

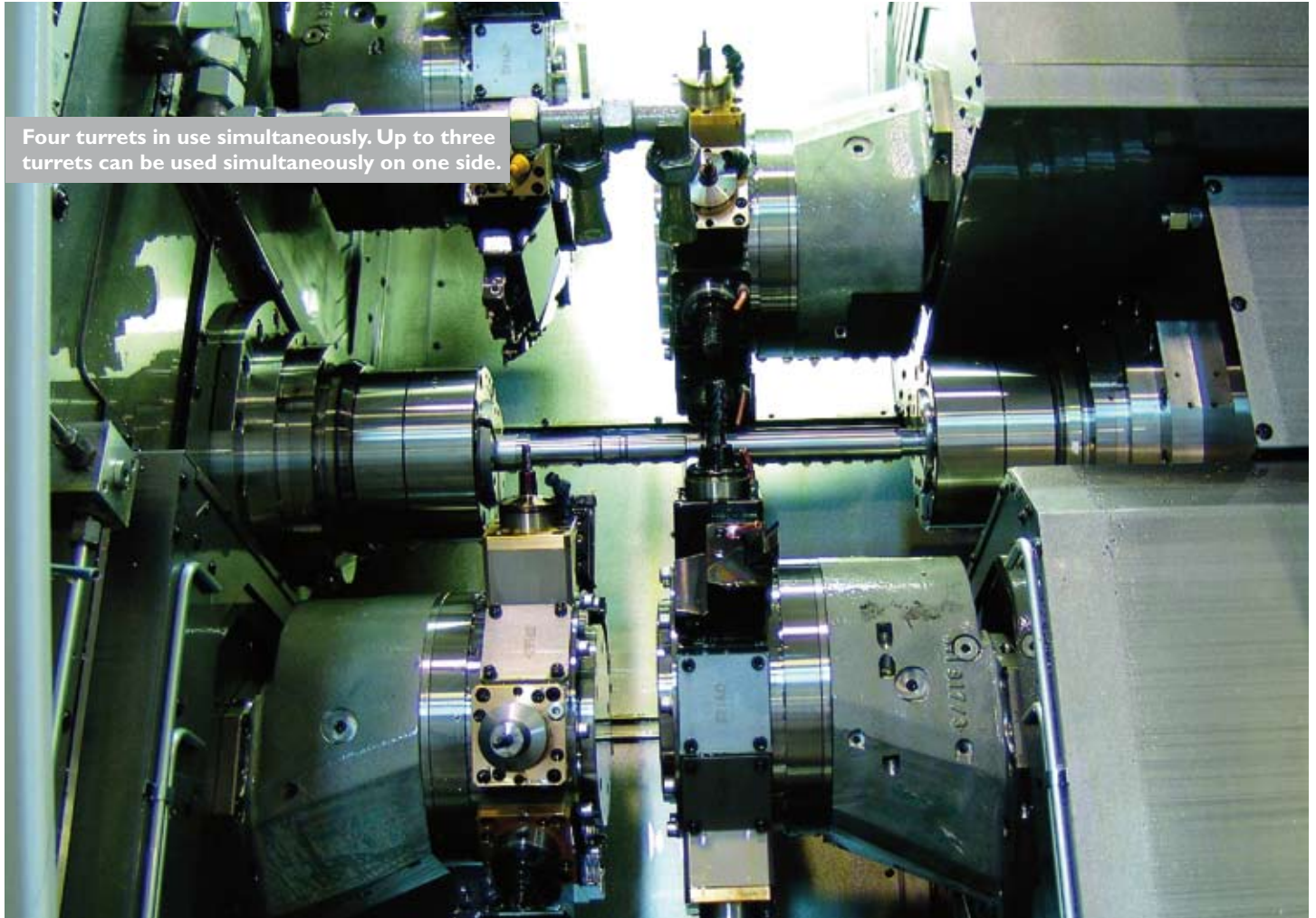
Four-times faster



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Four turrets in use simultaneously. Up to three turrets can be used simultaneously on one side.

