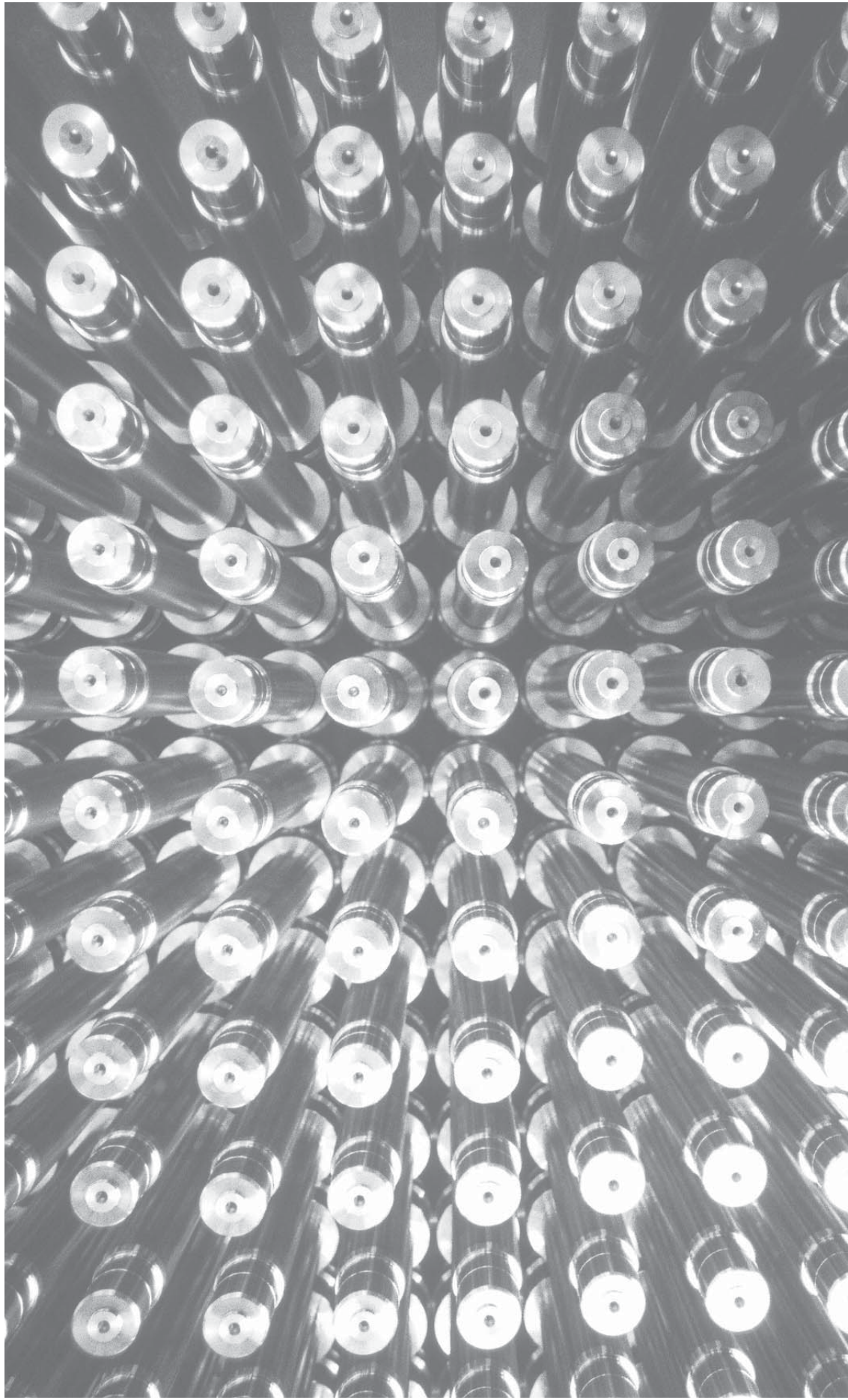


Turning machine in hard field test



Reprint from
the journal

**maschine
werkzeug+**

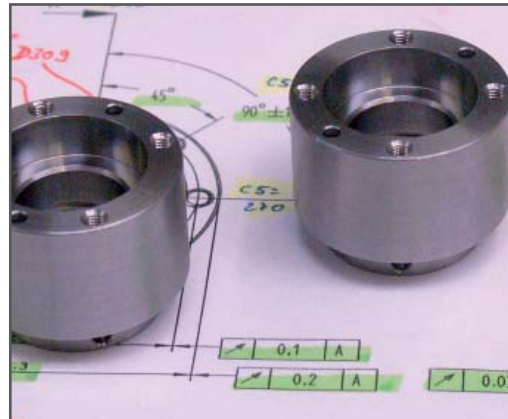
04 - 2008

Turning machine in hard field test

'That it would be so successful!'

