About four years ago, in parallel to its successful system business, Grob-Werke GmbH & Co. KG also began building standard machines that are suitable for use in the entire metal processing industry. The compact five-axis machining center with a footprint of 2.5 m x 4.0 m is extremely efficient and equipped with a horizontally arranged spindle. The G550, a larger model of the same design, with a footprint of 3.8 m x 6.3 m, followed in 2009 and presented a combined mill-turn center for the first time, equipped with the latest version of the Sinumerik 840D sl CNC. According to Peter Hermanns, head of the Standard Machines Department at Grob, the previous version of the horizontal milling center was already an important pre-requisite for hybrid machining: “Our rotary table achieved fast speeds of up to 800 rpm thanks to the maintenance-free torque motors we used.”

Just as important is the extremely stable machine structure with a horizontal spindle arrangement that is advantageous in both turning and milling tasks. The G550 features a long Z path of 1,020 mm and can machine workpieces with diameters of up to 900 mm with tools up to 500 mm long. In practice, the G series has already proven that it is capable of reliably delivering highest-precision tolerances and maximum surface quality in the machining of workpieces. “In addition to high rigidity, our machines have the advantage that the chips fall down freely,” says Hermanns. “This virtually eliminates blocked chips.”

Uniform user interface for milling and turning tasks

In order to exploit the versatile possibilities of the new G550 mill-turn center, the demands on the controller, as well as on the high-quality mechanics, are high. Grob uses the Sinumerik 840D sl, which is acknowledged as the best CNC for such application purposes. It can perform every milling and turning task perfectly, based upon the open architecture of the NC kernel. A particular advantage here is the new Sinumerik Operate user interface, which, thanks to the latest developments, now supports all the common machine kinematics for milling and turning. It was tested in a pilot project by the machine tool specialists at Grob.

Further advantages are the uniform operating structure and the user-friendly cycles, as the experienced Grob application technician and sales consultant Christian Heiss explains: “The programming and setup of milling and turning processes always has the same look and feel and is supported by graphical displays and animations. This is particularly important because the changeover from milling to turning demands a great deal of imagination on the part of the machine operator.” Sinumerik Operate provides additional support here, with a clearly structured tool list that displays all mill and lathe tools. Different programming methods are available: ShopMill for graphically supported, shopfloor-oriented workstep programming, or programGuide (G-code pro-
Programming with NX-CAM

The more complex the program, the more often external CAD/CAM systems are used. NX-CAM, developed by Siemens, ensures high consistency throughout the process chain. The programs that it creates can easily be transferred to the Sinumerik 840D sl machine controller and used for productive milling. This is one of the main reasons why the workpiece presented live at EMO — the wing mirror of a RUF Porsche — was programmed with NX-CAM.

Best overview with a 19 inches screen

The highlights of Sinumerik Operate are particularly evident on the new OP 019 Operator Panel. Real progress has been achieved, according to Heiss: “This new 19 inches user interface is user-friendly, efficient and very clear. The industrial display behind the large glass front has brilliant resolution and glass touchpanels around the edges trigger the functions perfectly. There is no better product available on the market.”

» The new 19 inches user interface of the Sinumerik OP 019 is user-friendly, efficient and very clear. «

Peter Hermanns, head of the Standard Machines Department at Grob (right), and Christian Heiss, application technician, are delighted with the new technology

Programming), which offers extensive cycle support, including all milling, turning and contour cycles.

Increased performance through innovation — emphasis on five-axis machining

The most recently released version of Sinumerik software also offers new features and improvements that are especially useful for tool and mold construction. This further increases surface quality, productivity and precision especially in the area of real five-axis applications — and these improvements are even easier to achieve. One highlight of this innovation is Advanced Surface Stage II with an improved look-ahead capability that allows better surfaces to be achieved immediately. In addition, a function is now available in the ORISON orientation smoothing that makes five-axis milling even easier, more efficient and reliable.