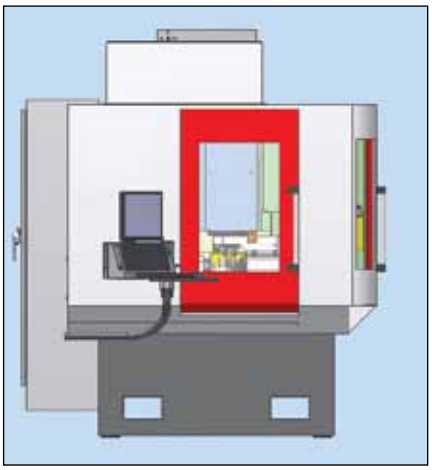
Star SU (Bourn & Koch, Sicmat, Star Cutter) Booth N-6924

The Bourn & Koch 1000VBS CNC Gear Shaper is a 40 inch (1,000 mm) gear shaping machine with 8 inch (200 mm) stroke capability. It has the potential of being paired with Bourn & Koch's 1000VBT Vertical Turning Center or 1000VBG Vertical Grinder.

Features of the shaping head design offer CNC controlled quick return; CNC controlled back off and cutter offset; CNC controlled tapering, crowning and contouring; and CNC control of the helix motion of the cutter spindle (electronic guide).

The model that will be on display at IMTS has a base constructed from a hybrid composite. It uses CAD produced heavy beam style weldments and polymer aggregate in a heavily stabilized structure. The column also has these features.



The column is fitted to the top of the base and has a precision vertical preloaded roller way system and ballscrew to support and position the cross rail. The vertical motion of the crossrail on the column gives the machine a large range of capacity. The crossrail is clamped to the vertical column way system after positioning.

The work spindle is a self-contained unit mounted on precision radial/axial roller bearings and has infinitely variable speeds of 1–40 rpm, powered by an integral liquid cooled torque motor with 1,800 Nm continuous torque.

The patent pending shaping head is mounted to the infeed slide using the

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preloaded roller rail system mounted to the crossrail. The infeed slide is positioned with a precision ballscrew.

The machine is furnished with a complete 50-gallon tank coolant system, Siemens 840D with PC front end, touch screen, and Bourn and Koch HMI.

The Raso 200 CNC shaving machine from Sicmat shaves gears with diameters ranging from six to 200 mm and module from 0.8 to 5 mm. Due to the lathe-like structure, the shaving machine provides performance levels and stiffness compared to larger machines in a smaller space.

The Raso 200 is equipped with Pilpro (piloted programming) software, which is Windows-based. Traditional cycles, mixed cycles (plunge plus diagonal), progressive diagonal cycles or combined double cycles can be programmed.

Two standard loaders are available. The Adatto 6 has a double pocket or the Adatto 8 with a drum unit. Sicmat's automated shaving cells can be configured with stand alone, rotary or SML/ linear chamfer and deburring devices. Custom configurations are available.

The NTG tool and cutter grinder from Star Cutter is designed for manufacturing and reconditioning end mills, drills, step drills, taps and form cutters quickly, with accuracy. Using *NUMROTOplus* software, NTG's three-station wheel and manifold changer switches grinding wheels in ten to fifteen seconds. The high volume auto load system holds up to 288 parts. It loads and unloads tools half an inch in diameter by up to eight inches long to an automated tailstock center in fifteen seconds or less.

Linear motors on two horizontal axes eliminate the need for ball screws and reduce the number of moving parts to lower maintenance costs and improve surface finishes. Since the loader is integrated in the standard enclosure, the NTG takes up 30 percent less floor space than earlier generation machines.

For more information:
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Kapp Technologies (Niles) Booth N-7036

The Niles ZE 400 machine is one of the Kapp Group's most successful compact and economical machines. It is engineered for high quality with maximum grinding torque. The stable, ductile iron machine bed supports workpieces up to 2,650 pounds. The ZE 400 comes equipped with a tailstock, CNC dressing device and onboard measuring, and it uses both dressable vitrified and non-dressable CBN wheels.

