

Drake's Newest Thread Grinder Utilizes Robot Load/Unload System

The GS: TE-LM thread grinder from Drake Manufacturing is fitted with a robot load/unload system that provides maximum throughput for high-volume production of ground threads.

The machine was first introduced at IMTS 2004, and Drake has been tweaking its features to unveil to the manufacturing community in time for IMTS 2006.

According to the company's press release, the machine will be tooled to grind the gear and worm profiles and bearing journals on a power steering pinion with vitrified CBN wheels. The machine is a full helix thread grinder equipped with a 180° power helix, linear motors and ways. It also will have the latest Fanuc controls programmed with customer parts, acoustic touch dressing, automatically generated wheel forms and a mineral-filled cast polymer base.

CEO John Drake says the company aims for cross-market appeal to both low-volume and high-volume manufacturers, from job shops to automotive customers. The grinder comes tooled for power steering of ball screws and worms. Drake adds the grinder is suitable for taps, multi-start worms, electronic steer-



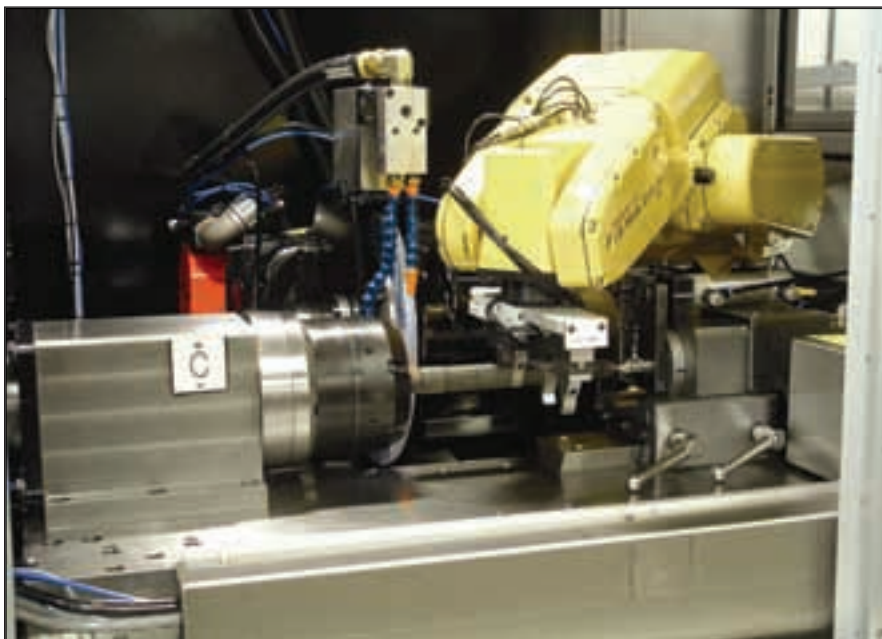
ing components, fast lead ball screws, medical bone screws as well as gearbox, transmission and speed reducer components.

"The gear machine that's generally offered is the 350 mm. However, we've

built up to one meter in overall length, and it's capable of going up to two or three meters now. The ballscrew manufacturers target a one, two, or three meter length product, and we can provide a longer bed length for them than for gear manufacturers," says Drake.

The auto load system consists of an infeed conveyor, robot with dual grippers and exit conveyor. The infeed conveyors allow faster changeovers on a family of parts. During the cycle, the robot loader lifts a new blank off the infeed conveyor and deposits a finished part on the exit conveyor at the same time.

Also, robot cycles are coordinated with Drake PartSmart programs for faster changeovers. The robot system is pre-programmed to automatically respond to part dimension changes as entered in the menu during changeover. The system can conform to customer restocking intervals and can be integrated in manufacturing cells. Drake has programmed the grinding and load/unload sequence into



the control. Changes in part lengths are accommodated by adjusting the conveyor width and headstock position.

The company has integrated robot systems in its machines for years as part of its package for higher volume customers. The GS: TE-LM is the latest and

most sophisticated of the robot-integrated machines.

“We have historically been a ball screw house,” says Drake. “Today’s speeds require competitive linear motors, so we’re offering low maintenance and much lower moving parts. So far, we’ve

experienced great acceptance in the screw and worm grinding market and are excited to offer the same technology for gear customers.”

Drake also plans to bring to IMTS a “mini” thread grinder that targets smaller parts. With a workpiece envelope of 100 mm x 100 mm, this new grinder is designed for high volume, precision threaded parts manufacturers in the cutting tool, automotive, aerospace and medical equipment industries.

The company recently shipped a “mini” with a cycling autoloader configured to grind M0.8–0.25 taps for threading holes in cell phone circuit boards. The mini is suitable for grinding small taps, thread roles, thread gages, worms, ball screws, e-steering components, aerospace fasteners and surgical bone screws.

The mini is also equipped with the PartSmart software, so customers’ parts are pre-programmed into its system. Operators follow the screen prompts and enter values.

With a footprint of 1.2 m x 1.8 m and weighing 3,000 kg, the grinder can be integrated into manufacturing cells and transported via forklift.

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Norton's New Gear Grinding Wheels Increase Life of Parallel Axis Spur Gears

The new BRGg VPHS high speed grinding wheels from Saint Gobain are

designed to reduce cycle times by increasing metal removal rates. The increase in removal rates has been applied without metallurgical damage to the surface being ground and without loss of dimensional tolerance. Wheel life is lengthened, and the BRG high speed wheels can run up to 60 m/s.



