

# Gear Expo 2015: Gears Galore!

You'll see more gear exhibitors in the Motor City than ever before

Jack McGuinn, Senior Editor

You may well have already read the following Gear Expo description on the AGMA Website. But we figure it took a lot of years, people, and hard work to make these words reality—so they bear repeating. And besides, they describe the event perfectly:

“Gear Expo is the only trade show dedicated to the complete gear manufacturing process, and is one of the world's most affordable machinery shows for exhibitors.

“Gear Expo is a biennial event and the world's only conference and expo designed exclusively for the gear industry.

“For three days gear buyers and manufacturers network and build relationships that benefit their respective companies. Attendees see first-hand the latest technology on the market and discuss trends in the industry with experts. Exhibitors have the opportunity to meet face-to-face with attendees and other exhibitors and will display more than 750,000 pounds of machinery on the show floor.

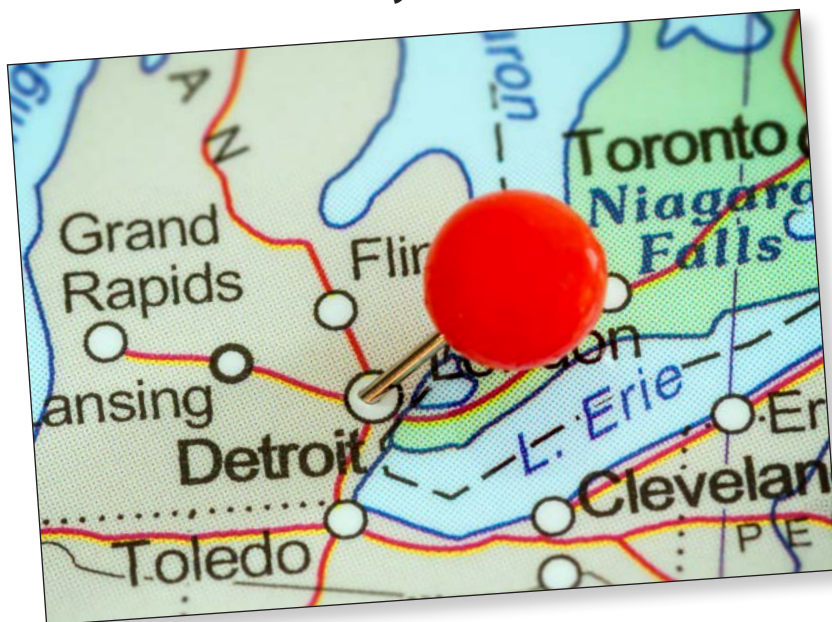
“Thousands of professionals from around the United States, international manufacturing hubs, and emerging markets conduct profitable business transactions and collaborate on the innovations that make their operations more streamlined.

“Once again the ASM Heat Treating Society Conference & Exposition is co-locating with Gear Expo 2015. That means more access to more exhibitors and attendees, and emerging technologies and trends impacting the gear industry.”

Enough said. Now, it's on with the show.

While things are improving, it is exceedingly premature to say the Motor City is back.

But Gear Expo is—and that's a fact—back in Detroit.



Yes indeed, the American Gear Manufacturers Association's premier event returns to Motown for the first time since 2007. And Gear Expo 2015 (Oct. 20-22, Cobo Hall) and Fall Technical Meeting (Oct. 20-22) promise to not disappoint; consider that in 2013 Gear Expo was recognized by Trade Show Executive magazine as one the 50 fastest-growing shows. This year's event is sub-headed “The Drive Technology Show”; but really—“Gear Expo” nails it—there are more gearmakers (60+) exhibiting this year; that is more than at any previous show (*gear-buyers' spoiler alert: but we don't see that affecting pricing*).

We couldn't talk to all of them, so we zeroed in on a few exhibitors—some long-time, some not so long. We touched on a number of issues. Depending on busy pre-show schedules, some had more to say than others, so we've attempted to include that which is of most interest to readers.

