

New Gear Technology at EMO Hannover 2017

Randy Stott, Managing Editor

EMO is arguably the most important trade show when it comes to the introduction of machine tool technology, and this year's show – taking place from September 18–23 in Hannover, Germany – promises not to disappoint. We've talked to a number of gear manufacturing technology providers to give you a sneak peak of what you can expect to see if you attend this year:

DVS Technology Group—Hall 17, Stand C46

Pittler T&S GmbH will offer the first skiving center of its kind including automation cell for the complete machining of larger components (diameters up to 400 mm). The new platform is designed around the Pittler Power Skiving gearing technology, allowing for cutting of both internal and external gear components. The work chambers of up to two gear centers can be automatically supplied with tools via an innovative automation cell, minimizing space and investment requirements compared to robotic loading, allowing manufacturers to react economically to varying batch sizes.



PRÄWEMA internal honing - pioneering development for the surface quality of hardened internal gearings

Prävema will debut its SynchroSkiver machine, which combines the functions of hard skiving and internal honing for internal gears with significantly higher quality requirements. Prävema will also demonstrate VarioCrossHoning, a special oscillation method during hon-

ing which is designed to reduce surface roughness and improve surface quality for external gearing.



New for EMO17 - diamond dressing gear wheels from DVS Tooling

DVS Tooling will introduce the new VSD SF diamond dressing tool. The "SF" stands for "Super Finishing," and the tools allow for the manufacture of external gears with surfaces of Rz < 1 mm.



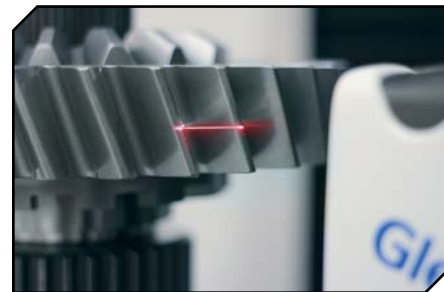
WMZ is demonstrating its Power Skiving gearing technology on an E-drive shaft.

Also at the booth, WMZ will demonstrate the complete manufacture of a motor shaft for an electric drive, including soft turning, milling, drilling and gear cutting via power skiving on its H200 machine.

Gleason—Hall 26, Stand D82

Gleason will highlight its 300GMSL Inspection System, which, in addition to conventional tactile probing, also offers non-contact laser sensor scanning of tooth flanks to support gear develop-

ment. Complete topography data can be recorded far more rapidly than with conventional tactile probing with comparable results. In addition, its capabilities include surface finish measurement and Barkhausen noise analysis to inspect for grinding burn. The combination of functions make the system well suited for R&D applications for both prototype and production parts or when reverse engineering is required. It can accommodate spur, helical, straight bevel, spiral bevel and hypoid gears with diameters up to 300 mm.



Other significant new technologies on display will include the 100 HiC Horizontal Hobbing Machine with integrated chamfering/deburring unit and Gleason automation; the Gleason Genesis GX Series threaded wheel grinding machine with features like single-tool setup, twist-controlled grinding, integrated automation, and closed loop integration with Gleason GMS inspection machines; the 150SPH Spheric Power Honing machine; and the 500CB Cutter Build Inspection machine.

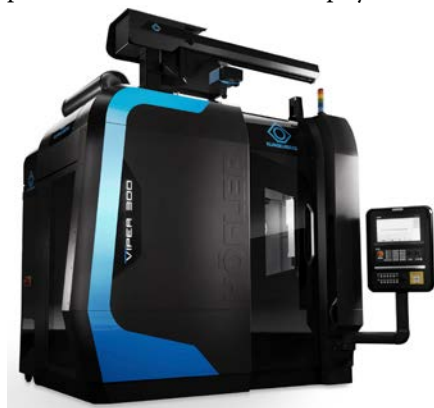
Gleason will also be emphasizing its advanced cutting tool solutions, such as the Pentac Plus-RT system, which is designed to be built faster and more precisely than stick blade cutter systems of the past. As in previous shows, Gleason will host its Quick-Flex Plus Challenge to demonstrate how easy it is to change the modular components of this technology.