'The winner takes them all...' is a statement often heard in the US primaries. When talking about WST in Löffingen, you'd have to add: '... from INDEX', for virtually all of the 70 or so turning machines from the contract manufacturer come from Esslingen. And this has been the case right from the state, so for almost 15 years. That does of course have its reason, or to be more precise, reasons, many good reasons.

Author: Hubert Winkler



WST manufactures precision turning parts in series production of between 100 and approx two million pieces, primarily from steel.

Do you remember what the graph of an e-function looks like? Very easy: similar to the turnover curve of WST in Löffingen between 1993 and 2007. WST originally stands for 'Werkzeugschleiftechnik' or 'tool grinding technology' and Löffingen can be found in the south-eastern corner of the Black Forest between Donaueschingen and Titisee-Neustadt. Tool grinding, that was the start of WST but today, the company produces high-quality 'precision turning tools for the highest requirements' - that's its slogan - in series of between 100 and around two million, in most cases between 5,000 and 100,000 units, more than 90% of these (measured by the tonnage) made of steel.

And that with the e-function has also been exaggerated for some years, because managing director Georg Willmann pays attention to solid growth. But that didn't wane in the years between 2002 and 2005, which were critical years for the industry: Turnover grew between 15 and 25 per cent per year, and between 2006 and 2007 the figure was even in excess of 35 per cent - despite intense international competition and highly discerning customers. Georg Willmann: 'Customers come primarily from the automotive sector, gear manufacturing and drive technology. The largest customer is Daimler, where we are an A-category supplier.'

How can a company be so successful, even in difficult times? Georg Willmann puts the success down to a lot of 'self-initiative', motivated employees and modern machinery. He himself is in his early 50s, and is the head of a young, hard-working, creative team - including his two sons Manuel and Jörg. The average age of the relatively young, yet experienced WST team is 35 years. To meet the ever higher quality standards, the employees are constantly expected to solve difficult manufacturing problems. The in-depth machine and cutting knowledge, the high machine workload in three shifts thanks to the commitment of the people in the plant and an active

sales department

are fundamental pillars for the success of the Löffingen-based company.

The machines from INDEX also make a substantial contribution to the development of WST. Georg Willmann put his faith in them right from the start. The company started with a second-hand INDEX machine in a garage; today it produces on around 6,300 m². The 70 or so production machines from INDEX account for around 80 per cent of the overall WST machinery.

The remaining 20 per cent are machining centres, grinding machines, sawing machines etc. from other manufacturers. Many state-of-the-art measuring devices are used for quality control, including three coordinate measuring machines. All single- and multi-spindle machines originate from INDEX. These are primarily of the types ABC, G200, G300, C200, MS32C, MS32P, MS42C and MS52C.

C200? Yes, C200, to be more precise Speedline C200! It is new - and who would have thought it - the 'big sister' of the Speedline C100 from INDEX, which is already well-known. The Speedline C200 could be seen for the first time at the EMO 2007. WST, as one of the largest and most important INDEX customers - has the honour - and as it quickly turned out - the pleasure of thoroughly testing the C200 in a comprehensive field test before it was offered to the general market. INDEX does not launch any machine on the market until it has been subject to a thorough and tough practical test - with the emphasis on tough - lasting several months at selected customers and it has passed this test. 'This guarantees a high standard of quality when series production starts,' explains Michael Czudaj, the head of the INDEX outdoor sales team in Germany. INDEX was also interested in the comparison with the G200, even if the two machines have a very different character, emphasises Michael Czudaj: 'The G200 with Y/B



axis is a flexible turning centre for smaller batches and parts of high complexity. In contrast, the C200 is a turning machine for workpieces of a slightly lower complexity that are produced in large quantities. For both machines, there is also a handling facility for chuck parts.'

WST produces many parts that are suitable for both machines. And this was where the comparison led to a clear-cut result, says Achim Blank, job preparation manager at WST: 'The G200 is a super machine but the C200 also offers reliable and a consistently high level of precision. And we have around 30 per cent increased productivity compared to the predecessor machine. And his colleague Robert Bede, the head of the single-spindle machines department, emphasises: 'We have practically no waste with the C200.'

INDEX has done a considerable amount to achieve this reproducible precision and the high level of productivity.

- The plate guidance system Singleslide with its large gliding areas sets standards with regard to damping, stiffness, tool operating life and thus achieves accelerations (1 g) and rapid traverse speeds (50 m/min) as high as those with linear rolling guides, which has a positive effect on machine idle times.

- Three independent tool carriers, each with 10 (DIN VDI 69880-30) or 14 (DIN VDI 69880-25) places (all also for driven tools) and two Y-axes facilitate highly productive manufacturing of very complex parts too.