The Kapp KX 160 Twin is built on a shared modular platform for continuous generating grinding of planetary and final drive gears in automobile applications with wheel drive or automatic transmissions. The machine includes two identical workpiece spindles arranged at opposite sides of an indexing table. As one spindle machines a part, the second unloads or loads and aligns another part, increasing output.

The 160 Twin machines external spur and helical gears of modules up to 4.5 mm with OD up to 270 mm (10.6 inches). An integrated profile dressing unit for conventional dressable grinding worms is included. Diamond profile roll sets are used for dressing tools, and grinding worms can be dressed for the dressing tool root machining also. A Siemens Sinumerik 840 D controls 10 NC-axes, including both workpiece spindles, the tool spindle, the swivel

angle and rotary motions needed for grinding.

Kapp tools for direct grinding and coroning, diamond dressers for grinding and honing, as well as CBN and diamond-plated tools will be on display.

Another feature of the Kapp booth is live streaming videos from the facility in Boulder, CO demonstrating wet-grinding on the Kapp KX 500 Flex machine. These interactive lessons made their debut at Gear Expo 2009, where they received positive feedback from visitors. A schedule of these presentations will be posted at the booth, where Kapp and Niles personnel will be on hand to answer questions.

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Reishauer
Booth N-7018

The RZ 260, making its debut at IMTS, features Reishauer's continuous generating gear grinding and has been increased in size. All relevant components have been adapted to handle higher loads and forces to accommodate grinding larger gears (up to OD 260 mm and modules up to 4 mm).

The machine was designed to adapt to different production requirements depending on customers' individual requirements. The RZ 260 can be fitted with one or two work spindles. The two-spindle version minimizes the loading times while increasing production output. Both versions can be equipped with a fixed or CNC-controlled axis for swiveling the dressing tool. With this option, the dress-

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ing tools' flexibility can be increased because the same tool can be used for a range of gears compared to the fixed dresser, for which the tools are usually workpiece specific.

A changeable profile-grinding spindle is appropriate for grinding gears with space limitations or small lot sizes. This allows the use of a small plated or dressable wheel to grind gears with the discontinous profile method.

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Gleason
Booth N-7000

Several machines and tooling will be showcased by Gleason. These include the Titan 1200G Grinding Machine, which features the Power Grind process for high volume production to reduce manufacturing times by combining threaded wheel grinding and profile grinding in a single setup. The 1200G offers high flexibility for producing single parts on one platform.

Profile grinding machines that use the Opti-Grind process show up to 40 percent in productivity gains. The technology uses multiple grinding wheels for roughing and finishing simultaneously. Optimized contact conditions between the grinding wheel and the workpiece flank improve part quality.

The Phoenix 280C cuts cycle times up to 35 percent in comparison to other machines in its class. It features a fast part loading system and measurement device. It chamfers pinions and gears simultaneously. A quick-change cutter and arbor designs make it faster and easier to change over for new parts and tooling. As with other Phoenix machines, the 280C is built from a monolithic column design cast from a polymer composite material for high stability and damping, which is often found in high volume, dry machining production environments.

The Agilus 180TH machines shaft- and disk-shaped gears in one setup. The tool turret for locating fixed or driven tools allows turning, drilling, milling, hobbing and subsequent generating chamfering and deburring in the same setting. The CNC tailstock

clamps various workpieces with support on both sides for rigidity. The 180TH can operate automatically in conjunction with one or more turning cells.

The first in a family of GMS Series inspections systems with models available for gears up to three meters in diameter, the 1000GMS Analytical Gear Tester uses a Renishaw 3-D probe head for accuracy and flexibility to completely inspect all gears and gear cutting tools.

The Opti-Cut family of indexable insert cutting systems for gashing, hobbing and shaping can reduce cost-per-part by up to 50 percent compared to conventional high speed steel cutters. The tools are available in a range of cutter body sizes, insert types and geometries.

A range of workholding solutions for bevel gears, cylindrical gears and non-gear production machines will also be exhibited by Gleason.

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Gleason Corporation
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Sigma Pool (Liebherr, Klingelnberg) Booth N-6930

The LCS 1200 Gear Grinding Machine combines generating and profile grinding while handling workpieces up to 1,200 mm in diameter.

