Medium-sized machine tools manufacturer Knuth has fitted a cycle turning machine with Sinumerik 808D. The machine is impressive for its across-the-board precision, productivity, and price.

Manufacturers of machine tools do not usually state exact sales prices. It is often impossible to do this because the type and equipment of the individually configurable machines are very different. Knuth Werkzeugmaschinen GmbH differs from other manufacturers on this point because the construction of its machines is as transparent as their price. Machines for drilling, turning, milling, and grinding are as much a part of the range offered by the family-owned company from Germany as cutting systems and systems for other types of sheet metal working. Virtually all machine categories are offered as manually operable or CNC controlled. Yet the Sinumerik 808D CNC is being installed more and more often in Knuth machines.

Increasing demand from Europe and Asia

Sales consultant Mike Kutzner explains, “We have not set our sights primarily on high-end applications. It is much more a case of supplying contract manufacturing companies in machine, systems, and tool construction with reliable and affordable technology.” The market for
this is huge and offers massive potential for growth. According to Kutzner, “In our northern German homeland as well as in Holland and Scandinavia, we are noticing increasing demand from subcontractors for wind and biogas plants. However, we are also receiving an increasing number of orders from southern Germany, the rest of Europe, and Asia.” The machine tools are developed jointly by German and Chinese engineers. They are produced and pre-assembled in China. There they also pass through various acceptance tests that are conducted according to German standards before they are brought to Knuth’s headquarters in Wasbek. The final acceptance of each individual machine is carried out in Wasbek so as to fully comply with German and European quality standards.

High-quality and affordable machine tools

The German-Chinese coproduction enables Knuth to offer high-quality machine tool technology at competitive prices. One example of this is the Numturn 420 CNC cycle turning machine – also fitted with the Sinumerik 808D CNC. Particularly for companies and departments that have previously worked only with manual machines, the Numturn 420 represents the perfect entry into the world of CNC due to its precision and productivity. The positioning and repeat accuracies on the x-axis are around 0.02 mm and on the z-axis around 0.015 mm; the rapid traverse rates in the x and z directions are around 4,000 and 8,000 mm/min, respectively. In addition to induction hardened and ground bed guidance tracks, the high-grade ball screws and servodrives also contribute.

According to developer Markus Jankowiak, “Even if only small series are to be manufactured, the relatively small additional investment in the CNC version of the machine quickly pays for itself. And as the operators still have handwheels available, they nevertheless feel secure on the machine.” The master electrician goes on to say, “Thanks to the clearly laid-out CNC operating structure, it usually isn’t long before they give in to the temptation of Sinumerik 808D.” The basis for this was created with the Sinumerik Operate Basic user interface, which has many familiar Windows functions. The G-code language with convenient cycles, including the contour cycle, is used for programming. This enables the contours entered to be converted automatically into stock removal operations and executed. The integrated thread-cutting cycles with which internal and external threads can be created are equally useful.

Jankowiak stresses, “The entry-level CNC has a lot to offer in terms of quality too.” This is because the same NC kernel is used for Sinumerik 808D as for Sinumerik 828D and 840D sl. The CNC therefore computes with 80-bit NanoFP accuracy, not least because this prevents internal rounding errors. The precision and productivity of the CNC and machine are correspondingly high.

Easy-to-use Sinumerik 808D

According to Jankowiak, however, Sinumerik 808D offers even more advantages. For example, every purchaser receives the free PC version of “808D on PC.” CNC novices can use it to gain initial programming experience on a normal PC. At the same time, experienced users can create executable programs on external workstations and check them via 2-D simulation while the machine is still producing other components. The developer says the Start-Up Assistant is equally helpful. It guides the operator step by step through commissioning of the machine so that errors can be eliminated. Jankowiak stresses, “I don’t know any other CNC supplier that makes this so convenient.”

Facts of Sinumerik 808D

- CNC system for entry-level turning and milling machines
- Configured as a panel-based CNC controller
- Up to 3 axes + 1 spindle in one machining channel (turning), or up to 4 axes + 1 spindle in one machining channel (milling)
- Sinumerik Operate Basic user interface
- Semi-servo solution with Sinamics V60 drive system and Simotics S-1FL5 servomotors
- S7-200-based PLC with 72 inputs / 48 outputs
- Training software 808D on PC