

# Gear Expo 2017 Booth Previews

## The latest technology on display in Columbus, October 24–26

Alex Cannella, Associate Editor

### Automation Controls & Engineering, LLC

Booth 937

ACE will show off GIT Automation (Guaranteed Inspection and Traceability Automation), which is designed to eliminate uncertainty by incorporating inspection and traceability inside your automation cell. Parts are inspected and marked before they leave the cell, eliminating downstream in-process gauges and laser marking stations.

ACE's patented robotic material handling system will load/unload gears or shafts directly from trays with bore vertical or bore horizontal, then have gears washed, roll checked for runout/TCE and laser marked for traceability—all inside the automation cell.

ACE will also feature Slone Gear International's *GearVU* software on Non-Contact Laser Measurement and Contact Laser Measurement Systems. *GearVU* software is designed to accomplish 100 percent production volume tooth profile measurement in seconds and can accurately measure down to microns.

#### For more information:

Automation Controls & Engineering, LLC  
Phone: (734) 424-5500  
[www.ace-automation.net](http://www.ace-automation.net)

### Affolter

Booth 537

Visitors will see the brand-new gear hobbing center Affolter AF110 Plus, the most advanced machine offered by Affolter Technologies.



The AF110 Plus has eight axes with a maximum DP17, minimum DP1270

and a spindle speed of up to 12,000 rpm. Different automation systems for part loading and unloading are available, such as universal grippers, drum loader or robot loading as well as options such as deburring, dry cutting, centering microscope and oil mist aspiration.

The new loader system AF71 with two grippers ensures 24 hours automatic production. While a gear is in the hobbing process, the other gripper reaches out for the next part to load. The AF110 Plus can cut spur, helical, frontal, bevel and crown gears. The machine is equipped with the in-house developed Affolter Leste CNC control, specifically designed for handling up to 12 axes. The newly designed worm screw power skiving (WSPS) technology is available as an option.



“It is an innovative machine concept: Power, rigidity, and precision combined with universal applicability provide a means of manufacturing complex parts at the cutting edge of technology. From standard products to custom-made developments, it encompasses the full range of expertise in very stringent fields,” explains Mikael Affolter, head of sales at Affolter Technologies.

Affolter Technologies recently introduced the innovative WSPS process. Unlike in worm hobbing, where the hob turns much faster than the workpiece, the Affolter engineers inverted the process. “The workpiece turns extremely fast, with two new spindles up to 12,000 rpm, while the cutter turns much slower. Only technology advanced machines can reach such speeds and at the same time provide the necessary stiffness,” says Managing Director Vincent Affolter.

The company sees a large demand for this WSPS technology in the automotive, aerospace and medical equipment industries. “WSPS allows us to finish a high-precision worm in only six seconds. If done by worm hobbing, every piece takes about 25 seconds,” explains Affolter. In other words: WSPS reduces cycle time by up to four times. Manufacturers of high volume worms in these industries will greatly benefit from this new process. The WSPS technology focuses on small worms with a module up to 17 DP.

#### For more information:

Affolter Technologies  
Phone: +41 32 491 70 00  
[www.affolter-applications.ch](http://www.affolter-applications.ch)

### Asco Sintering

Booth 207

ASCO Sintering Co. will exhibit its award-winning powder metallurgy gears.

“ASCO's participation in Gear Expo helps reinforce our position as an acknowledged industry leader in the manufacture of award-winning highly complex powdered metal gears and planetary gear carriers through the application of a six sigma zero-defect philosophy,” stated the company.



ASCO received the MPIF Grand Prize Award in the Medical/Dental Category in 2015 for its sinter-hardened steel planetary gear system, featuring a carrier with an integrated sun gear and three planetary gears.

The company's latest PM gears will be on display with sales and engineering management staff in attendance to discuss their design and application.



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[www.ascosintering.com](http://www.ascosintering.com)

### **Bourn & Koch Booth 407**

Bourn & Koch, Inc. will feature their re-engineered 100H horizontal gear hobber. Capable of producing gears up to AGMA Q-13 (Q-9 to Q10 typical) in a compact footprint, the 100H now features their brand new, Millennial-friendly BK-HMI conversational gear cutting soft-

ware, which drastically reduces the time and specialized knowledge required to program a quality gear.



The new BK-HMI is displayed on a full 19.5" touchscreen monitor with an integrated cycle time calculator, error-proofing and numerous modular programming cycles, including Bourn & Koch's industry exclusive point-to-point array programming. The re-engineered 100H also features a more ergonomic machine tool enclosure, ready for integration with automation.

The Bourn & Koch 100H features standard single and double cut cycles, Fanuc 0i-F CNC control, a power-programmable CNC hob swivel, automatic hob shift, crown and taper hobbing cycles, constructed with hardened and ground precision linear ways, a 4.00" diameter hob slide and a standard high-intensity work light. The 100H can cut gears up to 127 mm in diameter and 2.54 module.

The 100H has the same spindle face as the Barber-Colman 6-10, allowing for all workholding and tooling to be directly interchangeable between the two machines. This makes the transition to CNC gear hobbing a less costly investment overall. In a head-to-head complete cycle time comparison, a newly trained machine operator can set-up, program and cut a gear on a 100H 25 percent faster than on a Barber-Colman 6-10. The 100H also produces superior quality.

#### **For more information:**

Bourn & Koch, Inc.  
 Phone: (815) 965-4013  
[www.bourn-koch.com](http://www.bourn-koch.com)

### **EMAG USA Booth 1107**

EMAG USA will feature manufacturing systems for precision metal components with a special focus on its solutions for gear manufacturing.



The modular VL Series for chucked components will be on display, with EMAG's VL 4 machine. With the goal

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of developing a system of modular machines for medium and large batch runs, EMAG offers flexible solutions on a standard machining platform. For example, the process of single spline hobbing can be performed on a VT vertical lathe for shafts. With the capability of offering gear cutting on a standard machine, EMAG modular machines offer flexibility over specialized and custom hobbing machines. Machining is performed on four axes at a maximum speed of 6,000 rpm. The process employs two turrets with twelve tool stations each equipped with turning tools or driven tools. One common feature of the VL and VT machine sizes is the shared modular design. Their small footprint reduces floor space costs and increases flexibility in floor layout options. Every VL and VT machine features an integrated automation system for transporting workpieces. When combined with the self-loading pick-up spindles, this automation concept ensures short cycle times and high productivity. To accommodate machine operators, all the service units are easily within reach, with

the various units (electrics, hydraulics, cooling system, cooling lubricant and central lubrication system) accessible at any time so that the machines can be maintained with ease. While the standard lathes are commonly used for gear blanks, a wide range of technologies can be incorporated into the machines, including turning, grinding, hobbing, chamfering, induction hardening and laser welding. (More information at [vl-vt.emag.com](http://vl-vt.emag.com))

The technologies in the EMAG Group cover the entire spectrum of metalworking — including non-traditional processes. Laser welding is essential in the light weighting of automotive components while electro-chemical machining (ECM) is a broaching and deburring option. For more information on ECM Broaching, EMAG ECM experts will be giving a presentation on the topic in the Solutions Center at the show. In addition to the VL 4, EMAG will have an eldec induction hardening system with a modular induction (MIND) machine at the show. Featuring Simultaneous Dual Frequency (SDF) technology, where two

different frequencies are applied to the workpiece, MIND machines can apply mid-frequencies to penetrate deeper and heat the root of the gear tooth simultaneously to high frequencies to accurately heat the tip of the tooth. eldec hardening systems complement the workpieces machined by EMAG lathes to create efficient, complete production lines. The flexible machine concepts and complete systems from EMAG offer modular and customized solutions for the production of workpieces in nearly every industry.

