

Monoculture that

provides flexibility



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When investing in machine tools, Spreitzer does not accept any compromises

Monoculture that provides flexibility

For 34 years, Karl Spreitzer has been producing precision-turned parts in Gosheim. The lathe manufacturer INDEX has been his companion from the very start. In the meantime, the INDEX subsidiary TRAUB with its powerful single spindle bar automatic for short turned parts has also become involved.

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30 out of 40, that is, 75 percent, of the Karl Spreitzer GmbH machinery – is made up by the INDEX Group, that is, INDEX and TRAUB combined. This high percentage is a result of the company's philosophy and success. First of all, managing director Bernd Spreitzer (Figure 2) generally prefers machine tools from Germany, »because machine tools are a key technology in Germany's economy, without which other industries would also have a bleak future.« Needless to say that this allegiance stops when he doesn't find a solution close to home.

High flexibility with large piece quantities and complex components

In addition to that, Spreitzer also advocates technological monoculture (Figure 1): »At a given quality, flexibility in the form of responsiveness and short cycle times is decisive for success and adequate price levels. Our high degree of CNC and automation, but in particular the consistency in the individual machine groups, allows us to quickly supply large six-figure piece quantities, even for complex components, by distributing the order to several absolutely identical machines. Not to mention the advantages of uniform NC programs and tool systems, better spare parts stocks and less training required that such a monoculture entails. Given these circumstances, I readily accept that we do not have the best machine for every component.« From the very start, INDEX has been the preferred machine supplier of the turned parts provider: Karl Spreitzer has built up his company with cam-controlled machines from the Esslingen-based company and manufactured millions upon millions of hydraulic components. However, when the component requirements got more and more complex, and apart from turning and tapping operations, it had become necessary to also carry out milling, drilling and 3D machining operations in dimensions that got smaller and smaller (Figure 3), Spreitzer was forced to react. That's



Fig. 1: A powerful squad: The ten TRAUB single spindle bar automatics of the »TNK36« type in rank and file – their compact arrangement ensures short paths in multi-machine operation, access to the working area on both sides, making for short setup times

when Spreitzer got started with CNC machines from the same partner; first in the form of INDEX GB and then INDEX ABC machines. The latter, some of them automated with a robot handling system, are still today the mainstay in the complete machining of series parts as a highly productive machine group, due to the fact that they combine the advantages of cam-controlled bar automatics with those of universal CNC lathes.

Small, complex, high-precision - single spindle bar automatic wanted and found

With the help of CNC technology and the change to complete machining from bar stock, Bernd Spreitzer also took a big leap forward in terms of workflow management. »Components that required 3D milling work used to have incredibly long cycle times because they first had to be turned and deburred, then mounted on the milling machine, and finally the drilling patterns had to be applied on an indexing unit. In the end, the parts never got finished and got stacked everywhere between the machines. The likelihood that agreed dates went down the drain was quite high because there were just too many machines and too many employees involved in their production. Nowadays our workflow is clearly structured and actually flowing.« The one remaining problem was that of the component size getting smaller and smaller as a result of the cross-sector »Light-weight

construction and ›Miniaturization‹ megatrends. Five years ago, Bernd Spreitzer was faced with the challenge that a very interesting, but complex short-turned part required a level of precision that would have been too much of a challenge for the existing machines. In his search for a suitable machine, he spotted the Reichenbach manufacturer TRAUB, then already a subsidiary of the long-standing Spreitzer partner INDEX. Already provided with considerable trust, the new ›TNK36‹ series launched in 2002 had to compete with a renowned competitor and emerged victorious both in quality and productivity.



Fig. 2: Successful partnership over decades (from left): Werner Groß, Regional Sales Manager for INDEX and TRAUB, Walter Hoch, Sales and Technology Manager for TRAUB, Matthias Merkle, TRAUB's Sales Manager for Southern Germany, and Managing Director Bernd Spreitzer.

