



The new STAMA machine excels at complex workpieces involving milling, turning or threading

■ STAMA Maschinenfabrik GmbH, Germany

Flexible and Highly Productive

Sinumerik 840D powerline performs demanding control and drive functions in innovative milling-turning centers.

End-users must make full use of the potential offered by machining technology if they are to cost-effectively manufacture parts in a high-wage country such as Germany. STAMA Maschinenfabrik GmbH in Schlierbach, Germany, possesses expertise in highly productive machine tools that is almost unparalleled. At EMO 2007, STAMA will present an innovative double traveling column machine for MT (milling-turning) six-sided machining. The machine was developed specifically for flexible production of small, mid-sized and, in particular, large batches.

The MT 726/MT-2C machine was designed for users such as Schröder & Co. GmbH Zerspanungstechnik in Lübeck, Germany, whose requirements are typical for the workpiece range of this machine. The company manufactures complex milled/turned parts and tested modules, and intends to use the new STAMA milling-turning center to produce, among other things, highly complex parts for use in medical technology. Very small batches and even individual workpieces involving milling, turning, drilling and threading are typical requirements. The machine is designed to facilitate personnel-free machining over the weekend and is intended to run in three-shift operation 365 days a year. For this reason, refitting must be quick and must

not cause problems. Flexibility in terms of workpiece range to be processed is also a requirement. The machine must be able to handle rods of any cross-section as well as rectangular or hexagonal saw sections and pre-formed semi-finished products.