**For more information:**

EMAG USA  
Phone: (248) 477-7440  
[www.emag.com](http://www.emag.com)

**Emuge Booth 1501**

Emuge Corp. will showcase their comprehensive line of clamping solutions for applications from low volume job shops to high volume automotive production environments.

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(937) 660-8182

**GEAR EXPO 2017**  
THE DRIVE TECHNOLOGY SHOW

**Booth #515**



“Our workholding group stays close to our customers to learn about their unique challenges and production envi-

ronments. Doing so helps us develop the best solutions for their applications,” said David Jones, precision workholding manager at Emuge Corp. The precision workholding lineup on display will include:

Emuge’s System SG features an expanding-bush design and is used in many machining operations such as hobbing, shaping and shaving for gear production, as well as milling and inspection. The System SG’s large surface area contact with the workpiece provides

a clamping solution which is very rigid, accurate and repeatable.

The high precision System SP, is used not only to clamp workpieces but also tools. By applying an axial force, the clamping sleeves move in the direction of the force and expand radially. This eliminates the clearance between clamping sleeve and body, and between clamping sleeve and workpiece. System SP achieves concentricity of <math><0.002\text{ mm}</math> (corresponding to <math><0.0001\text{ inch}</math>).

System SZ is designed for use on workpieces that have a short clamping base or for diameters with a very large tolerance. By applying an axial force, a slitted collet is radially expanded by a cone. Simultaneously an axial movement occurs, clamping the workpiece.

Diaphragm clamping System SM is ideal for when the eccentricity between pitch circle and seating bore is very small. It allows clamping of the gear wheel at the pitch circle for machining the seating bore. The gear wheel is clamped in both axial and radial directions.

#### For more information:

Emuge Corporation Precision Workholding Group  
Phone: (800) 323-3013  
[www.emuge.com/products/precision-workholding](http://www.emuge.com/products/precision-workholding)

#### Felsomat

##### Booth 1135

Attendees will be able to review and discuss Felsomat’s Flexline — the flexible manufacturing solution combining all aspects of gear production into a seamless automated cell. This unique concept incorporates turning, hobbing, laser welding, heat treating and gear grinding.



Felsomat has garnered a global reputation for precise, efficient and autonomous loading systems designed to enable all manufacturing processes to be completely decoupled. Felsomat solutions include gantry, single-arm robotic cells and automated storage/stacker cells.

#### For more information:

Felsomat USA  
Phone: (847) 995-1086  
[www.felsomat.com](http://www.felsomat.com)



## MANDO G211

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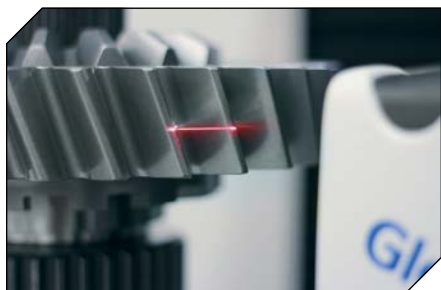
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## Gleason Booths 1411 and 1628

Gleason will demonstrate a host of advanced machines, tooling, software and global customer support services.



Among the most noteworthy of the new technologies is the Gleason 300GMSL inspection system, which, in addition to conventional tactile probing, offers non-contact laser sensor scanning of tooth flanks to support gear development. Complete topography data can be recorded more rapidly than with conventional tactile probing, with comparable results.

The integration of laser scanning and associated 3D graphics with CAD interface considerably expands both functionality and range of applications for this machine platform, making the 300GMSL appropriate for research and development applications for prototype and production parts or when reverse engineering is required. It can accommodate spur and helical cylindrical gears as well as straight, spiral and hypoid bevel gears, with diameters of up to 300 mm. Its capabilities also include surface finish measurement and Barkhausen noise analysis to inspect for grind burn.

Another new Gleason technology at Gear Expo will be the Genesis 400HCD Hobbing Machine. For hobbing of larger cylindrical gears in small batches, Gleason's new continuous fly cutting process offers significant advantages for improving chamfering flexibility and reducing costs as compared to chamfering on a dedicated, stand-alone machine. This feature is available on the new Genesis 400HCD Hobbing Machine, designed for workpieces up to 400 mm outside diameter and module 8 mm. The 400HCD has the capability to chamfer/deburr in parallel with hobbing — eliminating the cycle times and cost per piece added when chamfering/

deburring conventionally.

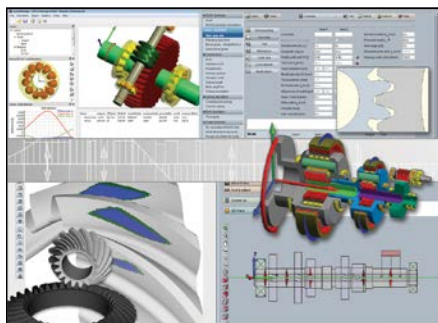
The 500CB Cutter Build Inspection Machine is for automatic, accurate and repeatable builds. The 500CB delivers more accurate and highly automated build, truing and inspection of all types of stick-blade bevel gear cutters with automated closed-loop blade positioning for better gear quality and maximum tool life.

### For more information:

Gleason Corporation  
Phone: (937) 859-8273  
[www.gleason.com](http://www.gleason.com)

## GWJ Technology Booth 944

GWJ Technology provides professional software development for mechanical engineering to support engineers and designers in their daily work. The GWJ products range from standard software for classical machine elements with 3D CAD integration modules to the determination of whole systems up to a complex special software for 5-axis milling of gears. There are common features that all GWJ solutions share: intuitive design, sleek interface, ease of use and suitable applications for all users from beginner to very advanced. GWJ is constantly working on software enhancements and adding new features to the system in order to keep the applications up-to-date. They are also committed to providing high-quality customer services, including engineering services and workshops.



Several of GWJ's various software suites will be on display. *eAssistant* is a web-based calculation software for mechanical engineering. The software allows for professional calculation, design and optimization of machine elements including shafts, bearings, cylindrical gears, bevel gears, shaft-hub connections plus many more. The suitable 3D CAD plugins offer a great way to connect cal-

culational and design. 3D CAD models can be automatically created with just a mouse click and the design table with all manufacturing details can be placed on the manufacturing drawing.

For more than 30 years, the *TBK* software has been a widely accepted calculation software and is being successfully used by many engineers worldwide in the widest range of sectors. Gear manufacturing is one of the key applications. The software is used in the steel and cement industry, open cast mining, wind turbines and even for Formula 1 engines. The high-quality calculations are based on generally accepted calculation methods (DIN, ISO, VDI, AGMA, ANSI, etc.).