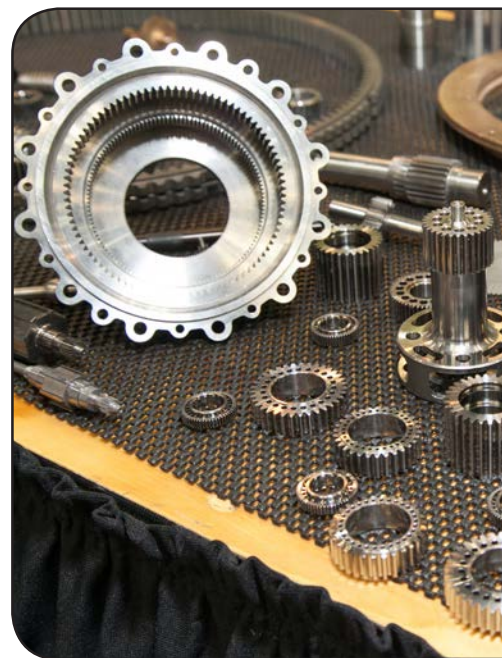
## Excel Gear (Booth 1619)

N.K. (Chinn) Chinnusamy, President

Can you tell us more about your new bevel gear software design package?

Was it a goal to have it ready for roll-out at Gear Expo?

“Most software packages available in the market do not include bevel gears. There are significant differences in how bevel gears are manufactured. The Gleason, Klingelnberg, and Oerlikon systems are for spiral bevel gears. Our software is for the Gleason system only. Mating bevel gears must be manufactured to the same system, i.e.—a Gleason pinion cannot be matched to a Klingelnberg gear, and vice versa. Bevel gears are manufactured in sets



(i.e. — pinion is matched to gear) and cannot be interchanged from one set to another unless the gears are manufactured to a master. A recent development in machines is that they can cut universal bevel gears, eliminating the matched set requirement; but most bevel gear job shops do not have that capability. Still, one system cannot be matched to the other like spur or helical gears.

“Bevel gear capacity calculations are very complex and there are no standards, except AGMA; but even AGMA standards are not fully understood or followed by most designers. Yes, it was our intension to roll out the bevel gear software at the Gear Expo. Our software will help designers to design, analyze, and create one-page-gear dimension data for bevel gears like spur or helical gears.”

### Rave Gears and Machining LLC (Booth 1339)

“Rave will be introducing its Gen3 line of spiral bevel gears which also has the option of adding our Ravecoat. The coat that covers the teeth improves efficiency and durability of the gear,” says Diana Martinez, contract administrator.

### KISSsoft AG (Booth 1830)

“We will be highlighting the newest release of KISSsoft, Version 03-2015,” says Stefan Beermann, KISSsoft CEO

and partner. “Looking back, Gear Expo was always a chance to show new features to our customers in a hands-on way, discussing pros and cons while demonstrating the software directly in the booth. This is typically not a one-way road; we also learn a lot from the feedback or our customers. Since Dr. Kissling, the ‘brain’ behind the software is present, this is a perfect opportunity.

“The new release of KISSsoft has several new features that will be dem-

onstrated,” says Beermann. “Why? Our customers have made request for added functionality and KISSsoft has responded. New features are added standards, like the AGMA 6001/6101 shaft calculation, or some Russian GOST standards for spur and helical gears. The contact analysis for planetary gearsets now determines the load distribution on the gear flanks taking the results of finite element calculations of the planet carrier into account; for this we included an open-source FE



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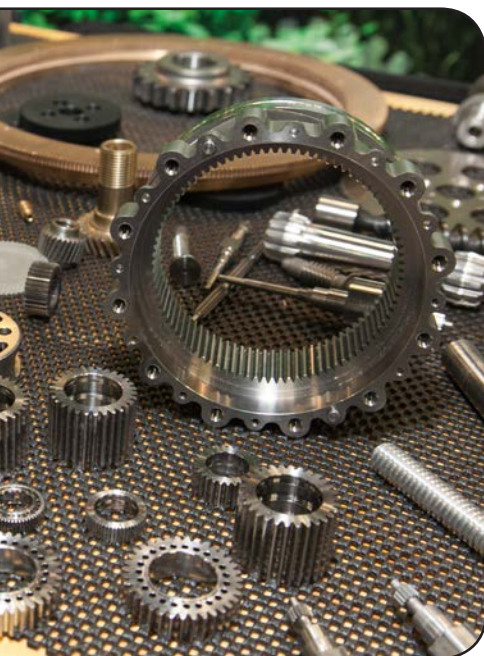
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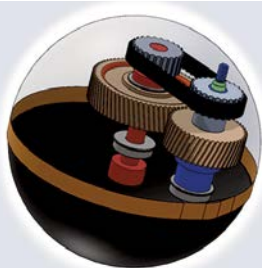
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core into the installation. And we can now read in a full stiffness matrix form various FE programs to model the resilience of the housing of a gearbox. In addition, the determination of critical speeds on a system level is now available. And, of course, many other more specific improvements.”

