

## Gleason's Genesis 130SV Gear Shaving Machine

The 130SV shaving machine from Gleason is the newest of the company's Genesis family of gear production equipment.

Introduced to the gear community in February, the 130SV is designed for the fine finishing of soft spur and helical gears with outside diameters of up to 130 mm. Gleason reports plans to ship its first order to a large German automotive manufacturer in May, and two more machines will ship to a Korean automotive manufacturer in July.

According to the company's press release, the 130SV's shaving head has been simplified by controlling the Y-axis with Gleason's spheric software to provide the linear motion for precise correction. Therefore, plunge shaving and diagonal shaving can be performed on the same machine.

"The biggest difference from the previous machines is that for doing corrections on the tooth flank, we don't use a so-called cradle anymore but added a tangential axis," says Johann Mall, engineering director at Gleason Hurth. "This allows us to use the same machine configuration for several technologies like hobbing, shaving and threaded wheel grinding. The biggest advantage to the



customer is that he gets a fully capable machine to do all the shaving technologies, like plunge and diagonal shaving."

Mall says that although previous shaving machine models allowed plunge and diagonal shaving, the mechanics were different and more expensive. When purchasing the machine, a customer had to know its uses ahead of time. A diagonal shaving machine needed more axes than a plunge shaving machine.

A new mechanical, cam-driven double gripper loader is fully integrated into the machine and can perform the load/unload sequence in approximately four seconds. It can also accommodate disk or shaft-type gears and readily integrate with common parts handling systems, including palletized, gantry, blue steel and robot systems for maximum throughput.

"Although there are also loaders on other machines in the market which work near to this speed, they are all dedicated, inflexible and very special. The loader for the Genesis machine is universal," says Mall.

Special features include a footprint of seven square meters (73 square feet) including all hydraulics, lubrication, chip

removal, coolant and pneumatic systems; an easy access service module to consolidate hydraulics, lubrication and pneumatics into one location; a single piece, mineral cast polymer composite base/frame; a new shaving head that operates without a cradle; a stock dividing system mounted on the shaving head; a magnetic chip filter/conveyor that can relocate to meet different cell/system floor space requirements; direct-drive spindles; advanced Siemens Sinumerik 840D controls with Gleason Spheric shaving technology software, Windows-based user friendly software and PC front end; optional on-board chamfering, deburring and burnishing capability; and a common design with the other Genesis machines. The fully self-contained machine can be moved as a single unit.

A proprietary Power Shaving option is available, enabling the 130SV to be equipped like the ZS series of Gleason shaving machines. With this option, both the work spindle and shaving cutter are driven such that the workpiece is automatically meshed on the fly with the continuously rotating cutter. In addition, the shaving cutter applies a torque on the workpiece during the shaving cycle.

Gleason estimates a 20% time savings and recommends this add-on for especially small parts, such as pinions.

Process data calculation software is offered as an option to be run on the machine controls. After feeding in the gear data, the program suggests appropriate shaving parameters. For its soft-

ware development, Gleason employed its knowledge from the design of the Spheric Honing machines, which have similar kinematics to the 130SV. Therefore, the linear axis moves similarly to the swiveling cradle axis' movements.

The Genesis stock dividing system mounts to the shaving head and adds one



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second to the loading time, eliminating the need for adjustment from part to part. During loading, the stock divider sensor swivels in position between the cutter and part, finds the tooth gap and reverts back to its parking position as cutter and part are brought into mesh. Movement is conducted by the NC axis, eliminating the need for manual operations. The CNC machine uses part data for automatic positioning.

Gear producers should find this machine very competitive, says Mall. As a vertical machine, it can integrate into interlinked production lines and does not require additional part carriers or swiveling units.

"There is no comparable machine concept on the market. Customer interest has been very high," Mall says. "The best proof for the success of this is to have three machines out in the market five months after quotation. We've appointed a group of application and design engineers to answer all our requests for quotes. Several orders are expected within the next two months."

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