual CMM output by unit number. And the combination of CMM and gear measurement in a single machine is attractive to the new industry of wind power, based on the company's LH and LHF gantry machines, six of the latter are destined for China for this purpose, in fact.

In 2006, granite supplier Steinwerk Heina was acquired, then Xspect Solutions in the USA, the largest supplier of refurbished CMMs worldwide, supplying 100 units (all makes) into North America.

At the 40th anniversary celebrations, Mr Wenzel announced the acquisition of Knotenpunkt, developer of the Shapetracer laser scanning head and associated Point Master software, used in reverse engineering applications. The system was already used by Wenzel and is highly cost competitive. It has been successfully deployed in a challenging application in the UK, reports Mr Woodward.

In another move, Wenzel Group announced the purchase of computer tomography (CT) company Volumetrik GmbH. CT makes possible non-contact 3D measurements of internal details without the need to destroy/open the part. Best known for its use in the medical sphere, it can be used on a range of materials.

measuring software is evaluated through either the PTB [Physikalisch-Technische Bundesanstalt] or NIST [National Institute of Standards and Technology] algorithm performance test. Unfortunately, the same is not true for mapping algorithms or mapping models. The situation is made worse by the sheer number of maps with all the different manufacturers and machine variants. Is there any wonder that two machines, measuring the same part, yield different results? With no industry or government oversight, the CMM user is at the mercy of the manufacturer and current CMM accuracy testing, says Wenzel.

FLEXIBLE FRIEND

Special machines represent some 15 per cent of group turnover. An example is the first-of-a-kind machine to measure 6 m, 20 tonne diameter bearing rings. The company's flexibility also extends to a willingness and ability to interface to other

CMM software through the I++ interface, of which it is a strong proponent.

Turning to cost of ownership, Mr Woodward offers that, for example, the company does not compel its users to upgrade to the latest revision of software should they require additional modules such as support for a toolchanger – a recent real world UK example, in fact.

Other cost of ownership issues include:

New software

Metrosoft Quartis is a new generation of measuring software; the first software based on the innovative Microsoft Office Fluent user interface. The new interface is clearly arranged, flexible and goal-oriented. The delivery of Quartis will start in January 2009.



Hand lapping of a granite table. An established craft tradition within Wenzel and one that delivers precise flatness

specially made wire in CMM wiring looms that tolerates tight radius bending; specially made long-life pneumatic tubes, textile wrapped to prevent UV degradation; positioning the motion controller away from the machine; laser cutting apertures in the steel vertical bridge/arm supports to reduce weight without inducing stress into the component as would a chip-making process; the design of machines to support fast and easy maintenance/replacement.

In the latter case, this means that changing a wiring loom takes under an hour now instead of a complete shift as in previous years, and the ability to change a vertical ram roller set in half an hour versus two shifts, with a matched set fitted requiring no recalibration. And on its gear measuring machine, WTG350, the use of standard Renishaw probes, not specials, means that the owner can benefit from Renishaw's standard return-exchange programme.

In growing, Wenzel has retained its traditions and values, says Heike Wenzel-Daefler. "We value our customers and our employees. We look for the best solutions for our customers and desire long term relationships. We have a long term strategy and do not put short term profitability ahead of long term success."

As for the future, in another 40 years' time Frank Wenzel sees the metrology company as still being family owned but by then one of only up to five global players. And while technology may evolve, 'Wenzel values' are clearly anticipated as being a constant. □