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Components like this can be programmed and manufactured extremely efficiently with the FZ08 MT and Sinumerik CNC

■ Chiron-Werke, Germany

Simultaneous Machining

Chiron has developed its new machining center specifically to handle the complete machining of highly complex workpieces, and the company is using Sinumerik Operate to make the most of the increased capabilities.

The new FZ08 MT ("Mill Turn") machining center from Chiron integrates the most sophisticated turning and milling operations. The world's leading producer of vertical machining centers has also optimized the thermal stability of this proven machine design, increased its modularization and expanded it to include a full-fledged Sauter/Capto C4 turret. The swivel head, rotating spindle, turret (with centric clamping vise) and counter spindle or swivel table(s) offer a total of up to 12 axes when fully equipped, allowing the user complete freedom when carrying out six-sided complete machining of highly complex workpieces. The ability to use two tools simultaneously on both spindles should allow processing times to be cut by half and therefore double productivity. The automated material feed (42 mm or 65 mm diameter bars) and the automatic unloading of finished parts make this an extremely productive manufacturing system that meets the highest possible quality standards. This machine tool builder is aiming at users not only in medical part manufacturing, clock and watchmakers, and jewelry manufacturers, too, but also at those in the automotive and general mechanical engineering industries, where complete machining is becoming more and more important.

The very latest CNC and drive technology

The Sinumerik 840D sl, together with direct drives and spindles from Siemens (Weiss), forms an integral part of this new generation of machines. Chiron is also using Sinumerik Operate HMI software for the first time, in order to fully exploit the increased capabilities and enable both simple and highly complex workpieces to be programmed safely and quickly, directly on the machine itself. In addition, the Chiron PROCESSline CAD/CAM system, based upon NX-CAM from Siemens PLM, provides easy offline programming and simulation that is precisely tailored to suit the kinematics of the machine.

Two-channel display provides transparency

"For us, one of the most important differentiators of the Sinumerik Operate HMI graphical user interface was its ability to display the processing steps on the two NC channels for the main spindle and the rotating or counter-spindle side-by-side during runtime," explains Dr. Claus Eppler, head of research and development at Chiron. That means the operator is always able to monitor the machining process without the need for any manual switching, and is always able to keep track of the current processing

steps. The same applies during the creation, programming and graphical simulation of new workpieces on the machine, which eliminates input errors and helps avoid the damage these can cause. The programSYNC function allows the synchronization of the channels or program sections to be easily optimized. To fully exploit the benefits of a detailed graphical display, the FZ08 MT comes equipped with the new, large 19" OP 019 touchscreen as standard.

Direct drives for precision and dynamics

The reliable superstructure of the MT range, which is currently available in two sizes, has been extended to incorporate a full-length transverse linear axis at the bottom. The common primary component of the Simotics L-1FN3 linear motor has a secondary component mounted on it for the axial movements of the turret and another for the counter-spindle. The water-cooled, wear-free linear motors offer the best possible dynamic performance, ensuring the shortest processing times, high levels of precision and repeat accuracy, and, therefore, the highest possible processing quality. The travel paths are finely tuned that the swivel head and turret can be used on both spindles. Meanwhile, the equally compact built-in Simotics T-1FW6 torque motor, which has performed well in other Chiron machines, delivers a high degree of torque and holding torque (for milling operations) on the counter-spindle.

Comprehensive support included

In addition to the products themselves, the Tuttlingen, Germany-based company has always made good use of the support services and expertise provided by Siemens. For example, Siemens employees were closely involved in the definition and implementation of the new functionality and also in the commissioning of the first FZ08 MT at the last EMO trade show. Chiron also leaves the switch cabinet construction to the specialists from Werk für Kombinationstechnik Chemnitz (WKC), which delivers ready-to-use, fully-certified cabinets direct to the company's production line. The range of services is completed by an intensive training program for the Chiron team on a Chiron machine at the Siemens Technology and Applications Center (TAC) in Erlangen, Germany. ■

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Productivity in compact form: Chiron has integrated complex six-sided turning and milling operations in its new FZ08 MT machining center

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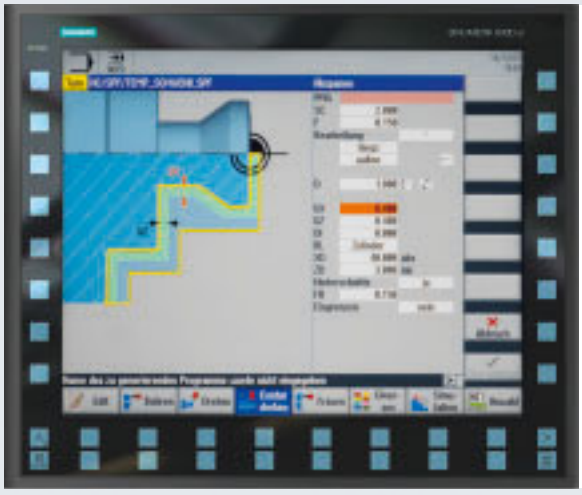

Siemens AG

The benefits of Sinumerik Operate at a glance

- Integration of work-step programming and high-level language programming in a single user interface
- Windows-style display
- Clear overview provided by tool list
- Ease of use with animated elements
- Safety through simulation
- Easy setup of different kinematic characteristics