Four-times faster

Complete machining: It was, in particular, the kinematic construction with its refined turret concept that impressed IWN GmbH & Co. KG on their new TRAUB TNX65/42 turning/milling center. The component is a complex drive shaft with a machined spiral that is used for door locking systems on commercial vehicles. Machines offered by the competition would have needed at least four-times as much machining time.

When we researched the market we determined very quickly that the TRAUB machines came the closest to what we had envisioned." Besides power and accuracy, the actual cycle time played a decisive role in machine selection for Reinhold Schulte, Owner and Executive Director at IWN GmbH & Co. KG in Bielefeld. IWN has a wide-ranging spectrum as a supplier for the machine industry, the automotive supplier industry, and the agricultural, printing and packaging machine industry. When the first signs of the current crisis were noticed in the fall of 2008, consistent measures were undertaken early on. By cutting work hours and overtime, the worst effects were at least reduced. After a slight gain in the third quarter, Schulte is expecting a "30% decrease in revenue over the year". When the IWN Executive Director was looking for a suitable machine at the METAV expo

in Düsseldorf in the spring of 2008, there were no signs of a crisis. Schulte, a "jack of all trades" who prefers to supply his customers with system solutions developed in-house and ready-to-install, already had plans for a new project back then: A new, compact drive concept to pneumatically open and close doors in commercial vehicles in a safe manner. The key part of this drive cylinder is a shaft made from 16MRCR5 case-hardened steel with a machined spiral. This shaft is a highly accurate and complex component with an extremely high surface quality. It was clear for the IWN experts that such a part ideally had to be manufactured on a turning/milling center: Even though there had been numerous machines of this type available at IWN for decades, it was quickly determined that the existing machines would not be able to handle the new tasks with regard to stiffness and accuracy.



Successful project team (from left): IWN Executive Director Reinhold Schulte, TRAUB-INDEX Regional Sales Manager Dieter Theßmann, TRAUB Sales Manager Hans-Joachim Koschig, and IWN Manufacturing Manager Matthias Buschkamp.

Profile

Expert problem solver

IWN GmbH & Co. KG was founded in 1975 by Wolfgang Niemann and first manufactured parts under the name IWN Armaturen. The abbreviation IWN stands for Ingenieur Wolfgang Niemann. In the beginning, the main focus was on the development and production of industry fixtures. In 1987, the company started to manufacture precision turned parts. Reinhold Schulte took over the company in 2005. IWN develops and produces products according to customer specifications. This includes everything from cross-section cutting devices for packaging machines to high-tech spray systems.

This led to intense market research. However, none of the "usual suspects" were able to offer a viable concept that would satisfy the high standards of the Bielefeld company. That was until Schulte and his team discovered the TNX65/42 turning/milling center from TRAUB Drehmaschinen GmbH & Co. KG at the 2008 METAV expo. The "clean and sturdy construction" was very impressive, and also especially "the turret design, its construction, and the placement of the spindles in relation to the turrets," said Schulte. Another advantage, Schulte mentioned, is that all four turrets show sufficient degrees of freedom. While IWN has been a loyal Index customer for years, nobody had considered its subsidiary, TRAUB. The last purchase of a TRAUB machine, a CNC fixed headstock lathe, had been 15 years ago and was not the best experience with regard to accessibility for service and maintenance. But TRAUB developers have made progress, because in this area, the TNX leaves practically nothing to be desired. The economic efficiency is particularly impressive: Cycle times are four times faster than those of the machines offered by the competition. The machine was bought as a standard machine, but of course with "certain specifications" regarding tooling. The only special request: The machine was to work with oil instead of emulsions. This added a fire-extinguishing and oil-mist vacuum system. Commissioning of the machine took place at the start of 2009.