*SystemManager* is a true software application for complete systems of machine elements. The software is a coupled FE calculation of multi-shaft systems with gears as non-linear coupling elements. *SystemManager* runs as a desktop application, making it possible to configure and calculate entire systems with just a few mouse clicks. The application ranges from simple to complex systems, e.g. multi-stage gearboxes, shift gear transmissions or different types of planetary gear trains. *SystemManager* allows the import of 3D housings as STEP files. The software meshes the parts automatically to consider deformation and stiffness of the housing throughout the system. A further extension of the 3D elastic parts function is the support of planet carriers and imported shafts. Planet carriers can be imported as CAD models or be defined parametrically; various basic designs are available for the parametric planet carriers.

The *TBK Manufacturing Suite* is a powerful software especially designed for calculating the real 3D geometry of gearings. This geometry provides the basis to manufacture cylindrical and bevel gears in conjunction with multi-axis machining centers. The software calculates the tooth form based on a mathematical simulation of the manufacturing process analogous to traditional manufacturing on gear cutting machines.

### For more information:

GWJ Technology  
Phone: +49 (0) 531 129 399 0  
[www.gwj.de](http://www.gwj.de)

## Hardinge Booth 401

Hardinge will be on hand to discuss their line of products, most notably the all new Kellenberger 100 platform. Kellenberger's Vista and Vita machine model ranges, the Tschudin T25, and the Jones & Shipman Ultramat CNC and Ultragrind 1000 were integrated in the Kellenberger 100 platform concept.



In terms of functionality the new platform concept goes far beyond the possibilities of the machines named above and delivers the most diverse of configuration options for the widest range

of grinding operations. Because of the modular solution on one common platform and the new assembly concept designed to reduce throughput time, it was possible to optimize production costs for the machine and ensure an excellent price/performance ratio. Numerous standard options put the finishing touch on the machine variety.

The user-friendly and ergonomic design of the Kellenberger 100 machines will feature a new, simple operator guidance system on an intuitive touchscreen panel. The machines are equipped with the latest Fanuc 31i CNC controls with 19" touchscreen, optionally also with newly designed cycle programming or workpiece-related graphic programming.

The Fanuc 31i controls replace Hardinge's Kel-Easy interface with intuitive touchscreen operation. They offer consistent support for the operator throughout, expanded range of functionality, integrated automated technology calculation, context-sensitive help images, online operation and maintenance instructions. No ISO programming skills are necessary to interact with the interface, which is also optionally available with familiar Fanuc 31i applications

Three important features distinguish the new Kellenberger 100 machine series. First is a new collision-free tandem wheelhead in compact construction with motor spindle which features reinforced casing for larger grinding wheel diameters for internal grinding. Customers can choose between 10 wheelhead variations for optimum layout of the machine based on the components to be processed. The Kellenberger 100 series also enhances several performance parameters: Higher grinding wheel drive power for increased productivity, a newly designed Z guideway for higher profile precision and a C axis with direct drive for higher precision for non-circular grinding. Lastly, the service department was involved in the optimization of the machine concept. This means that faster maintenance and service operations and optimum accessibility of maintenance-intensive components are assured.

### For more information:

Hardinge Grinding Group  
Phone: (607) 734-2281  
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## Hainbuch America

### Booth 622

Hainbuch America Corp. announced a mandrel with hexagonal pyramid shape instead of a round taper, designed with stringent manufacturing requirements and process reliability in mind. Hainbuch has acted in response to demand from specific areas that has been growing year by year. Users are requesting mandrels that deliver higher performance as well as process reliability. The result is called Maxxos. It exceeds even the specified customer requirements, and more than this, offers all the advantages of a hexagonal clamping mechanism. The segmented clamping bushing with hexagon inside shape fits perfectly onto the clamping pyramid and enables maximum cutting performance. The lubrication, combined with its tightness ensures a very constant production flow and as a result, achieves maximum reliability. Customers that value process reliability and maximum torque transmission will be delighted with the Maxxos T211.



Thanks to the hexagonal pyramid clamp, maximum torque transmission can be achieved. Up to 155 percent more transmissible torque and up to 57 percent higher bending stiffness compared to the classic Mando T211 mandrel. This makes it possible to achieve higher process parameters and consequently improve the yield of finished parts. Greater process reliability is facilitated by the spacious layout between the clamping bushing and the clamping pyramid. Even during the clamping process, this design prevents virtually any dirt getting onto the surfaces. This significantly cuts down the frequency of maintenance times for cleaning and lubrication. Overall, the mandrel has a clamping diameter range of 18 to 100 mm. The clamping areas of each size are designed to overlap. This has the advan-



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tage that users can choose from up to three mandrel sizes depending on the clamping diameter. The aligned, segmented clamping bushings have a minimum concentricity of 0.01 mm and can even be supplied in a high precision version.

**For more information:**

Hainbuch America Corp.  
Phone: (414) 358-9550  
[www.hainbuchamerica.com](http://www.hainbuchamerica.com)

**HobSource  
Booth 703**

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**Kapp Niles  
Booth 1006**

Kapp Niles will display their latest grinding machine generation — the KNe3G — together with the analytical gear inspection system PGM 400 and the ultra-precise measuring machine KNM 7C, both now part of the newly founded division Napp Niles Metrology.



Efficient, easy to use, ergonomic and effective — that's what the "e" is all about. The machine concept of the KNe3G comes with the new KNgrind software and HMI (Human Machine Interface) which means operator-friendly and machine-oriented parameterization of the generating grinding task. The latest control hardware and a multi-touch screen technology from Siemens (Sinumerik 840D) will interactively guide the user through the input of workpiece and technology data. The integrated measuring system of the KNe3G allows various alignments, analysis and correction possibilities.

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Booth #606



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The PGM 400 analytical gear inspection system for workpieces up to 450 mm in diameter is designed to maximize uptime and throughput. Its measuring ability in relation to functional datums eliminates the need for expensive tooling or fixtures. With its modular design approach to both hardware and software, the PGM400 allows easy system upgrades and expansions.

The KNM C series complements diameter requirements from 500 mm up to 1,600 mm. The KNM 7C with its highly accurate mechanics is the result of well-proven technology and innovations, adjusted to meet customer requirements specifically to determine form deviations of bearing rings, race rings and all kind of cylindrical workpieces.

**For more information:**  
Kapp Niles  
Phone: (303) 447-1130  
[www.kapp-niles.com](http://www.kapp-niles.com)

**KISSsoft**  
**Booths 1411 and 1628**

KISSsoft and Gleason invite you to visit them and find out about the highlights from *KISSsoft Release 03/2017*: transmission reliability calculation at system level, simplified modeling in *KISSsys* using predefined gear stages, verification of root stresses with FE for cylindrical gears and determination of balancing requirements when vibrations on a shaft have been calculated.

They also are taking this opportunity to present the first benefits resulting from the merger of KISSsoft AG and Gleason Corp.: *GEMS* and *KISSsys* programs are now linked by a direct interface to exchange gear tooth and system design data between the two software

packages. *GEMS* supplies the values for the geometry data for the bevel gear pair, which is imported into *KISSsys*. *KISSsoft* determines EPG misalignments for specified load points, taking shaft bending values into account. Results are transferred to *GEMS* which carries out a comprehensive contact analysis. *KISSsoft* will be able to demonstrate the whole process in detail live at Gear Expo.

