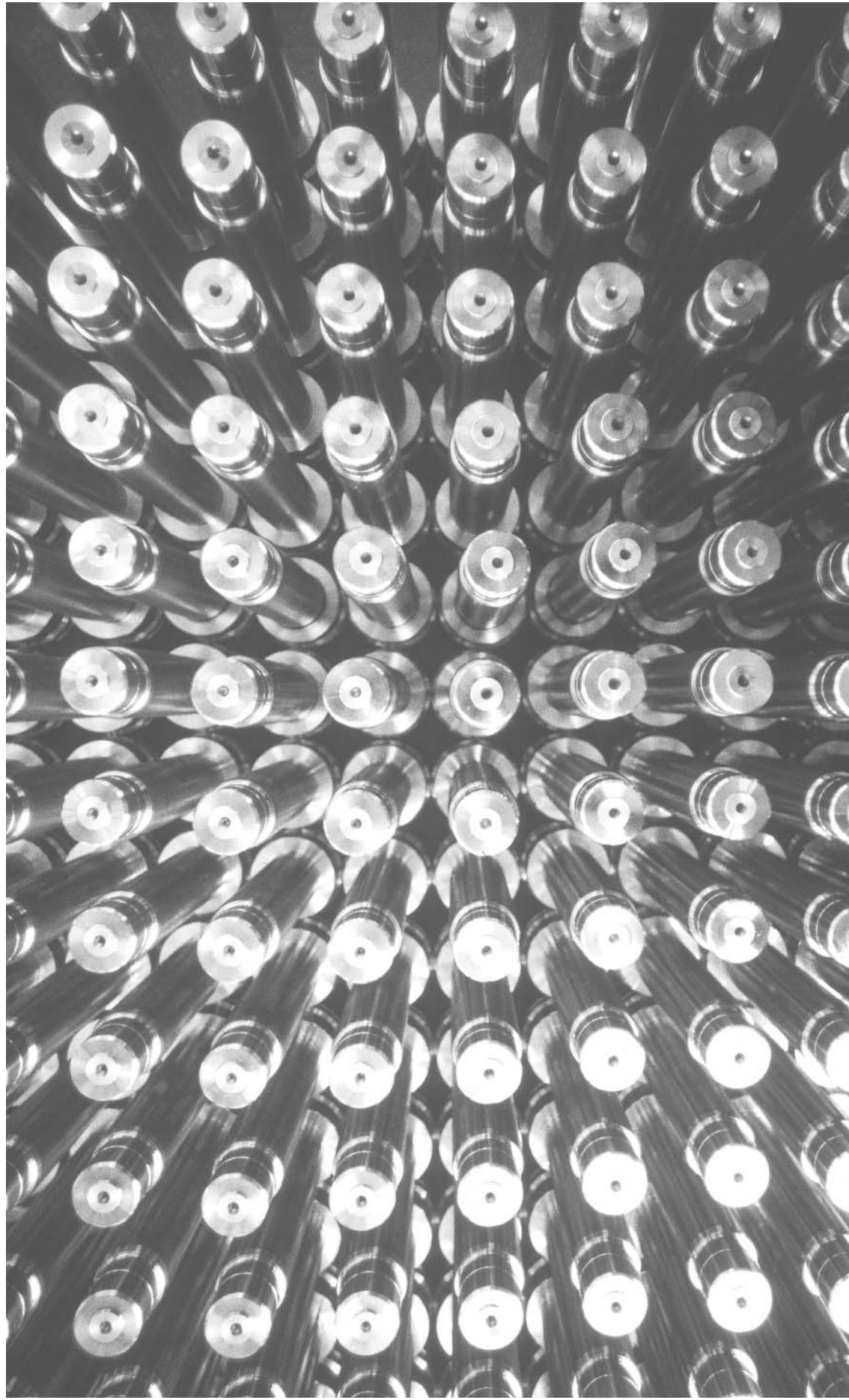


**Customized
with Standard
Modules**



Customized with Standard Modules

INDEX turn-mill centers equipped with handling system increase the economy of the production of steering parts
As many as three INDEX turn-mill centers G200 equipped with a machine-integrated handling system have been ordered by the Alfred Heyd GmbH & Co. KG in Bietigheim-Bissingen, Germany, at an interval of two years. The manufactured parts are ball sockets for automotive steering parts. In favor of the INDEX systems are the set of individual components, which, by virtue of their customer-specific customized parts, offer an economic overall solution.

Author: Walter R. Frick

"We bought the INDEX machines because the overall system constitutes an optimum solution for our range of parts." Dipl.-Ing. Stefan Heyd, managing partner of the Alfred Heyd GmbH & Co. KG, Bietigheim-Bissingen, is not aware of any comparable overall systems of other providers for this particular case. What was so convincing about the INDEX machines were not only the individual components but the complete solution that was achieved: Compact machines, individual bar stock feed and adjustable finished parts removal. Add to that the complete metal cutting feature, which even for the turn-mill center is extremely advantageous.

