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Benefits of Sinumerik 802D sl

- ▶ Efficiency and flexibility through innovative planning and drive technology
- ▶ Convenient operation and programming through proven DIN programming supported by advanced programming aids (cycles, contour definitions) and through ShopMill/ShopTurn-based setup
- ▶ Perfect handling through the use of commercially available Compact Flash (CF) cards (64 MB to 1 GB+) for the storage, transmission and processing of part programs

located in the Dongguan Guangdong province, wanted to design a new product for the Chinese mold and die market that featured very rigid mechanics. After consulting the Siemens engineers from the local office, Gamma CNC opted for Sinumerik 802D sl which combines the features of the well-proven Sinumerik 802D with the benefits of the new Sinamics S120 drive concept, thus providing a new, future-oriented and homogeneous solution. However, as this was the first time Gamma CNC used a Sinumerik, the company first wanted to benchmark this CNC against a competitor system. Two HV1000L were built simultaneously, with one machine equipped with the Sinumerik 802D sl pro and the other with a CNC from another supplier.

To facilitate the entry into Sinumerik technology, the Siemens engineers supported Gamma CNC by implementing an optimized solution. All basic features of the machine tool, such as cooling, lubricating and ATC and tool magazine control, were realized using the functionality provided by the standardized PLC library. The speed controller and the position controller were optimized using the start-up tool supplied in the Sinumerik 802D sl toolbox to reach the optimum performance.

The benchmark test was performed on a sample part made of aluminum that was machined at a feed rate of 300 millimeters per minute with a ball nose cutter with two blades. Spindle speed was set at 5,000 rotations per minute. The results of this test were quite impressive. The part machined on the Sinumerik-controlled equipment had far better surface quality and the machining time was approximately 15 minutes shorter.

Sound design pays off

To build a high-performance machine tool, the mechanical design and motor sizing are the most important criteria. As the application example at Gamma CNC shows, well-designed mechanics and the selection of the right motor make it easy to have increased performance. ■

■ Gamma CNC, China

Free Forming at its Finest

By introducing CNC machine tools to free form parts machining, Gamma CNC benefits from reduced cutting time and increased surface quality.

There are many aspects that influence the machining result. One aspect is surface quality. Another aspect is the design of the mechanical system. Highly-dynamic applications require maximum stability and a rigid design. When designing machine tools, the required motor torque, the compatibility of motor rotor and lead screw, and the duty cycle for machining have to be taken into account. It is also very important to carefully balance the weight of the hanging axis to reduce the impact to the axial dynamics.

Performance benchmark

Recently, Gamma CNC, a Chinese machine tool builder successfully integrated Sinumerik 802D sl into its HV1000L machining center. The company,

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