**For more information:**  
KISSsoft  
Phone: +41 55 254 20 50  
[www.kisssoft.ch](http://www.kisssoft.ch)

**Klingelberg**  
**Booth 1123**

Klingelberg will display the Höfler Speed Viper generating grinding machine. With the Speed Viper platform, Klingelberg is presenting itself as a pioneer of Industry 4.0 technology — and it will be demonstrating the cost savings and efficiency gains that are possible as soon as the potential of digitally-supported processes is fully exploited. With this new development, Klingelberg is celebrating a market premiere: new construction, a completely revised, ergonomically optimized design and Gear Operator, a newly developed operating concept focusing on a simple, innovative operating philosophy.



Modifications and corrections no longer need to be entered manually, but are automatically loaded using Gear Operator. Klingelberg is aiming to set a new standard regarding machine operation by presenting this operator guidance via a modern 19-inch touch screen display.

The all new Speed Viper is designed for high-productivity and robustness of the grinding process, and therefore meets any requirements of today's large-scale production: short set-up times,

minimum cycle times, innovative software solutions and digital process control in a closed loop system.

**For more information:**  
Klingelberg America, Inc.  
Phone: (734) 470-6278  
[www.klingelberg.com](http://www.klingelberg.com)

**Koepfer America**  
**Booth 807**

Koepfer America will show three important technologies for hobbing, shaping and deburring.



First, gear manufacturers will see the proven technology of the Koepfer Model 200 CNC gear hobbing machine with a completely redesigned control interface. This new Vektor control ushers in the latest generation of Koepfer's user-friendly control concept. It optimizes functionality by using a minimum number of control elements. Instead of a fixed menu structure, the Vektor control's adjustable apps make operation more intuitive. The control panel interface is 50 percent larger compared to the previous generation, and the panel has complete touch and swipe technology. The front panel is also flush and sealed, allowing for easier cleaning. Other updates with the Vektor control include a compact design, integrated NC and PLC, and a USB interface for data backup and easy updates.

The next feature will be a gear deburring machine that is brand new to the North American market: the Tecnomacchine ("TM") 200 R3, which uses five work stations that produce a fully deburred and brushed part in approximately 25 seconds. CNC work stations also allow automatic tool wear compensation. The TM 200 R3's CNC

automatic loading and unloading system features two rotary magazines, each comprising 8 adjustable turrets, making this a versatile, flexible deburring solution for job shops with parts up to 200 mm (7.874").

Third, Koepfer America will show the CLC 200-SZC CNC gear shaping machine. As with all CLC machines, the 200-SZC features robust components, such as direct drive torque motors, for maximum quality and machine life. This show machine will feature CNC cutter relief, crowning and taper. Traditionally, these CNC features have limited stroking speeds; however, a new design concept from CLC provides both CNC cutter control as well as mechanical control. This allows up to 2,000 strokes per minute. This machine will also feature on-board robotic loading and unloading with Koepfer-style gravity and conveyor parts magazines.

Koepfer America will be celebrating 30 years of service to the industry in tandem with Koepfer Germany's 150th anniversary. All gear manufacturers are welcome to join Koepfer America in their booth to celebrate and see the new

TM 200 R3 gear deburring machine, the new CLC 200-SZC CNC gear shaping machine, and the new Koepfer Model 200 Vektor control.

**For more information:**

Koepfer America  
Phone: (847) 931-4121  
[www.koepferamerica.com](http://www.koepferamerica.com)

**Liebherr  
Booth 1015**

Liebherr Gear Technology will introduce gear skiving machine series LK 300 and 500, which are based on the tried-and-tested components of the corresponding large hobbing machines but feature greater rigidity and more powerful spindles. A gear skiving machine requires a table with a direct drive, owing to the high workpiece speeds required. This drive works with an automatic control that constantly has the optimal parameters. The complex clamping fixture, which links the workpiece and the machine, is designed by Liebherr.



As skiving is a highly dynamic process, the machine is supplied on a "turn-key" basis with individual clamping fixtures for each workpiece, precise rigidity and contour accuracy. "This overall view is an important part for the production success," explains Siegfried Schmidt, team leader in development and design of skiving. "A complex process such as skiving has many specific obstacles, which we overcome with very specific mathematical solutions."

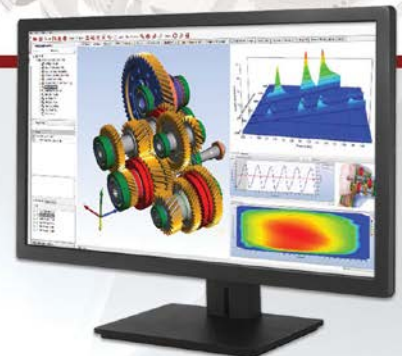
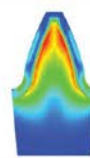
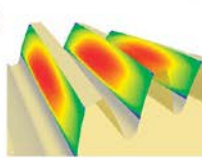
With its *Skiving*<sup>3</sup> program, Liebherr not only provides the LK 300 or 500 skiving machine, but a whole process, including machine, tools and technology for gear production. This integrated approach from Liebherr has already been tried and tested in practice. For many customers, the process of skiving

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# SMT

is new, and therefore the operators of the machines need comprehensive training and assistance. On top of that, the tool design is a very complex issue.

Skiving<sup>3</sup> is popular especially for internal gearing with medium size and quantity as it is much faster than shaping and more economical than broaching. In situations where gear skiving is not possible or appropriate, owing to interfering contours or quantities that are too low, Liebherr still offers technological alternatives with gear shaping and gear hobbing.



The newly developed LHGe@rTec control system also contains the mathematical formulas for pressure angle cor-

rections. This way, quality improvements can be easily achieved via the kinematics of the machine.

The optional tool changer, which can be used to change between roughing and finishing tools, for example, is new. Liebherr offers a ringloader as a standard option for the workpiece changing device; other automation solutions, such as belts and robots, can also be realized upon request.

The LK 300/500 has a maximum module of 5, can machine gears up to 300/500 mm in ID diameter, 500/600 OD diameter, has a maximum table speed of 3000/1500 1/min, maximum tool diameter of 250 mm, maximum tool speed of 2700 rpm and maximum spindle output of 32 kW.

**For more information:**

Liebherr  
Phone: (734) 429-7225  
[www.liebherr.com](http://www.liebherr.com)

**Luren Precision  
Booth 722**

Luren Precision will present two new gear grinding machines. The newest is the LVG-100 CNC spiral bevel gear

grinding machine. Luren's CNC spiral bevel gear grinder joins their generating gear grinding machines and profile gear grinding machines, offering value without compromising precision, reliability or versatility. The LVG-100 features an interactive and communicative Luren designed Windows 7 based software, reducing training time and increasing profits through increased up time. The LVG-100 also utilizes a Siemens 840D controller, dedicated cooling systems for the direct drive spindle and direct drive work head, separate dedicated cutting oil chiller system, air-conditioned electrical cabinet and rigid construction with robust components.



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  - Shaper Cutters
  - Milling Cutters
  - Chamfering and Deburring Tools
  - Broaches
  - Master Gears

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Email [alex@dtrtool.com](mailto:alex@dtrtool.com) for a quotation.