### Gleason Corp. (Booth 1017)

Gleason is a leading source of education for gear technology and it will be promoting its customer training classes that offer a full range of courses and education forums, ranging from the beginner to the most advanced user covering all aspects of gear design, production and inspection.

Offering plastic gear design and injection molded plastic gears, including helical gears, spur gears, planetary gears and internal gears, Gleason plastic gears provide customers with the benefit of a plastic gear with no weld-line for a stronger, more accurate and economical drivetrain—eliminating the additional expense of secondary machining. Gleason will display some of its most recent innovations and have experts available to answer any plastic gear-related question.

### EXSYS Tool, Inc. (Booth 1731)

Florida-based EXSYS Tool, Inc. will showcase its new line of Eppinger gearboxes and custom gear-making services for a wide variety of industries. EXSYS, known as the North American supplier of high-precision, German-made Eppinger live and fixed toolholders, as well as modular adapter systems—both for CNC turning centers—just recently expanded its line of productivity-enhancing systems into the gear sector. Therefore Gear Expo

attendees can now enjoy some personal time with the latest Eppinger spiral bevel-, planetary-, planetary-bevel-, hypoid- and cycloid-type gearboxes. They can also learn how to acquire specialty, custom-made gears produced to their specifications.

### EXSYS Gearbox Types

**Spiral bevel.** BT (bevel torque) and BM (bevel maximum torque) compact spiral bevel gears bring high torque and maximum efficiency to gear applications that require a high degree of reliability and variability. Each of these bevel gearbox types offers minimized tooth clearance and optimal transmission properties via precision axes and bearing seats, combined with Gleason bevel gears that can withstand high loads. The single-component steel housings for these bevel gearboxes feature mounting threads on all sides to ensure stable attachment in a variety of installation positions. The heavy-duty bevel gears inside these housings offer high transmission precision and reduced stress on the bearings. A friction-locked, zero backlash connection of the crown gears on the drive shaft reduces the mass of the gearing component. Both BT and BM gearboxes come in solid or hollow shafts, in standard and custom designs. BT-type models are available in seven sizes with a transmission ratio of  $i=1:1$  to  $5:1$ , while BM-type models are available in five sizes with a ratio of  $i=1:1$ .

**Planetary.** PE (planetary eco) and PP (planetary precision) planetary gearboxes are for applications that require low backlash, high efficiency, shock resistance and a high-torque-to-weight ratio. With a modular design that combines ground gears and precision gear components, these gearboxes ensure performance efficiency and maximum uptime. They are also energy-efficient and easily mount to a variety of motors. The present range of planetary gearboxes comprises five sizes, with each size offered as



a single-, dual-, or triple-stage design. Each gearbox variant is also available as a precision design with reduced backlash. The wide range of sizes and designs allows users to achieve overall transmission ratios from  $i=3:1$  to  $i=512:1$  in a variety of applications.

**Bevel planetary.** BP (bevel planetary) gearboxes combine features of the company's BT (bevel torque) series bevel gearboxes with the pre-stages of its PE (planetary eco) planetary gearboxes, creating an innovative solution for various applications. The stable housing design and hardened, super-finished gear components of these gearboxes help ensure smooth running and constant backlash control. These planetary bevel gearboxes are efficient and achieve high-output torque and extremely high transmission ratios up to  $i=320$ . Currently offered in eight sizes, the planetary bevel gearboxes easily mount to a wide range of motors.