Success with TRAUB's fixed headstock automatics in the maximum configuration

For Walter Hoch (Figure 2), TRAUB's sales and technology manager, this success did not come as a surprise. »Not only then was the TNK far ahead of its time, but even now it is more than adequate according to today's standards in all its performance characteristics. When it was launched, it had the outstanding feature of allowing simultaneous machining work with three tools, including backworking. Another convincing feature was the fully functional counter spindle of identical performance. Unlike models using a synchronous spindle, for the first time the lathe operator was completely free in dividing the cuts between the front and rear: In practice this means a higher concentricity and a more favorable chip fall on both sides of the working area. When optimizing his machining strategy, the

programmer is not limited in the number of optionally driven tools of the 12-station turret nor in the number of NC axes.« Over the last five years, Karl and Bernd Spreitzer have invested in ten identical TNK36 single spindle bar automatics equipped with identical LNS (›Hydrobar Express 332‹) bar feeders, thus considerably strengthening their company's performance. »I never would have thought that we would grow in the short-turned parts sector at such a speed. We moved into our new building in 2007 and changed over more than half of our machines by November. The TNK's compact installation area and its free access on both sides via its central cover has allowed us to install ten machines in one row. This has allowed us to minimize our non-productive times and achieve another increase in the efficiency of multi-machine operation.«

User

In 1974 Karl Spreitzer established a company for the manufacture of precision turned parts on cam-controlled automatics.

He first addressed only customers from the hydraulics industry. When the market for ›cam-produced parts‹ broke down unexpectedly at the beginning of the 90s, CNC technology was introduced. Today Spreitzer is offering complete machining of complex components on single- and multi-spindle automatics, some of which are highly automated, and on sliding headstock and single spindle bar automatics, including a heat treatment, completed, if desired, to a sub-assembly. The group of customers of the company certified according to DIN EN ISO 2001 now also includes the automotive and supplier industries, plant design, consumer goods and the supply industry.

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Slim structures also thanks to the ›WinFlex-IPS‹ software

The TRAUB machines provided the Gosheim-based company with a new control unit. Whereas INDEX relies on Siemens, TRAUB has opted for the TX8i control unit from Mitsubishi. A disadvantage, you would think. But Regional Sales Manager Werner Groß (Figure 2) and his colleague Jürgen Weiler were able to convince Spreitzer that the opposite was true. Groß: »Flexible and especially slim structures are an enormous competitive edge for Spreitzer. To keep it that way, all machines are equipped with the TX8i control unit and with our ›WinFlex IPS‹ software package. There is no way of programming a lathe that several tools are simultaneously operating on more quickly, more intuitively and especially more safely with respect to collisions. The fact that by now ten TNKs are in place and that the job preparation is still being done by the same small team proves that we didn't promise too much.« For 20 years, sustainability in corporate management has meant for Bernd Spreitzer investment into modern metal-cutting equipment independently of the economic situation.

However, this also includes aspects such as the preservation and resale



Fig. 3: Typical complete valve component made of AlMgSi1 with large portions subjected to drilling, milling and tapping



Fig. 4: Only a small selection: Karl Spreitzer produces complex components completely from bar stock in small lot sizes up to several million per year. In the attached mounting section, these components are combined, if required, with purchased parts to produce sub-assemblies

value of the machines and their energy balance. The machines are equipped with a high-pressure coolant device for high-alloy cutting oils and are operated with cutting oil. This protects the machines and primarily the thread-cutting tools. Since the oil mist may ignite under full load in extreme cases, all TNKs are equipped with a multi-stage fire-extinguishing device.

Total Cost of Ownership – also included in our monoculture approach

To quote Bernd Spreitzer verbatim, »a supplier's typical grab bags« is produced on the TNK36 machines. This refers to the wide range of different parts in lots of 1,000 to 500,000 parts, mostly 5,000 parts (Figure 4). The materials cover the entire range of steels, stainless steels, non-ferrous metals and light metals. The machined materials include, apart from round material, also polygon material, although hexagons are also milled in high productivity. In view of this variety, Spreitzer has selected the maximum configuration of the TNKs from the very start: including main and counter spindles, each with C axis, a 12-station turret and front- and backworking attachments. Since the turret as well as the backworking attachment is equipped with a Y axis, eccentric machining operations on main and counter spindles are possible simultaneously. Each finished part is gripped by an integrated gripper and transported free of damage out of the machine on a conveyor belt. The bar diameter of 36 mm and the turning length of 100 mm meets the standard L/D ratio for short-turned parts of 3:1 almost precisely. The energy balance topic of the machines is also of great importance to Spreitzer given the 7-figure kilowatt demand per year. Here, too, the TNKs set standards, according to Matthias Merkle (Figure 2), TRAUB Sales Manager for Southern Germany: »All drives are capable of regenerative feedback, i.e. the braking energy is fed back to the

system. The low-energy temperature control of the two-part switchgear is another cutting-edge feature, which makes an additional active switchgear cabinet air-conditioning unnecessary.

Thus, for Spreitzer everything works perfectly with the TNKs, including the proximity of the manufacturer when service is required.

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