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[WWW.DTRTOOL.COM](http://WWW.DTRTOOL.COM)

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**U.S. Office Location (Chicago) Email**  
inquiries to: [alex@dtrtool.com](mailto:alex@dtrtool.com).  
1865 Hicks Road, Suite A, Rolling Meadows, IL 60008  
**PHONE: 847-375-8892 Fax: 224-220-1311**

Headquarters  
85, Namdong-daero 370beon-gil, Namdong-gu, Incheon, Korea, 21635  
**PHONE: +82.32.814.1540**  
**FAX: +82.32.814.5381**

Luren Precision is also presenting the LFG-8040 CNC profile gear grinding machine. Engineered to be flexible, the LFG-8040 comes standard with an advanced on-board inspection system, giving the operator critical information needed to reach gear classes of AGMA class 14 and above. With Luren's proprietary, user friendly and communicative Windows 7 based software, combined with Fanuc's advanced 32i MB CNC controller and Fanuc ai series servo motors, a direct drive high torque spindle, automatic lubrication systems, dual chillers for cutting oil and the spindle motor, the LFG-8040 is equipped to handle the ever-changing and demanding needs of the gear industry.



#### For more information:

Luren Precision  
Phone: (847) 882-1388  
[www.lurenusa.com](http://www.lurenusa.com)

#### Machine Tool Builders Booth 1401

MTB is launching their beta version of New Grinding Technology, which include form grinding conversational software, on-board inspection, wheel dressing and automatic setup adjustments. Yefim Kotlyar and Ken Flowers will be available for discussions at the booth.

D+P (Donner+Pfister), a company that continues Maag's tradition of manufacturing and servicing highly accurate gear measuring instruments and grinding machines, will be displaying its ultra-precision ES4100 pitch testing unit and featuring a truly portable ES4400 gear inspection measuring unit from Switzerland. Christoph Donner, owner of D+P, will be available for discussions.

Diablo Furnaces will be displaying four miniature size pieces of equipment to acquaint captive and commercial heat treaters of their capabilities: IQ, car bottom, temper and washer.

Burri GmbH, manufacturer of BZ generative gear grinders and PM—profile wheel dressing—machines from Germany, will have Mr. Dieter Burri, owner, at the booth for discussions regarding the Burri technology.

A technical expert, Kwanjoo Hong, from Yuniil, manufacturer of Hera Gear Hobbers, will be present in the booth for questions.

MTB will display a recontrolled Pfauter P400G form grinder featuring numerous new technologies that can be added to an existing grinder. With a new controls system and these new technological features, customers can extend the life of their grinder very cost-effectively.

#### For more information:

Machine Tool Builders  
Phone: (815) 636-7502  
[www.machinetoolbuilders.com](http://www.machinetoolbuilders.com)

#### Marposs Booth 400

Marposs Corp. will present its Artis process monitoring system for gear hobbing applications, which detects and tracks tool wear, provides a real tool life count according to the cutting conditions and instantly stops the process in case of chip welding, damaged or broken teeth or other conditions such as peeling coatings.



The Artis system utilizes an algorithm representing the life cycle of a hobbing tool to identify the optimum time to remove the tool for re-sharpening based on its actual condition. Additionally, a system of machine mounted sensors monitors spindle torque, spindle vibration, true

power consumption and other parameters depending on the specific application. Using these inputs, the system then captures the exact signature of each operation in the process and automatically generates a "good" tolerance band for the process based on that signature.

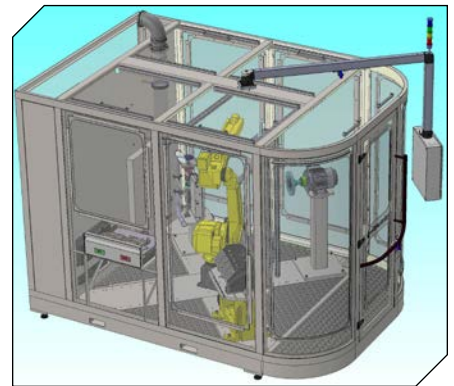
While the concept of monitoring process inputs is not unique, the Artis system couples it with software specifically designed to detect the exact kinds of anomalies produced by worn and/or damaged hobs. The Artis software can identify and quantify each of these signatures to generate an approaching end-of-life warning for normal wear, or an automatic machine stop in case of actual tool damage. In the case of normal wear, the Artis system notifies with ample time to schedule the downtime required to minimize the impact on production.

Another unique aspect of the system is the ability to detect and automatically compensate for tool diameter changes after re-sharpening.

#### For more information:

Marposs Corporation  
Phone: (888) 627-7677  
[www.artis-systems.de](http://www.artis-systems.de)

#### Matrix Design Booth 422



Matrix Design, LLC will feature their brand new Deburr Demo cell. Here, attendees will have the opportunity to see live advanced robotic deburring technologies. This modular-designed automation system includes four interchangeable stations arranged in a quadrant formation around a single M-20iA35M FANUC robot, each featuring various deburring solutions that address the unique challenges associated with deburring.

"We are very excited to unveil our new robotic deburring applications system,"

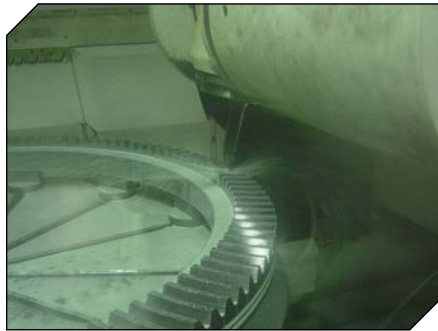
says Jeff Bennett, vice president of sales and marketing. "This new system will allow us to demonstrate our automated deburring technologies to manufacturers as well as qualify new potential deburring applications." Matrix's staff will be on hand to present, answer questions and help end users understand how manufacturers' operations can benefit from increased productivity, improved safety and work environment, decreased costs and consolidation of processes.

**For more information:**

Matrix Design, LLC  
Phone: (847) 841-8260  
[www.matrixdesignllc.com](http://www.matrixdesignllc.com)

**Mazak Booth 123**

Mazak will demonstrate recent advances in manufacturing systems for gears. Visitors will discover how Mazak's Multi-Tasking Machines, when equipped with the latest Mazatrol Smooth CNC and Mazak Smooth Gear Cutting Solutions, can serve as adaptive machining solutions for precision gears of all shapes and sizes.



More than 90 model configurations of Mazak Multi-Tasking Machines can be paired with the right software and CAD/CAM system to perform a wide variety of operations that include hobbing, forming, surfacing and skiving in a single setup. Shops with occasional gear work, for example, can use a Mazak Multi-Tasking Machine to turn a part's I.D. and O.D., process its mating features, then power skive its gear tooth pattern. Such capability on one machine improves overall accuracy because every part feature runs true to the gear teeth. Plus, when the machine is not busy with gear work, it can be used to process a broad range of complex, non-gear components.

At the Expo, Mazak will highlight its new closed-loop gear machining strategy, developed in conjunction with software developer Dontyne Systems, which simplifies the measurement and validation of the accuracy of virtually any gear tooth profile. Through this process, shops with full, 5-axis multi-tasking capabilities can productively and profitably produce tight-tolerance gears in small and medium volumes. The process also makes it possible to generate more complex and specialty forms for better overall gear performance.

Attendees will also experience how Mazak's Mazatrol SmoothX CNC operates four times faster than the company's previous-generation controls. Gear makers, especially, will benefit from faster rotary axis speeds, which allow the machine tool to quickly perform gear hobbing and skiving operations.