"Off-the-rack" machining

Something else that confirmed Reinhold Schulte's choice of his new addition was: "That in addition to the current part, you can manufacture parts that do not belong to the classic workpiece spectrum of a turning/milling center." Thus, it is conceivable that valve housings from rectangular material could be manufactured on this machine. Such parts are generally manufactured on a

machining center. This is why the bar loader was deliberately chosen to also accommodate rectangular cross-sections. The main drill holes of such valve housings must be highly accurate and burr-free to the extent possible. That is why "off-the-rack" manufacturing offers advantages, because the drill holes can be processed multiple times without a problem. In addition, the contour of such drill holes can be very complex, which means that certain control edges or undercuts can be manufactured directly on the machine. For current machining, "we really only need three turrets," explained the IWN boss. "But, we have ongoing development and would like to be ready for the demands of the future." This is why he emphasizes the complete machining of parts that becoming increasingly more complex. The four turrets are unmatched in this regard: "They are side-independent and can even work simultaneously with three turrets on one side." This allows for the optimal distribution of machining times over the spindles and therefore reduces cycle times. TRAUB Sales Manager Hans-Joachim Koschig also referred to "the unique machine kinematics that allows each individual turret to approach any point within the processing space". This is how up to four tools can be used independently at the same time. In addition, the TNX has an excellent stiffness.

Turn-mill center TRAUB TNX65/42 with four turrets



My opinion

Disappointed customers are resentful. Thus, Bielefeld-based IVN GmbH & Co. KG has not purchased a TRAUB machine in 15 years, because they had a bad experience with the accessibility of the machine. Not until the discovery, more or less by accident, of the four-turret all-in-one TNX machine, was it clear that machine developers can learn a great deal. This is a prime example of how important it is to remain in touch even, or especially, when the customer is hesitating. A good product can overcome a bad experience very quickly.

Walter Frick



The operators are now able to handle the new TRAUB TNX 65/42 machine and its capabilities very well.

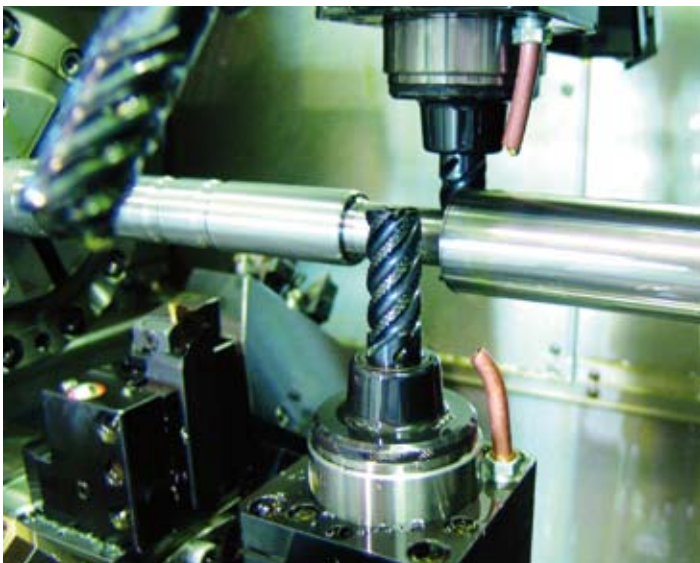
Basic version with hybrid bearings

Even in its basic version, the machine has hybrid bearings in the two identical work spindles, as well as large roller guides, ball screws, and cross slides. According to Koschig, "We have used turret heads with a so-called compact-shaft system, which are used to attach tool holders directly in the turret." Only the tool holders were optimized. The bearings of these holders were modified with regard to the extreme radial loads. Overall, Buschkamp is highly satisfied with the new turning/milling center. Working together with the manufacturer, the typical "minor start-up problems" were all quickly remedied. The machine is now absolutely reliable. Also, "a lot has changed" with regard to the previously criticized accessibility of the TRAUB machines. The back of the control cabinet is used as a cover for the ma-

chine space. By simply swiveling the control cabinet, you immediately get complete access to all assemblies. Currently, around 600 parts are being manufactured per month, in a two-shift operation. In a three-shift operation, up to 1,000 parts/month can be manufactured.

IVN Executive Director Schulte explained the current excess capacity like this: "When I was informed by the suppliers about the actual cycle times for the drive shaft during the first RFQs, we calculated the machine utilization respectively higher." Because the TNX has cut the cycle times down to a fourth of what they were, "we are happy about the possibility of utilizing the machine for further machining".

Author: Walter Frick



Three turrets on the complex part: Machining of the shaft, made from 16MRCR5 case-hardened steel, with machined spiral.

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