- The tool holders have the INDEX W interlocking, an improved VDI interface and also contribute to high repetition precision with their form closure. Another benefit: Tool change is also faster.

Whereas the spindles of the two C100 versions hold 30- and 42-mm rods, those of the C200 also permit rods of up to 65 or 90 mm. INDEX offers its own rod loader (MBL) that is ideally adapted to the machines, but they can also be combined with third-party makes.

But all theory is grey, how do measures work in practice? 'The machine has very quiet running characteristics. The mechanical stiffness is huge. The parts come from the machine in a constant quantity, independent of the remaining rod length. In the past, we had to make corrections more frequently,' reports Achim Blank, and Robert Bede adds: 'When we have to turn parts for H7 clearings that are exact to 11 µm, this is not a problem for the C200. 'We have practically no waste in cases like this.' The two cannot yet give any statistically reliable information about the longer tool idle times. For that, the testing time is still too short. But Jürgen Weiler, who works for INDEX in the outdoor sales team and is a welcome guest at WST, adds: 'We have examined that aspect thoroughly at INDEX. The results are clear cut: In some cases, we have achieved up to 30 per cent higher total tool paths.' Initial tests have shown that INDEX is also on the right track here, says Georg Willmann.

So everything hunky-dory? Not quite - not yet. Despite the good training by INDEX, Achim Blank and Robert Bede are not quite as familiar with the programming as they are used to being. Like most of the other INDEX machines, the C200 is equipped with the adapted Sinumerik 840 D ('INDEX C200-4D powerline'), which means that the many options offered by the C200 require a change in thinking. 'The simultaneous contact of three tools and the two Y-axes require a good imagination and supreme concentration,' explains Achim Blank. Currently, programming requires 30 to 40 per cent longer than on the other machines.

However, the 'virtual machine', that INDEX offers to optimise and control the process has not yet been tested, even if it does offer more reliability. But Georg Willmann already sees the advantages of this facility: 'Even if we old hands are not dependent on it - you can be sure that the programme runs, that the process runs superbly, without any collisions.'

Ultimately, programming is possible on the virtual machine just as on the real machine, only for much lower costs. Georg Willmann comments on this: 'There is a difference as to whether I programme on a real machine for three hours that stands idle for this time, or on a virtual machine, while the real machine produces cuttings. When an inexperienced programmer makes an error in particular, the damage can quickly amount to more than the investment in the virtual machine. Isn't there anything to complain about? Perhaps in the service from INDEX? Georg Willmann shakes his head - on the contrary: 'The service from INDEX is good. Whereas other machine manufacturers do indeed send someone who does not know the machine at all, INDEX send out someone within a very short period of time who not only knows the respective machine inside out, but who is also a specialist for the particular problem.

And something else is also important for the successful entrepreneur - the sustainability of the supplier: 'You can rely on INDEX for decades. We have no problems in getting all the spare parts, even for our oldest machines. This reliability and the careful product maintenance are unique, and that from a manufacturer that is one of the most innovative. This and the robust mechanics contribute to the high value retention of the INDEX machines. Above-average prices can be achieved on the second-hand market, even for older INDEX machines.