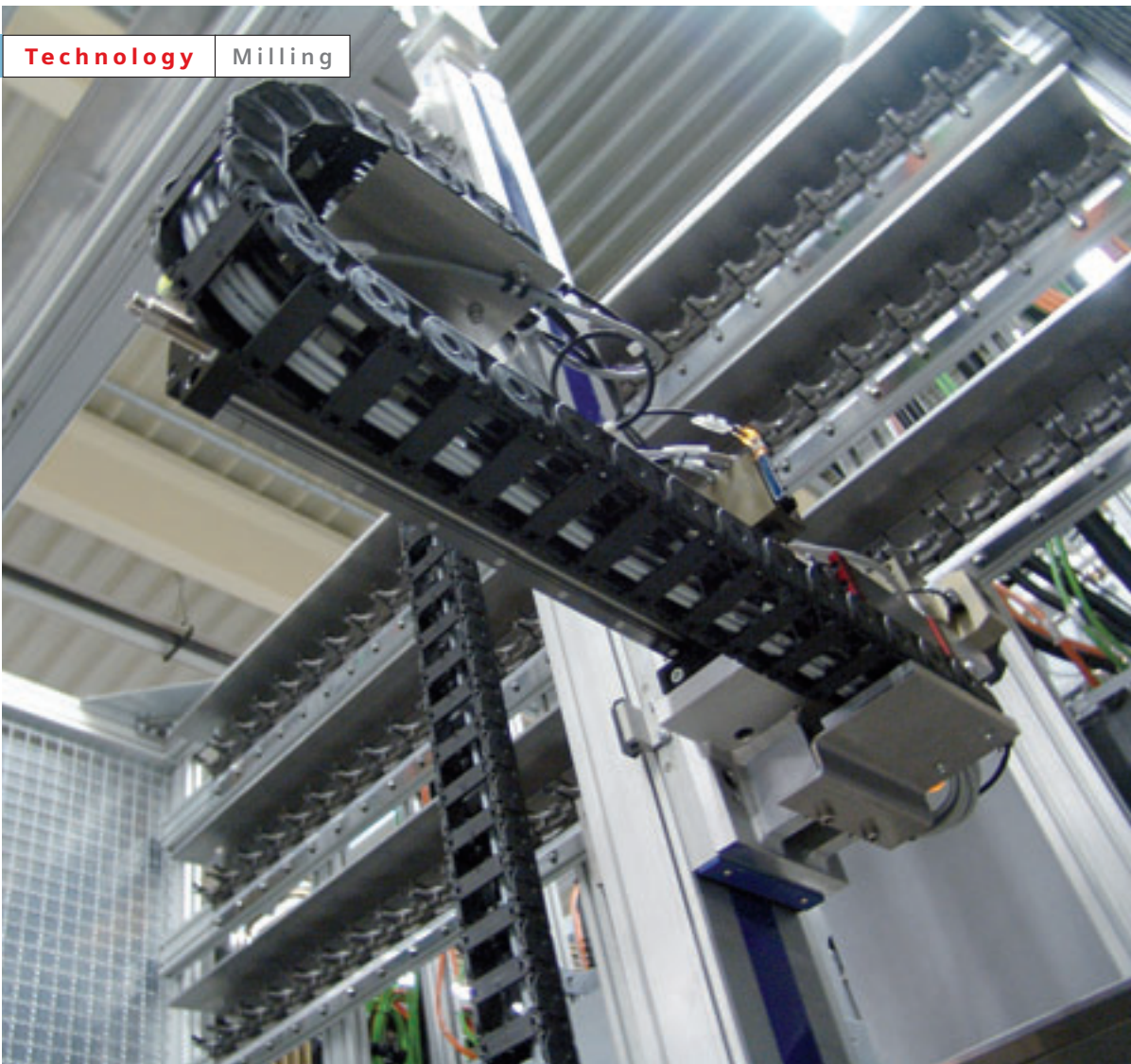
Ideal for complex requirements

The new milling-turning center is equipped with two independent traveling columns/main spindles and two complete rotating spindles for six-sided complete machining of rods or semi-finished products from the chuck/fixture. All milling, drilling and turning operations are performed simultaneously in two separate working areas.

The system is completed by a handling portal with gripper that is attached longitudinally across the machine tool, a rod feeding device, accumulation conveyors for saw sections, a tool magazine, and a delivery belt for completed workpieces.

Sophisticated production process

The first machining step is frontal five-sided machining of the raw part at the first workstation in the left traveling column. A workpiece made from rod mate- ➤



All pictures: Publicis / C. Manegold

The box-type setup magazine and the two coupled main magazines are controlled via the software which is integrated into the Sinumerik. The box-type setup magazine and the two coupled main magazines are controlled via the software which is integrated into the Sinumerik

► rial measuring 1020 millimeters in length is automatically drawn into the rotating spindle via the rod feeding device and fed into the left machining station. The rod store can hold up to ten rods. As an alternative to the rod store, saw sections of any cross-section can be gripped by the three parallel accumulation conveyors of the handling device and clamped into the rotating spindle.

Using the milling spindle that can travel on three axes (X/Y/Z axis) and the workpiece spindle that can swivel on the B axis, complex milling and turning operations are possible. Upon completion of the first machining step, the two rotating spindles are moved to the same position and the right rotating spindle takes up the workpiece. If the workpieces are being processed from a rod, the two rotating spindles are synchronized so that the workpieces can be cut off, taken up by the right rotating spindle and transferred to the second working area for finish machining.

After the workpieces have been transferred to the second working area, machining of the next workpiece gets underway immediately in the first working area. This means that both traveling columns each process five sides of the workpiece simultaneously. Following

finish-machining, the workpiece gripper removes the finished part from the right turning/swivel unit and places it on the finished part belt, making optimum use of the available space.