**For more information:**

Mazak Corporation  
Phone: (859) 342-1700  
[www.mazakusa.com](http://www.mazakusa.com)



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## McInnes Rolled Rings Booth 1248

McInnes Rolled Rings specializes in seamless rolled rings from 4"-144" diameter and forged discs up to 54" diameter in carbon, alloy and stainless steel. Their ISO 9001, AS9100 and ABS certified plant in Erie, Pa. combines the latest in ring rolling technology with experienced professionals, resulting in the best value and the fastest deliveries in the industry.



### For more information:

McInnes Rolled Rings  
Phone: (800) 569-1420  
[www.mcinnserolledrings.com](http://www.mcinnserolledrings.com)

## Oelheld Booth 901

The multifunctional DiaGrind 535/15 HSG grinding oil has been used successfully on gear hobbing, gear grinding and even for gear shaping applications. DiaGrind 535/15 contains a blend of high quality additives and superior base oils and does not require regeneration or complete exchange for many years. Its high performance characteristics are coveted by a number of transmission manufacturing companies in this country, while its environmentally friendly composition keeps their operators safe and their equipment in top shape.



DiaGrind 535 was especially developed for doing high speed grinding operations like gear or groove grinding. Further it can be used for gear hobbing or thread cutting. The materials normally used are cast iron, steel and highly alloyed chrome-nickel-steels.

Benefits include very low oil misting, excellent temperature-viscosity behavior, very good aging stability, low foaming, extremely good flushing and cooling capacity due to low viscosity and physiologically safe materials.

With another product, the fully synthetic SintoGrind 353 high-speed grinding fluid, Oelheld is offering a product formulated from synthetically produced poly-alpha-olefin based fluid, which provides unlimited life span if properly filtered. It handles hardened steels in excess of 65 Rockwell with ease. Its lubricity lends to extended wheel life and minimal heat build-up in work pieces. This results in higher production rates and elimination of surface cracks and burns. The product has no hazardous components, is physiologically safe and exhibits stable viscosity at different temperatures.

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SintoGrind 353 was specially developed for profile grinding of gear teeth on Reishauer machines but can also be used for grinding and honing and is the ideal fluid for metallic and electro-plated CBN grinding wheels.

Additional benefits and features include reduced wear on the grinding wheels, extreme aging stability, reduced temperature on workpiece surfaces, a high flash point, very little foam and oil mist, viscosity that fluctuates very little at various temperatures, extremely low vaporization tendency, high pressure absorption, extreme flushing and cooling ability and positively no shearing. SintoGrind 353 is an extremely thin-bodied, chlorine and heavy metals-free material.

DiaMill HEF 1100 high-performance cutting fluid is the ideal alternative to water soluble cooling lubricants for turning, milling, drilling and cutting operations in modern CNC-controlled machining centers. DiaMill HEF 1100 is especially designed for the work on high alloyed steel, cast iron or non-ferrous metals. DiaMill HEF 1100 is a high performance product based on hydro-

cracked oils. It is nearly odorless, has high shearing stability and ages extremely well. It displays outstanding viscosity properties over a wide range of temperatures, thus guaranteeing maximum flushing and cooling at all times. The use of high performance pressure additives and cleaning agents contribute to high cutting speeds and excellent surface finish, while being at the same time 100 percent physiologically safe.

DiaMill HEF 1100 is best suited for materials such as steel, aluminum and all non-ferrous materials. Additional benefits and features include increased productivity, better lifetime of your cutting tools, improved surface finish, extremely low foaming and best possible air release properties and the best possible value for your money as no oil change is required.

**For more information:**

Oelheld U.S., Inc.  
Phone: (847) 531-8501  
[www.oelheld.com](http://www.oelheld.com)

**Röhm  
Booth 1000**

Röhm Products of America will showcase its industry-leading workholding

innovations. The highlight of Röhm's exhibit will be its KZF-S gear chuck shown side-by-side with its Agilis segment clamping mandrel to demonstrate a complete solution for gear manufacturers. Röhm will also display its drill chucks, live and dead centers, its RZM 125 5-axis vise, the RKE 90 intensified vise and the Duro-T manual chuck, as well as the F-senso clamping force measuring system, robotic end-of-arm grippers, Duro-NCSE power chuck and Captis modular workpiece clamping system.



The KZF-S is a powerful external clamping chuck specifically made for gear surface face grinding. It is well-suited for clamping gears/workpieces that have an external plane or gear teeth geometries accessible from the outside. Additionally, the chuck allows face and

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Machining Centers  
Multi-Spindle  
Horizontal Machining  
Deep Hole Drilling





ID diameters to be turned or ground concentric to outer gear pitch diameters. The chuck maintains its centrifugal force for extremely smooth rotation of less than 0.01 mm.

Röhms Agilis segment clamping mandrel will be shown as the perfect partner to the KZF-S. Agilis holds the part on their inside diameters and KZF-S holds them on their pitch diameters.

The compact Agilis is built specifically for automatic changeover and small diameter clamping. The system draws in workpieces against a rigid work stop—an operation that happens independently thanks to incorporated pull-back action of the quick-change taper sleeves. The power-operated Agilis offers concentricity tolerances within 0.01 mm, as well as repeatable high clamping accuracy.

Röhms application specialists will also be on hand to discuss specific workholding challenges as well as show how the company's workholding and automation technologies can help increase productivity through lights-out and just-in-time manufacturing.

#### For more information:

Röhms Products of America  
Phone: (770) 963-8440  
[www.rohm-products.com](http://www.rohm-products.com)

### Sinto Surface Treatment Booth 201

Sinto Surface Treatment is a global market leader in the development and implementation of world-class, machine tool quality surface finishing systems. They will be showcasing their next advancement in shot peening technology by introducing their Sightia series of products.



The Sightia series offers surface evaluation where strength is required by using

Sinto's non-destructive X-ray diffraction residual stress measurement device to ensure your parts stand up to the highest quality. Sightia ensures the traceability of individual parts with features such as a laser marker and checking quality before and after peening. This series can be built into or embedded in-line with your peening machine. The non-destructive peening inspection is safe, easy and fast measuring, taking just three seconds. Sightia's X-ray residual stress measurement is the world's fastest measurement at only 10 seconds.

Sinto Surface Treatment will also be presenting their line of shot peening equipment to provide a solution for all aspects of the peening process. Their two peening systems, air blast and wheel type shot peening machines, can be used for a wide range of applications from general purpose to critical peening processes. The air blast type peening machines is best suited for piece-by-piece peening treatments and gives the best possible focus on the shot intensity and volume. The wheel type shot peening machines are capable of projecting large quantities of abrasive to cover large work areas and is versatile enough to use on small or large parts.

#### For more information:

Roberts Sinto Corporation  
Phone: (517) 371-2460  
[www.robertssinto.com](http://www.robertssinto.com)

### Star SU Booth 1306

Star SU will feature a complete library of product overviews, video displays and a new interactive customer application solutions tool. Gear Expo visitors can explore the Star SU Solutions Kiosk independently or have a Star SU representative guided tour through its complete machine tool, cutting tool and tool services offerings from the brands they represent, including Star Cutter Company, Samputensili, Bourn & Koch, Profikator/GMTA, FFG Werke (Hessapp, Modul) and H.B. Carbide.



The booth will also showcase the FFG Werke Modul H200 vertical hobbing machine and the latest in gear cutting tool technology on display.