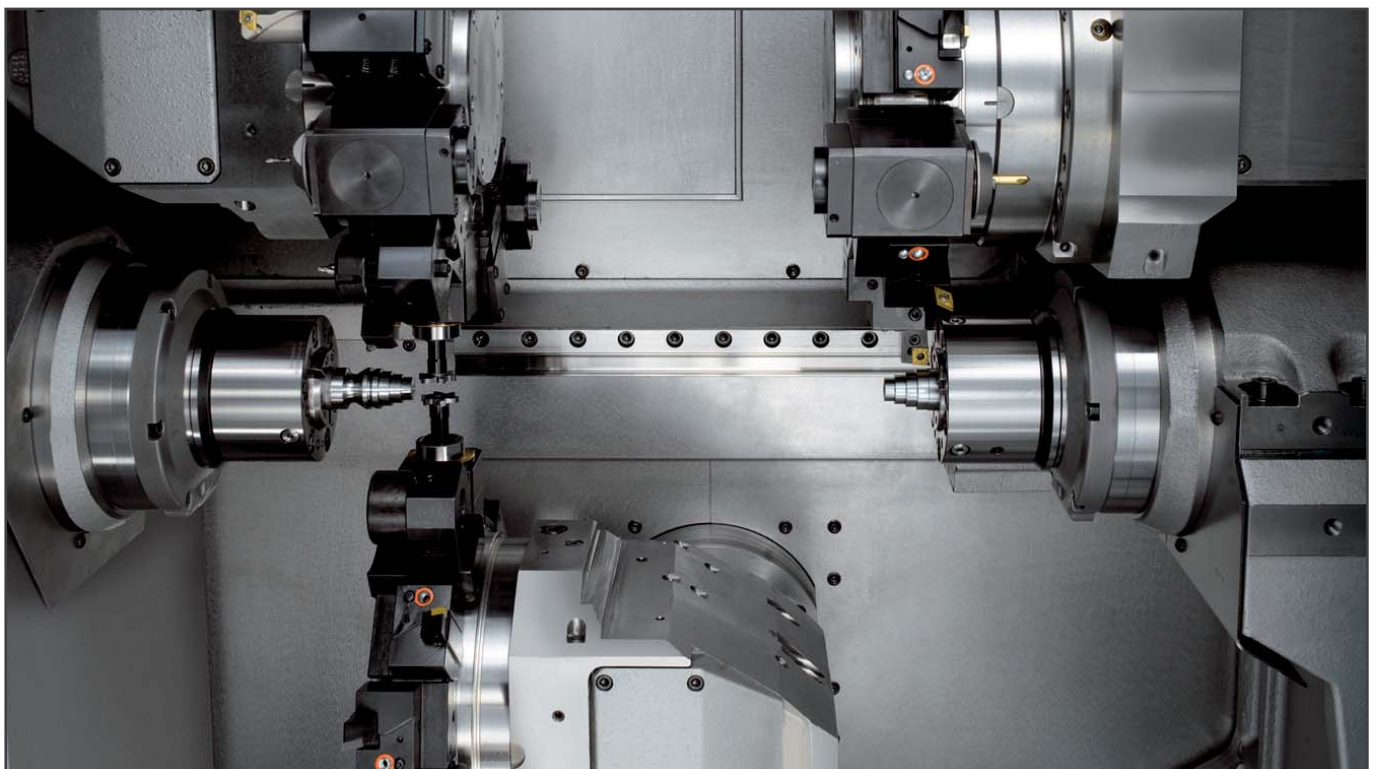
Actually, Georg Willmann shouldn't be that surprised by the C200 - but he is: 'INDEX is always right there at the very forefront when it comes to precision, technology and innovation. Even so, I would not have believed that the C200 would be so successful.

'The close cooperation is far from accidental. Rather, it's the

result of superb experience over one and a half decades. However, it is an accident that the huge photovoltaics system on the roofs of WST, designed for 200 kW peak performance, got around as much input - 32 kW - from the sun, which was swathed in cloud on that January morning, as the C200 needs approximately as a connected load.



The new C200 in a field test at WST: INDEX does not launch any machine on the market until it has been subject to a thorough and tough practical test - with the emphasis on tough - lasting several months at selected customers and it has passed this test.



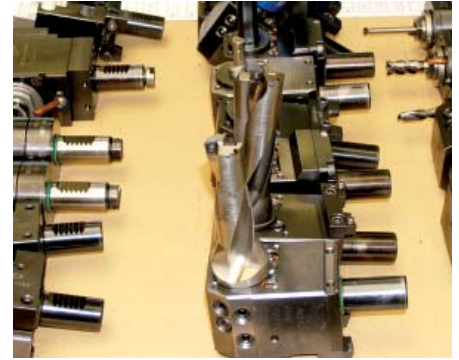
Two Y axes, three turrets and, a synchronized counter-spindle with Z axis in a clearly arranged working area make the C200 unusually versatile.



Successful and untroubled collaboration for 15 years. WST Managing Director Georg Willmann (right) in dialog with Jürgen Weiler (left) and Michael Czudaj from INDEX.



Highly motivated and qualified staff are the most important capital at WST. (from left) process engineering head Achim Blank, department head Robert Bede and Viktor Zich, tool setter and programmer.



The tool holders of the C200 have the INDEX W interlocking, an improved VDI interface and also contribute to high repetition precision with their form closure.

Company Portrait of WST

Founded in 1993, the family-run company possesses newest technology in metalworking by focusing on constant growth and continuing innovation. WST is one of the most reliable suppliers of high-quality precision parts in many fields due to modern machinery with state-of-the art INDEX mono-spindle and multi-spindle turning machines.

The customized production of smallest lot sizes up to series of over a million parts is a main feature of the flexibility and speed in manufacturing at WST. Steels like chromium-nickel, cementation and quenched and tempered steel as well as rust- and acid-resistant steels are being machined at WST. The wide range of machined materials is completed by non-ferrous metal like brass, copper and aluminium. The machining range lies between 5 and 100 mm from bar stock and up to 200 mm with chuck work.

INDEX

LY9002.9483-0708 Printed in Germany Subject to change without prior notice the journal

INDEX-Werke GmbH & Co. KG

Hahn & Tessky

Plochinger Straße 92

73730 Esslingen

Tel. (0711) 3191-0

Fax (0711) 3191-587

www.INDEX-werke.de