The INDEX turn-mill centers G200 equipped with a machine-integrated handling system, three of which are by now in place, are used to manufacture so-called ball sockets of different sizes for automotive steering parts. Obviously, the first purchase in 1998 was an immediate success, because the next orders following at an interval of two years in 2000 and 2002.

Thus, Heyd demonstrated fidelity to his supplier for a good reason: Even the predecessor machines, conventional CNC lathes, had come from INDEX. Prior to that, remembers the master craftsman Jürgen Walter, responsible for production, the ball sockets had been manufactured using duplicating lathes from different manufacturers. Apparently, the CNC lathes from INDEX had proven their "turning competence", because INDEX could offer their turn-mill center G200 when Heyd was looking for an even more economical solution.

The solution that was found turned out to be very economical because at a two-year interval another two machines of the same type were purchased. Jürgen Walter: "They are reliable, easy to set up, and quicker than its predecessor machines."

Another advantage was that the already proven workpiece feed had to be adjusted only slightly to the optimized production conditions, using a modified belt length. Due to the fact that the machines basically always produce the same series of parts, the changeover of the workpiece handling system only consists in adjusting the belt width.

Solutions for customer-specific problems

The INDEX turn-mill centers from the RatioLine G200 / G300 series are designed for economic high-precision solutions



Fig. 1: INDEX G200 turn-mill center equipped with machine-integrated handling system

tailored to the customer's needs. The standard subassembly program comprises the entire range from the traditional production lathe to customized machining centers equipped with integrated handling systems for machining simple to highly complex parts in small to large lot sizes.

This allows machining devices to be configured individually according to the requirements for customer-specific production tasks. You can choose among a multitude of universal units, such as the machine bed and spindles, available in various designs, different turret types, tailstocks, steady rests and handling systems in accordance with your requirements. Starting from the intelligently designed modular components, precisely the functions that are required by the user for his machining task at hand can be incorporated in the machine.

Machine-integrated handling systems offer the additional option of extending the turn-mill centers to give fully automa-

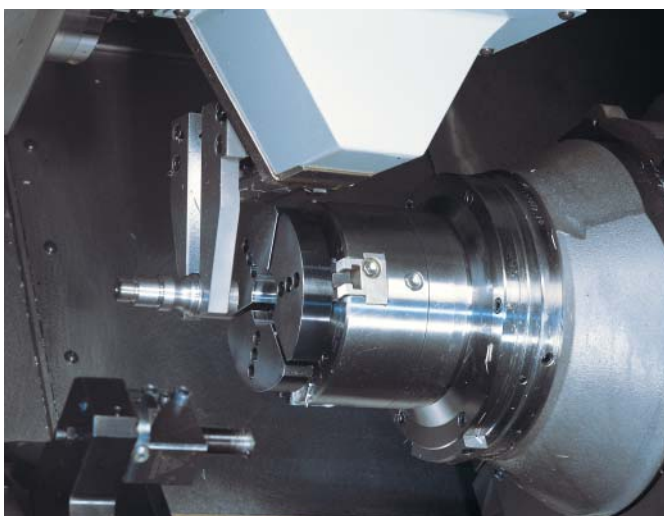


Fig. 2: For user-specific productions tasks, the INDEX G200 can be configured individually from the modular building block system

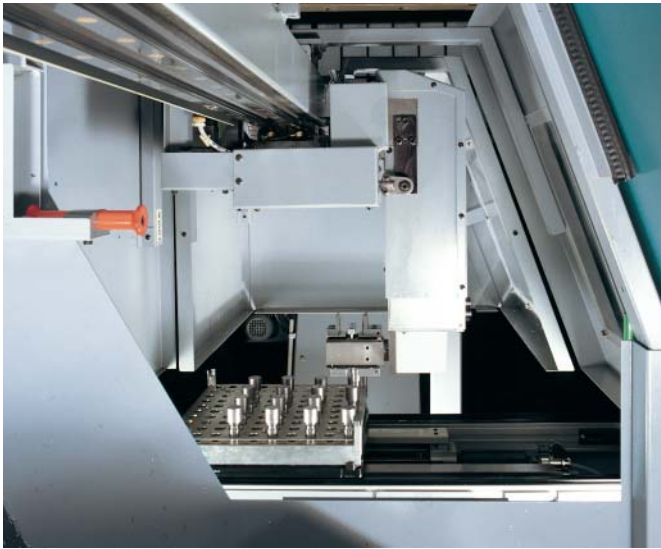


Fig. 3: A double gripper takes the blank to the work area while the machine is running

tic production cells.

The workpieces are provided outside the machine on pallets or a conveyor and are deposited there again with correct position orientation (adapted to the requirements of the customer-specific production processes). The double gripper puts the blank in the stand-by position in the work area while the machine is running. It picks up the finished part and, at the same time, loads the blank. This sequence can be additionally provided with a fully automatic measuring station.