The H80/100/160/200 series is the latest version of Star SU's hobbing machine line for small applications, specially engineered for the automotive industry. These machines have been designed for dry cutting operations in particular, although using oil or emulsion is not a problem. They are also available with the option of enlarged radial travel. This option allows users to cover the working range of H80 up to H200. The new CNC tailstock, driven by a servomotor, is standard now and allows the easy setup and monitoring of clamping force and position. The closed "O-frame" structure with cross beam allows the ideal integration of this tailstock.

These new features, combined with the user-friendly Modul operating interface, provide the optimal base for Job Shop applications. Request a budget quote and plan to see it at Gear Expo or by visiting Star SU's H 80-200 vertical gear hobbing webpage.

Star SU also carries a wide variety of gear cutting tools and offer precision tool re-sharpening services and advanced coatings, including Oerlikon Balzer's new Balanit Altensa, the high-speed coating solution that realizes productivity gains and efficiency.

Need more help managing your tool room? Let Star SU monitor the life cycle of your tools and re-sharpen, re-coat and replace them as needed. Visit [www.star-su.com/cutting-tools/gear-cutting-tools](http://www.star-su.com/cutting-tools/gear-cutting-tools) and request a meeting with a representative to discuss how Star SU can help you with your gear cutting operation.

Star SU will also feature Scudding cutters in conjunction with GMTA and Profikator manufactured to produce gear and spline teeth for reduced cycle times and tool costs. Learn more by visiting at Gear Expo or going directly to Star SU's Scudding page.

#### For more information:

Star SU  
Phone: (847) 649-1450  
[www.star-su.com](http://www.star-su.com)

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## Stresstech Booth 1602

For more than 30 years Stresstech has been providing nondestructive evaluation instrumentation for the automotive, aircraft, machine and energy industries as well as universities and research institutes. Today their instruments are used daily in many of the world's motor component manufacturing facilities. There, they monitor the quality of gears, camshafts, crankshafts, bearings, valves, landing gear units and other important engine and aircraft components. In addition to quality control, the instruments have proven their worth of investment by helping to adjust in line processes before major losses of material, time and capital occurs.



Barkhausen noise analyzers offer a nondestructive evaluation method to identify issues such as grinding burn detection, case depth measurement, heat treat defect detection and residual stress measurement. For measuring residual stresses and retained austenite contents, Stresstech offers a product line of X-ray diffraction equipment. For measuring stresses, instrumentation based on hole-drilling by electronic speckle pattern interferometry technology is also offered.

One of Stresstech's Barkhausen noise analyzers will be available for demonstrations at Gear Expo 2017.

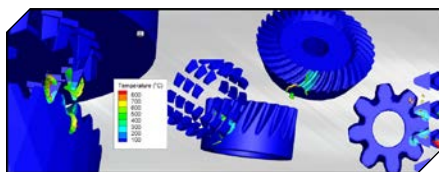
Unlike the traditional testing method, Nital etch, which relies on a subjective examination of a component surface, Barkhausen noise analysis provides a more sensitive, objective test and repeatable real-time grinding burn inspection without requiring chemicals or consumables. It is completely non-destructive and results in substantial cost savings by reducing scrap and eliminating the need for chemical disposal and personal protective equipment. Often compared to Barkhausen noise, eddy current is a traditional NDT method which is optimized for detection of physical flaws such as cracks. It lacks the sensitivity to stress and microstructure, the very prop-

erties most influenced by grind and heat treatment, to which Barkhausen noise is specifically tailored.

**For more information:**  
American Stress Technologies, Inc.  
Phone: (412) 784-8400  
[www.stresstech.com/GearExpo](http://www.stresstech.com/GearExpo)

## Third Wave Systems Booth 538

Third Wave Systems will showcase the latest advancements in new gear machining capabilities for its finite element software AdvantEdge. Stop by the booth for a demonstration or to determine if AdvantEdge Gear Machining is a fit for your machining processes.

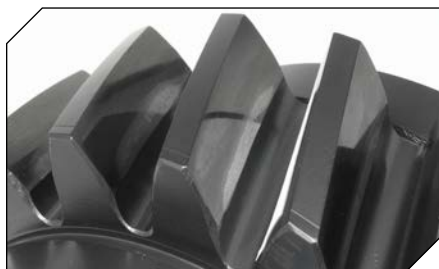


Third Wave Systems will also be giving a presentation at 4:00pm, Oct. 24 on the Solutions Center stage. The presentation will show AdvantEdge Gear Machining demonstrations and examples.

**For more information:**  
Third Wave Systems  
Phone: (952) 832-5515  
[www.thirdwavesys.com](http://www.thirdwavesys.com)

## TimkenSteel Booth 916

For 100 years, TimkenSteel has been creating some of the cleanest and best-performing special bar quality (SBQ) steel in the industry. Today, TimkenSteel offers its customers more than 500 grades of steel, including the company's new TimkenSteel Endurance steels, which is a specialized group of high-strength, high toughness products designed for extremely demanding applications that require a precise blend of steel toughness and strength.



"We've always been a leader in developing high performance steels with

some of the greatest degrees of strength and toughness, and now we're making them better," said Ray Fryan, TimkenSteel's vice president of technology and quality. "TimkenSteel's Endurance steels combine strength and toughness for longer life, more power and/or lighter weight, depending on the application's unique requirements. Our technology allows us to develop an exact blend of strength and toughness that's needed based on the application. Better yet, customers don't have to wait for a redesign to reap the benefits that our Endurance steels offer."

By offering gear manufacturers the ability to create better gears from TimkenSteel Endurance steels that meet their customers' existing designs and grade specifications — not just during a major redesign — TimkenSteel's clean steel offerings can help gear manufacturers achieve a range of improvements that may ultimately translate into savings and performance advantages for their customers. Potential benefits, depending on specific application needs, can include increased power transmission, light-weighting, extended product life and reduced component failure, which can reduce downtime and warranty program costs.

"These steels serve demanding environments where things are moving at a high rate of motion and are very energy intensive," said Fryan. "They offer an incredible amount of strength and toughness in a small envelope."

Fryan says he envisions TimkenSteel's ultra-high strength and high toughness grades to benefit premium gear manufacturers in a variety of market segments, including oil and gas, mining, marine, construction and more.

"One of the core benefits you get from TimkenSteel's family of Endurance steels is multiple options within existing grades, as well as new grades that can satisfy a range of performance objectives," said Fryan. "Our technology team is constantly working to push the envelope on what's possible in order to meet not only today's needs, but what our customers are looking for five, 10 and even 100 years from now."

### For more information:

TimkenSteel  
Phone: (330) 471-7000  
[www.timkensteel.com](http://www.timkensteel.com)

### Trojon Gear

#### Booth 1148

Trojon Gear specializes in under 24" diameter gears, shafts, pins, splines, sprockets and more. They can help you source gears, shafts and services like broaching, grinding and CNC machining are part of our expertise. Trojon works to make life easy for purchasers from small to large companies; for many industries within the agriculture, aerospace, packaging, mining, oil/gas and other markets. Since 1957 Trojon's gears have been found in everything from the iRobot to F16s. Their flexibility and broad range of capabilities make them a perfect supplier to get things done quickly for low to medium volume batches.