Phil Plainte, applications engineer at Saint-Gobain, says the BRG wheels can be used on new and older machines.

"Machine builders are building smaller, more compact, versatile, faster-running machines. This is driven by the end-user who is looking for higher quality gears with much faster cycle times," he says. "The BRG product addresses the demand for higher quality gears and the new machines that run higher speed spindles and short grind cycles. The BRG can also be used on older machines producing high quality parts."

The BRG line includes both form grinding wheels and threaded grinding wheels, and they are available with a variety of abrasive types and grit sizes.

In addition, Plainte says up to six starts/leads can be put into the threaded grinding wheel form to enhance the machine/process time. The BRG abrasive and bond help generate gears with tight geometric tolerances and burn-free surfaces. In some cases, Plainte says, the grinding action can enhance the compressive residual stresses of the gear.

In one instance, the wheels were tested on a 7.3635"-diameter, 56-tooth helical gear and generated 28 good parts before needing to be dressed. Conversely, a competing grinding wheel produced 17 parts before it required dressing. In addition, when tested on a 2.8117" spur gear, the BRGg wheel produced more good



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parts between dressings and simultaneously reduced per part grinding time.

“Original cycle time on one particular part was approximately four minutes; now they average around 1.5 minutes. We can’t say the reduction in cycle time is all BRG,” says Plainte, “but the product definitely plays a big part in cycle reduction. The machine is a new Gleason 245TWG high speed grinder.”

The gear grinding wheels will be displayed for the first time at IMTS and are offered with conventional aluminum oxide to the more advanced high performance ceramic grains. A complete line of dressing tools will also be displayed.

Norton Abrasives is optimistic about the products’ reception at IMTS.

“There are three dynamics taking place in the gear industry right now. Every manufacturer is under pressure to improve production and efficiency. If you don’t, you won’t survive,” Plainte says. “The other dynamic is drivetrain compression—more horsepower moving through smaller, lighter drivetrains. This can only be accomplished through better quality gears. Lastly, aerospace is in the middle of a seven-year up cycle, and gear manufacturers are struggling to keep up.”

“The customers participating in this environment are investing in new equip-

ment, such as high speed machines, and better tooling, like grinding wheels,” he continues. “We’re getting really positive feedback from customers in North America and Europe.”

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Kinefac Introduces New Automated Production System

Kinefac is introducing a new Robo-Roller, which is a quick changeover, automated production system for rolling threads, knurls, worms and other forms on bolts, shafts and other parts. The system integrates a Fanuc robot with Kinefac's MC-15 FI CNC Kine-Roller.

Robo-Roller users perform automated rolling from a pallet system, bulk feed unit, hopper feed, manual load/unload station or in a conveyORIZED system without safety guarding. The Robo-Roller can handle parts weighing up to 3 lbs. if there is some grippable feature.

The Kine-Trol computer numerical control rolling and part handling system on the Kine-Roller provides operator support to specify the thread size, thread length and rolling die specifications to establish the rolling cycle and die match. Robot programs are set up using a teaching pendant and then stored.

Each die spindle has an independent servo drive system allowing numerically programmed rotational die match. The heavy-duty spindle and die actuation system has a maximum radial die load up to 70,000 lbs. and can accommodate dies up to 6.75" in diameter and faces of 4.5".

Kinefac's Kine-Spin/Barret Division is also introducing a new portable unit for effectively removing solid contaminants from coolant and lubricant fluids



used in grinding, lapping, honing, wire drawing, deep drawing and other metalworking processes.

The unit uses the Barrett Clarifuge to remove the abrasive swarf, material coating residue, tramp metal particles and similar contaminants that are generated in metalworking.

The centrifuge and clari-clean centrifuge cowl cleaner are mounted on a cart and supplied with an 8 GPM circulation system. According to the company's press release, this allows the fluid cleaning operation to be brought to the machine and operated until the coolant or lubricant supply and machine reservoir

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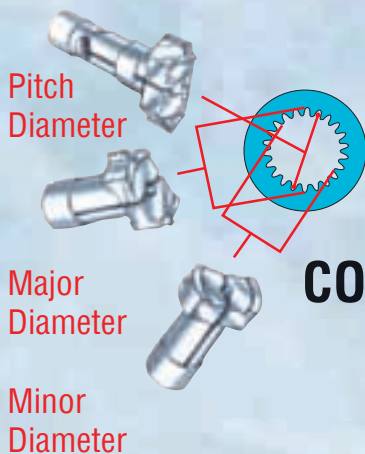
and sump are restored to normal operating conditions.

With the new system, removed contaminants are collected in a standard drum located on the cart, and therefore, the portable fluid recover unit can perform numerous machine operations before it must be returned to the location where contaminants are discarded in a hazard-controlled manner.

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Boston Gear Publishes New Gearhead Brochure



Boston Gear has published a full-color, 36-page brochure to introduce new high precision helical planetary gearheads.

The gearheads are designed for direct attachment to popular servo and stepper motors.

According to the company's press release, planetary gearheads combine the load-sharing attributes of multiple-tooth contacts with balanced operation at high speeds. That makes them suitable for servo-driven solutions to packaging, medical, material handling, robotics, automotive, and other high-production applications. Features include a patented planet carrier design, patented input and output sealing designs, and special heat and surface treatments.

The brochure provides detailed information on the complete line of Boston gearhead products, including specifications, selection information, motor mounting instructions, and torque tightening recommendations.

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