The integrated handling systems are available in the WHU (universal handling for chuck parts) and WHW (for longer shaft-type workpieces) versions. Both versions are characterized by the small amount of space required, short travels and short cycle times. In terms of the control technology, the handling systems have been fully integrated in the machine control. This enables convenient programming, fast and safe set-up, leading to a reduction in the set-up efforts.

The workpiece removal unit has also been solved in a practice-oriented manner: Precision parts from bar stock are picked up directly from the spindle by means of a gripper and deposited

on a discharge conveyor. The risk of damage to sensitive parts is thus excluded. The pick-up movements and positions can be programmed, thus also resulting in a reduction of the set-up times.

"We are able to adjust our WHU and WHW handling systems in accordance with the task at hand to customer's needs and his specific workpiece machining. The applications at Heyd use the WHU universal handling system", explains INDEX regional sales director Dipl.-Ing. (FH) Karl-Heinz Ziegler. The universality of the system has also convinced Dipl.-Ing. (FH) Axel Schaffroth, who is the Heyd responsible for the machine and resource constructions. "At our factory, we machine ball sockets whose diameters range from 24 to 50 mm in about 120 variants and to us very short changeover times are essential. This demand has been met in an exemplary manner."

Ease of set-up for small series

The advantage of the ease of set-up is also emphasized by Karl-Heinz Ziegler once again: "Actually, these handling systems are ideal for large series. However, owing to the ease of set-up without non-productive times nor additional equipment, they are also highly suitable for small and medium series." Given the lot sizes between 300 and 2000, confirms Axel Schaffroth, "we often change over three to four times a day, which is already extraordinary for such a system".

Other users, who exclusively machine large series, emphasize Karl-Heinz Ziegler, often use their systems, without even changing over for months. However, they do not work with a universal conveyor as we do here, but rather with pallets or robot systems. When, however, they do have to change over, "these solutions are somewhat more complicated".

Customized modular design solution

Hence overall a customized production solution from the INDEX modular design kit, which guarantees an economical production for the user Heyd in triple form. Foreman Jürgen Walter is especially enthusiastic about the reliability and the above-average availability of the machines - although the machining performance is also impressive: "We are working with cycle times of 30 to 40s per workpiece, add to that a handling time of only 5s per part."

Apart from the remarkable machining performance of the



Fig. 4: Stefan Heyd, managing partner: I do not know of any other provider who could offer such a customized production system."



Fig. 5: Axel Schaffroth, director of the machine and resource construction: "To us, very short changeover times are essential."

INDEX turn-mill centers, managing director Stefan Heyd sees another advantage: "As complete machining centers equipped with machine-integrated handling unit, the machines are relatively compact. The space required is more than a third less than with the predecessor machines. This makes a very significant difference, considering the available space."

In the final analysis, the managing director is extremely pleased with his investment. It is the sum of the individual components that makes the overall system economical: "Compactness, customized workpiece feed, parts removal and especially the efficient complete machining make these machines almost ideal for our range of products. I do not know of any other provider who could offer such a customized production system."

The company

Heyd - competence in steering parts

The company Alfred Heyd GmbH & Co. KG started in 1935 in Bietigheim-Bissingen with the production ball joints and cardan joints. Since the mid-fifties, steering and frame parts have been produced at this site in three different production plants. 80% of them are original equipment. Export takes place worldwide. At the Öhringen plant, propeller shafts and DIN parts are manufactured. Total staff is about 400.

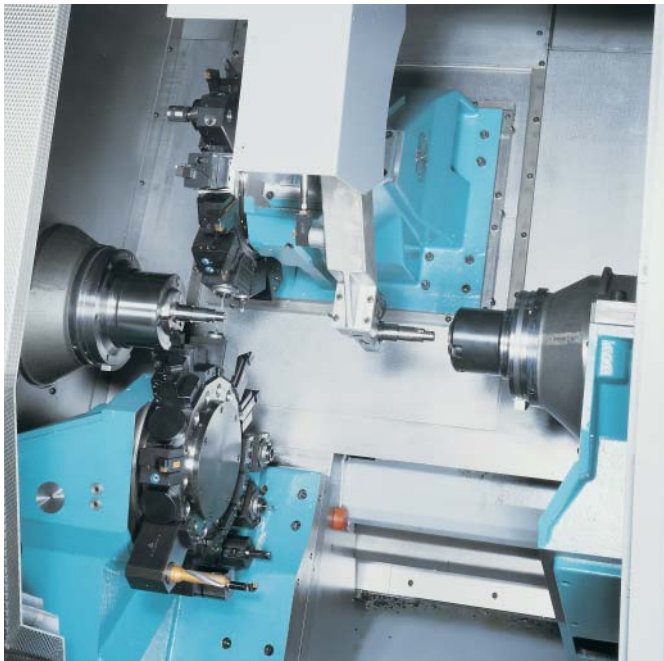


Fig. 6: The center allows flexible complete machining at short chip-to-chip times

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