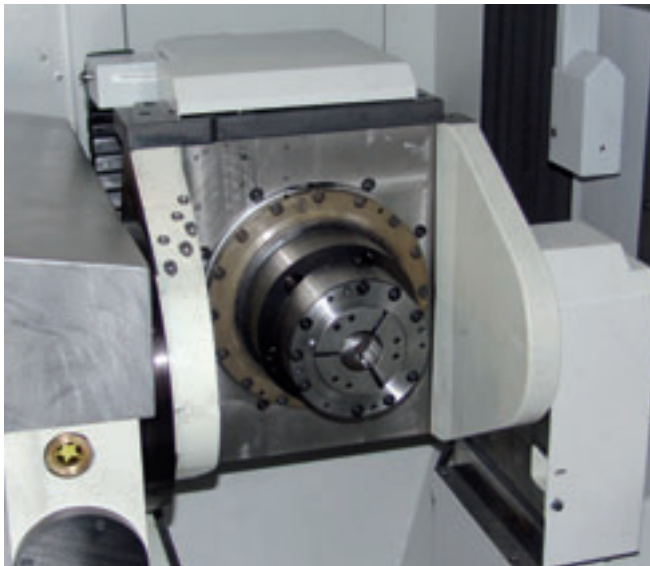
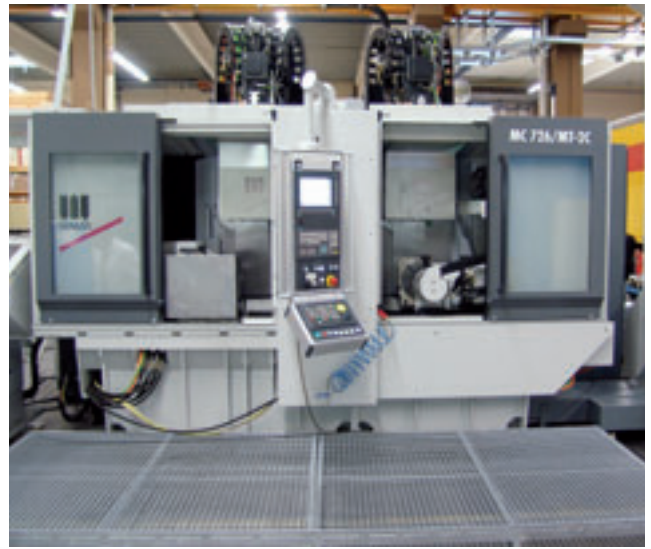
Superior control center

The machine is equipped with a Sinumerik 840D powerline as the CNC controller and nine Simodrive 611D servo-converters to drive the 19 axes and four spindles. The computing capacity of the Sinumerik 840D powerline is sufficient to control the movement of all axes and the handling portal, as well to manage the tool magazine.

“The Sinumerik 840D powerline has been tried and tested as a control system here at STAMA, and it is our first choice for complex production systems,” explains Dr. Achim Feinauer, Managing Director of STAMA, Schlierbach, Germany.

Multi-channeling facilitates programming

Each traveling column is controlled in a separate channel with independent tool management. Multi-chan-



Top left:
Control center: Motion Control, SPS functions, workpiece handling and tool management are controlled centrally by Sinumerik 840D powerline and operated via the operator panel

Top:
The new MT 726/MT2C was designed for the milling and turning of complex parts

Left:
The workpiece spindle in the first work station is hollow

nel control provides ideal conditions for equipment with multiple machining units. Each machining half is allocated its own parts program on one channel and the programmer simply needs to decide where the transfer should take place. This ensures quick and easy coordination and synchronization of the rotating spindles in the two traveling columns.

The Sinumerik 840D compile cycles are also helpful for the programmer, as spindle synchronization for the workpiece transfer from one spindle to the next can be activated by the spindle synchronization function.

Tool magazine and handling device under tight control

Each traveling column has its own coupled tool magazine containing 42 tools. In addition, there is a box-type setup magazine with 148 spaces that is used to automatically reload the main magazine.

Tool storage and feed are also managed by the Sinumerik 840D powerline. Operation of the tool magazine is facilitated by an operator panel at the back of the machine. "Short changeover periods with constant

cut-to-cut times are guaranteed for all tools by a patented solution and use of integrated Sinumerik 840D tool management," reveals an extremely content Günter Schuler, sales engineer at STAMA. When it comes to integration of the handling system, the focus is on keeping the programming effort for the user to a minimum. The programmer need only enter a few additional parameters alongside the requirements of the standard parts program, for example the workpiece dimensions and the depth to which parts are to be fed into the machine.

It is already clear that this milling-turning center will add another chapter to the STAMA success story. Even before the official presentation at EMO 2007, STAMA has received nine confirmed orders for machines featuring this new productivity solution for milling and turning. ■

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