Finally, visitors can expect to see the latest Gleason software solutions, including GEMS (Gleason Engineering and

Manufacturing System) as well as the latest release from KISSsoft of design software for gears and power transmission systems.

Klingelberg — Hall 26, Stand B82

Klingelberg will introduce the Höfler Speed Viper 180 and Speed Viper 300 generating grinding machines, which have been designed from the ground up for Industry 4.0, optimized ergonomics and user-friendly controls. The new *GearPro Operator* control system means that modifications and corrections no longer need to be entered manually, but are automatically loaded instead. The Speed Viper is designed for high productivity and robustness with short setup times, minimum cycle times and digital process control in a closed loop system.



Also on display will be the new Höfler TM 65 complete processing machining center, which can produce gear bodies and gearing systems of any complexity directly from rod material — regardless of whether it is bevel gears, cylindrical gears or internal gears.

Visitors can also see the P65 precision measuring, which has a new, ergonomically optimized design that allows for 3D coordinate measurement, form measurement and surface roughness measurement all on one machine, in one chucking. Klingelberg also promises to introduce some new products in the field of optical measurement.

Finally, Klingelberg will show its C30 flexible production machine, which is capable of both bevel gear cutting and power skiving of cylindrical gears, as well as its SmartTooling system, which is a digital identification system for tools and chucking materials, which can be tied into the concept of Industry 4.0.

Liebherr Gear Technology — Hall 26, Stand A72

Liebherr will introduce gear skiving machines LK 300 and LK 500 based on the tried-and-tested components of the corresponding large hobbing machines but with greater rigidity and more powerful spindles. As skiving is a highly dynamic process, the machine is supplied on a “turnkey” basis with individual clamping fixtures for each workpiece, precise rigidity and contour accuracy. With its skiving³ program, Liebherr provides not only the machine, but a whole process, including tools, technology and training.



The LK 300 is designed for maximum gearing diameter of 300 mm, but allows for workpiece diameters up to 500 mm. Maximum table speed is 3,000 rpm, while maximum tool speed is 2,700 rpm. The LK 500 can accommodate gearing diameters up to 500 mm and workpiece diameters up to 600 mm. The larger machine achieves a table speed up to 1,500 rpm, with the tool speed the same as the smaller model, at 2,700 rpm.

In addition to the skiving machines, Liebherr will introduce the LC280 a gear hobbing machine, designed for maximum flexibility and productivity in a job-shop environment. The LC280 can machine gears and shafts with a workpiece diameter up to 280 mm and a shaft length up to 500 mm with indexable carbide insert cutters. The hob head was designed for increased flexibility and productivity. “It is now possible to machine workpieces up to a module of five millimeters,” says Dr.-Ing. Hansjörg Geiser, Manager Development and Design, Gear Cutting Machines. “The spindle speed was increased by 50% to 2,250 revolutions per minute compared with the previous model. At the same time, the shifting length increased to

200 mm and the maximum tool diameter increased to 150 mm.”



Samputensili — Hall 26, Stand A56

The SAMP group will display the SG 160 Skygrind, the world’s first dry gear grinding machine. The machine features two spindles: one for hobbing and one for generating grinding. The machine removes about 90 percent of the stock allowance with the first pass using dry hobbing. In the second pass, the remaining stock is removed via dry grinding. Moreover, the two-spindle structure, coupled with high-speed linear actuators, allows for chip-to-chip times of less than two seconds, ideal for applications in the automotive industry.



Also, the company will present the Samputensili G 160 dual-workspindle grinding machine for the first time in Europe. The G 160 is designed for highly productive grinding of gears up to 160 mm diameter, with chip-to-chip times as low as 1.6 seconds including meshing, synchronization and simultaneous repositioning of the tool. In addition, no additional axis is required to perform the dressing cycle. The dresser is mounted on the X1 axis slide next to the workpiece spindle. This enables topological modifications of the gear flank and makes the dressing cycle insensitive to thermal deviations. 