The generating grinding method processes gears up to module 12. The machine has the capacity to produce noise-minimized gears in a two-flank grinding process to a specified twist design.

The profile grinding method grinds gears up to module 22 or a profile height up to 50 mm. Tools with electroplated CBN or dressable tools with corundum, sinter corundum or CBN basis can be used in both grinding technologies.

For the generating grinding method, the maximum OD of 320 mm on a grinding worm and the minimum usable diameter—which depends on the gear data, built in combination with the tool length of 230 mm, offers the longest tool life in this machine type class, according to Liebherr's press release.

Also on display will be the P 40 Gear Measuring Center, featuring a small footprint and appropriate for workpieces up to 400 mm OD. The center's new features include temperature sensors for ambient, machine and workpiece temperature. This allows reliable measurement in a non-climate controlled environment, extended part axis compensation and integrated surface roughness measurement of gear tooth flanks.

The P series machines are available in sizes from 260 mm to 3,800 mm. They can check cylindrical gears, spiral bevel gears, worms, worm gears, hobs, shaper cutters, shaving cutters, rotors, camshafts and crankshafts.

Dimensional measurements can be made on various rotation-symmetrical parts include roundness, rectangularity and flatness.

Liebherr is also exhibiting the PHS-1500 Pallet Handling System for automatic loading and unloading machining centers for parts mounted to fixtures; a hanging robot that was combined with a linear axis to expand its range of applications; and loading gantries from three load classes.

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For more information:
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Wenzel/Xspect Solutions Booth N-7436 and E-5157

The Wenzel gear measuring products are on display in the gear pavilion. The WGT 850 is a dedicated gear inspection machine that represents the highest performance in gear testing from Wenzel GearTec. All axes are made from natural dark granite for good thermal behavior. Air bearings on all axes ensure smooth running and high accuracy.

The Inova is a compact, four-axis, fully automatic CNC gear measuring machine. The Z-axis with integral rotary table is positioned independently from the X and Y-axes.

In a separate booth in the quality assurance pavilion, Wenzel is showcasing the X-Orbit CMM, which is equipped with the Renishaw PH20

probe. A typical Xspect Solutions remanufactured CMM will also be on display. Other 3-D imaging technologies at Wenzel's IMTS booth include the Wenzel ScanTec non-contact white light optical measuring system, the ExaCT integrated computed tomography workstation, MobileScan3D mobile CNC measurement system and the Shapetracer 3-D laser line scanner. This will be the first time these four 3-D imaging technologies will be on display in North America. OpenDMIS CMM software will be demonstrated on both the Wenzel and remanufactured CMMs.

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Fuji Machine America Corporation Booth S-9430

The VTP-1000 vertical lathe performs hard turning without grinding. With gearless spindle technology and an RS-slide structure, the VTP-1000 achieves contour and profile cutting accuracies within ±1µm on up to 40 inches (1 meter) OD gears and bearing components. The machine is capable of precise roundness on high hardness materials (HR60 plus).

Twin Capto C6 Receivers ensure tool tip rigidity while a magnetic chuck eliminates the distortion associated with conventional workholding methods. External heat sources are insulated with containment covers for thermal stability. An optional external coolant chiller is available. Heightened finishing accuracies result in up to 75 percent shorter manufacturing time. Tool holders can optionally come with microchips to prevent offset errors and verify the tool holder is in the correct pocket.

The table diameter is 1,000 mm, maximum swing is 1,200 mm and table load is 4,000 kg. Although the machine features a small footprint, it is constructed rigidly. The column and bed, which account for 75 percent of the total machine weight, are made of heavy cast iron. These components are not affected by thermal growth.

The VTP-1000 is designed for simple integration into an automated work cell. It is appropriate for use in the gear, construction, wind power, high-speed rail, aerospace and shipbuilding industry.

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Sunnen Products Company Booth N-7400

The patented multi-feed honing technology combines Sunnen's new controlled-force tool feed with its controlled-rate feed system. The two tool feed modes allow users to choose the best option to suit individual workpiece geometry, material and tool type/size. The multi-feed technology will be demonstrated and is available as an option on Sunnen's SV-1000 and SV-500 Series.