**Hypoid.** The Eppinger HT-type hypoid gearboxes feature a compact, robust design suitable for both specific and highly dynamic applications. With a specially developed, aluminum mono-bloc housing with high-precision bearing seats and an integrated input shank, each hypoid gearbox provides unmatched stability, accuracy and efficiency. These hypoid gearboxes easily connect to a variety of servo motors. With solid steel alloy and hollow shafts for shrink disc connection, users can install these gearboxes in various positions with a choice of the output side. Currently, the gearboxes are available in four sizes in the ratio range, from  $i=5:1$  to  $i=15:1$ .

**Cycloidal.** To round out its product portfolio, Eppinger develops and manufactures cycloidal gearboxes. These compact, high-transmission gearboxes are an excellent choice for tool machinery, automation and robotics. With integrated support bearings and a high-overload capacity, they excel in applications that require the utmost stiffness, performance and efficiency.

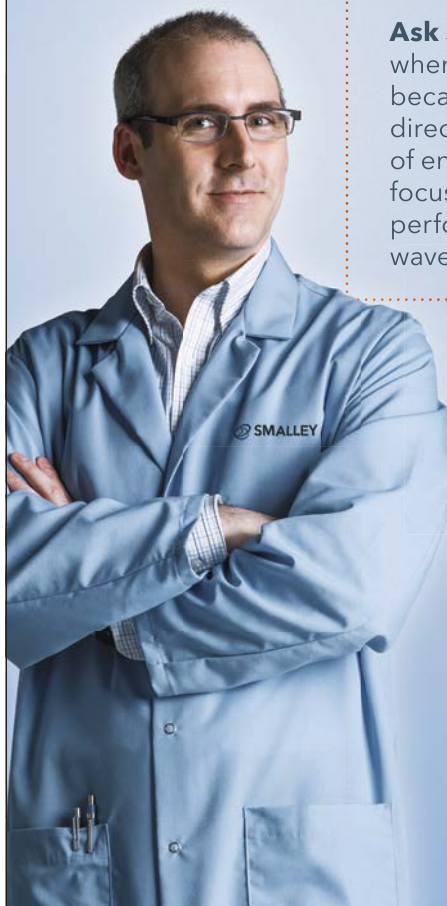
The cycloidal gearboxes are available in six sizes—with ratio ranges from  $i=57:1$  to  $i=175:1$ —and in solid and hollow shaft designs. They can also be adapted to meet specific customer re-

quirements.

**Custom gear manufacturing.** In terms of custom gear-making services, Eppinger is virtually without limits. They can for example develop and manufacture crown gear diameters ranging from 0.4 mm to 330 mm—depending on the transmission ratio. Examples include professional-quality, high-performance bevel gearboxes, as well as ring and pinion gearsets. Gear customers include Mercedes, Bugatti and Airbus.

The company uses modern Gleason milling and grinding centers to machine its gears from a wide variety of workpiece materials. Gleason and Zeiss measuring machines, along with Gleason test equipment, ensure each gear complies with the quality requirements of DIN 3965 and the American Gear Manufacturers Association (AGMA) at all times.

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### Brevini Gear

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## Final Thoughts

We close with some exhibitor observations about the value of the show.

Says Wendy Young, President/COO, Forest City Gear (**Booth 1826**): "We get leads and some are brought to fruition. We do have exposure to an enormous amount of networking, and that is very valuable in itself."

Offers Dan Kondritz, General Manager, KISSsoft USA: "Yes, (Gear Expo) always had (been good) — for KISSsoft, at least. We get a chance to meet face-to-face — something that is hard to put a dollar figure against."

(Rave Gear's) Martinez: "The costs of attending Gear Expo are justified because it's the place to meet individuals from the aerospace to automotive industries that require our services. And the best part of it is everyone is under one roof. This is the perfect opportunity for any company in this industry to get their name out there."

And from Kerry Klein, Arrow Gear (**Booth 1626**) Vice President, sales and marketing, "Certainly (the show is worth the expense)! Arrow Gear has long been a supporter of Gear Expo and will continue to support the industry. We feel that it is important to have a forum where all companies in the industry can display their products and gather together to share ideas and business experiences." **PTE**

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