ISO 9001:2015 is process-based certification that recognizes organizations that can link business objectives with operating effectiveness. We recently achieved this new standard and have demonstrated effective implementation of documentation and records management, top management's commitment to their customers, establishment of clear policy, good planning and implementation, good resource management, efficient process control, measurement and analysis. Continual improvement has been institutionalized.

### For more information:

Trojon Gear, Inc.  
Phone: (937) 254-1737  
[www.trojon-gear.com](http://www.trojon-gear.com)

### Wenzel

#### Booth 206

Wenzel will be showing off their GearTec WGT series, a range of 4-axis gear inspection machines which are designed to represent the ultimate in high accuracy, high speed analyti-

cal gear testing. We produce the WGT 280 (gears up to 280 mm in diameter), WGT400, WGT600, WGT850/1000 and WGT1200/1600. We also provide CMM-based solutions that allow customers to inspect gears up to 4m in diameter.

Both styles of solutions have the ability to inspect helical, spur, bevel, worm, worm wheel and synchronization gears as well as cams, racks, rotors, hobs, shapers, shavers and broaches. Wenzel is also able to reverse scan spur gears to obtain their nominal data and can inspect all of the above to the most common industry standards including AGMA, DIN, ISO, ANSI and JIS, as well as many company specific standards. All of this is performed through an intuitive and logical user interface. For Wenzel's scanning technology, they used trusted, reliable and ubiquitous Renishaw products in the form of the SP600M and SP80H scanning heads.



Other features and highlights of Wenzel's GMM solutions include: Uniquely designed WMC controller for 4-axis motion; all axes made from natural South African Black Impala granite, guaranteeing excellent thermal behavior; air bearings on all linear axes ensure smooth operation and high accuracy performance with no mechanical wear over the long life of the machine; fully counterbalanced tailstock, to support longer gears, tools, and shafts with parts easily loaded due to its ergonomic design; all WGT systems measure gears to VDI/VDE 2612/2613 Group I accuracy levels; and all system components and software are developed, produced and maintained by Wenzel.

As a family-owned company, Wenzel has a more personal relationship with

their customers which makes them effective and flexible when it comes to solving problems. However, they still serve almost all manufacturing industries including automotive, aerospace, energy, construction, defense, transportation and agriculture. They are a global company with a local feel, large enough to support customers around the world while providing a unique and personal level of service.

### For more information:

Wenzel America, Ltd.  
Phone: (248) 295-4300  
[www.wenzelamerica.com](http://www.wenzelamerica.com)

## ASM Exhibitors

### AFC-Holcroft/Aichelin

#### Booth 2047

AFC-Holcroft will feature their UBQ - Universal Batch Quench line of equipment, recognized as an industry leader by manufacturers, including the gear market, where heat treatment processes require precise metallurgical outcomes.



The UBQ uses both gas and electric heating with patented upflow quench agitation to assure uniform metallurgy. UBQ equipment is built with the highest level of maintainability with modular mounted equipment, standard access ladder and catwalk and an available jib hoist capable of removing fans, tubes, quench heaters and quench agitators without requiring an overhead crane.

The Universal Batch Furnace uses integral batch oil quench technology for carburizing, carbonitriding, neutral hardening, ferritic nitrocarburizing, normalizing, annealing, spheroidize annealing and stress relieving.

Additionally, the concept of "Lightweighting" is the latest practice prompting manufacturers to turn to AFC-Holcroft. The Universal Batch Quench Austemper Furnace (UBQA) - is another featured product at ASM Heat

Treat 2017.

AFC-Holcroft is at the forefront of the austempering process, having pioneered both continuous and batch furnace systems for this process decades ago. Austempering has been gaining momentum in the heat treatment of metals, and it is expected that many more companies will be looking to this process as part of their own environmental and energy-saving initiatives. AFC-Holcroft's global installed base for continuous and batch austempering equipment remains one of the largest.

The UBQA is a leader in atmosphere to salt quench for batch furnace designs, and the UBQA design is unique to AFC-Holcroft. The UBQA offers extreme flexibility in processing various part sizes and features an easy-to-maintain, modular design for rapid and accurate assembly, installation, maintenance and serviceability. The system can be provided as a stand-alone unit, or with a full range of companion equipment to create an entire system. The installation can be expanded incrementally as production increases, optimizing the investment. A fully automated system is available, with process and control management provided by a fully computerized BatchMaster system.

A patented water injection system provides quench severity, and patented "upflow" quench agitation provides more uniform hardness. In addition, improved atmosphere circulation under the load provides for a more uniform case depth for carbo austempering. The UBQA design has an intermediate transfer chamber between the furnace and the salt quench tank. This transfer chamber allows work to be transferred under atmosphere to the salt quench tank as well as prevent salt fumes from entering the furnace chamber.

Other benefits include greater than 97 percent reclamation of quench salts; modern air-cooled furnace fan design which requires no water and is less expensive to maintain; and large diameter radiant tubes which effectively and uniformly heat work for faster recovery rates. The use of high efficiency, spark-ignited sealed burners assures extremely uniform tube temperature and longer tube life.

Product experts from both AFC-Holcroft and Aichelin Heat Treatment Systems will be on hand to discuss your heat treatment requirements.

**For more information:**

AFC-Holcroft  
Phone: (248) 624-8191  
[www.afc-holcroft.com](http://www.afc-holcroft.com)

**Ajax Tocco Magnethermic  
Booth 1823, 2821**

Ajax Tocco Magnethermic/Saet Emmedi/GH Induction/Pillar Induction all provide innovative solutions for induction heat treating, heating and melting applications. A dual spindle compact scanner complete with a power supply, water system, quench system and control will be featured. The booth will include a computer presentation of Ajax Tocco/Saet Emmedi/GH Induction/Pillar Induction heating and heat treat products and the latest scanner controls with coil monitoring. Process development capabilities and regional service/repair facilities will be represented. Ajax Tocco's engineers will be available to review and discuss specific applications and equipment. Bring your toughest application problem.



**For more information:**

Ajax Tocco Magnethermic  
Phone: (800) 547-1527  
[www.ajaxtocco.com](http://www.ajaxtocco.com)

**Seco/Vacuum Technologies  
Booth 1813**

Seco/Vacuum Technologies (SVT) will be participating alongside its sister company, Seco/Warwick, and will showcase its line of vacuum heat treating furnaces via multiple interactive displays at the ASM Heat Treat Show and Gear Expo. Using a giant iTab screen, staff at the show will walk visitors through the company's portfolio of products, including Vector, SVT's benchmark high pressure quench vacuum furnace; the

Case Master Evolution (CMe), a unique multi-chamber vacuum furnace incorporating either oil or air for quenching; the Unicast Master (UCM), SVT's proprietary single-piece flow continuous vacuum furnace, designed for uniform high-volume heat treating of gears; and ZeroFlow, a patented gas nitriding furnace using uniform high convection heating, precision nitriding potential and ammonia control, all designed to reduce gas usage and minimize emissions.



Other interactive features will include a live connection to "Seco 4.0," offering visitors a real-time look into exclusive new developments in controls HMI and other proprietary tools, plus videos of manufacturing, a process description of the UCM single-piece flow vacuum furnace, customer interviews on UCM and ZeroFlow, as well as partner videos featuring Seco technologies.

**For more information:**

Seco/Vacuum Technologies LLC  
Phone: (814) 332-8520  
[www.secovacusa.com](http://www.secovacusa.com)

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