Controlled-force honing, a new feature in multi-feed, works like cruise control to ensure optimum cutting load on the honing abrasive throughout a cycle, regardless of the incoming parts' hardness, geometry or size variation. The process can cut cycle times by up to 50 percent, lengthen abrasive life for lower consumable cost and allows finer control of surface finish parameters. The controlled-force technology eliminates glazing of the abrasive due to low force and maintains a free-cutting, self-dressing condition for high metal removal in the shortest cycle time.

"In our development work, we found that more durable abrasives could often be used, resulting in more parts per set of abrasive and lower cost per part," says Dennis Westhoff, Sunnen's global business development manager.

Controlled force is an appropriate choice for applications using segmented diamond or superabrasive honing tools; also, where incoming workpieces have slight variations in hole diameters, hardness and geometry.

"An established honing process can be thrown off balance because of incoming part variations caused by

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upstream machining, heat treating or plating," Westhoff says. "Controlled-force honing always maintains optimum feed force on the honing abrasive under these conditions to eliminate wasteful air cutting, glazing or tool damage. The beauty is that if conditions allow, for example with a batch of parts requiring less stock removal, the honing cycle will be shortened significantly and automatically."

Controlled-force's ability to control the cutting load within a fine range also allows tighter control of finer surface finish parameters. "We have been able to cut the variation of final surface finish measurement by half or more," Westhoff says.

Sunnen's match honing process produces bore specifications to match the measured size of individual pins, plungers or pistons that may have dimensional inconsistencies due to special plating, coating or other treatment. Match honing achieves a precise fit between mating parts of fuel injectors, piston pumps, cartridge valves and similar products that use coatings or other treatments on male component parts that make achieving consistent diameter size impossible. The process reduces work-in-process inventories required when parts must be sorted by class size before assembly. Total tolerances between mating parts can be controlled to within ± 1 micron, which will be demonstrated at IMTS on a three-spindle SV-1015 honing system.

For more information:

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Sandvik Coromant Booth W-1500

The CoroDrill 854 and Corodrill 856 were launched to meet demand from the aerospace sector for hole making technology in composite materials. They were developed to withstand the harsh demands of CFRP materials and aluminum stacks, offering long life and meeting tight tolerances.

The geometrical shape of CoroDrill 854 is designed to improve hole entrance and hole exit quality on high fiber content materials. It is preferred where splintering or fraying is a problem. CoroDrill 856 is more appropriate if de-lamination proves difficult in resin-rich materials.

The insert grade GC1135 is for threading operations in stainless steels, super alloys and profiles requiring sharp cutting edges. It is available in the 0.630 inch insert for CoroThread 266. This size is appropriate for the majority of general threading applications.

The CoroMill 490 milling cutter is used to mill shoulders, faces, edges, contours, slices and slots in all materials. It can now take up to 0.393 inches depth of cut. The latest release in this cutter family is a 0.551-inch insert designed for larger depths of cut and engagements up to 0.393 inches. The insert size is introduced in a program

of cutter bodies in diameter range of 1.574 to 9.842 inches and in grades and geometries for steel and cast iron machining.

Grades S30T and S40T are available for a range of CoroMill cutters for face, shoulder, long-edge and high feed milling, plunging, profiling and slot milling. Developed with productive titanium milling in focus, the grade S30T combines the properties of micro-grain carbide and a wear resistant PVD coating. Grade S40T offers the high toughness of cemented carbide and thin CVD coating.

A range of integrated toolholders compatible with CoroMill 316 exchangeable-head (EH) tools achieve more secure performance than cylindrical shanks clamped in precision chucks, with comparable tool overhang, regarding torque transmission, run out and accuracy. When all machining variables are the same, integrated holders with an EH coupling provide shorter total programming length and higher stability when compared to cylindrical shank tool holders. With modular tooling possibilities, the holders can be used in many tooling combinations to suit applications and machine tools using a smaller inventory of standard items.

Sandvik is also showing hundreds of other product additions.

For more information:

www.Sandvik.coromant.com