

# Gear Expo 2013

## An Oscar-Worthy Indy Production

Jack McGuinn, Senior Editor

### Show Dates

**Tuesday 9:00 am–6:00 pm**

Networking Reception: 5:00 pm–6:00 pm

**Wednesday 9:00 am–5:00 pm**

**Thursday 9:00 am–4:00 pm**

### WHERE

#### Indiana Convention Center

100 S. Capitol Avenue

Indianapolis, IN 46225

Phone: (317) 262-3400

*(Note that a weather-proof pedestrian connector allows guests to walk from the Indiana Convention Center to 12 premium hotels including the Westin, Hyatt, Marriott, Conrad, Omni, Crowne Plaza at Union Station, Embassy Suites and JW Marriott.)*

### Gear Expo 2013 Schedule

#### Saturday, September 14

Registration Open 10:00 am – 5:00 pm

#### Sunday, September 15

Fall Technical Meeting 7:00 am – 5:00 pm

Registration Open 7:00 am – 5:00 pm

#### Monday, September 16

Fall Technical Meeting 7:00 am – 5:00 pm

Registration Open 7:30 am – 6:00 pm

#### Tuesday, September 17

Fall Technical Meeting 7:00 am – 5:00 pm

Registration Open 7:30 am – 6:00 pm

Training School for Gear Manufacturing  
8:00 am – 12 noon

Where Do I Start? The Preliminary Gear  
Design Thought Process 8:00 am – 4:00 pm

Exhibit Hall Open 9:00 am – 6:00 pm

Why Bearings Fail 1:00 pm – 5:00 pm

Networking Reception 5:00 pm – 6:00 pm

#### Wednesday, September 18

Registration Open 7:30 am – 5:00 pm

How to Organize and Manage a Failure Investigation  
8:00 am – 4:00 pm

Exhibit Hall Open 9:00 am – 5:00 pm

#### Thursday, September 19

Registration Open 7:30 am – 4:00 pm

Inspection Criteria for Gearboxes 8:00 am – 4:00 pm

Materials Selection and Heat Treatment of Gears  
8:00 am – 4:30 pm

Exhibit Hall Open 9:00 am – 4:00 pm

### We are well into an odd-number year, so it must be just about time for another Gear Expo.

Indeed, the big show—Gear Expo 2013—kicks off in Indianapolis at 9:00 a.m. Tuesday, September 17, wrapping up Thursday the 19th at 4:00 p.m. And whether you are exhibiting or attending, the bottom line is you are going—a good thing for you, your company and the tightly knit U.S. gear industry.

This is a *gear* show; *produced* by gear people; *for* gear people—gear people representative of just about every facet of the gear industry. In fact, the show is so exceedingly gear-intensive and industry-relevant that notice is arguably paid more to those companies choosing to stay home, rather than to the participants.

If your company is exhibiting at this year's show it means that there must be something worth exhibiting, right? So let's talk to some exhibitors and see what

they plan on exhibiting and, more to the point—*selling*—at this year's Expo. But beyond the dollars-and-cents considerations we'll explore some show-related issues as well.

“We will demonstrate Power Skiving technology on our 100PS machine,” says Gleason Corp.'s director of marketing, Alan R. Finegan. “(It) offers productivity benefits in terms of cost per piece and provides a cost-effective alternative to gear shaping and in many cases other soft-machining processes such as hobbing and broaching. (*Ed's Note: In addition to this story, check out Matt Jaster's article on Page 22 for more on Gleason and other exhibiting-company show offerings.*)

“Liebherr will introduce an extended Platform 2 hobber—the LC 500 CNC Gear Hobbing machine, with new hob head for an increased module capacity on the well-known Liebherr platform 2 machines (LC 200, LC 300, LC 380, and

LC 500),” says Scott Yoders, VP sales, Liebherr Gear Technology. “Hobbing gears up to module 12 in one cut can now be fully-realized with the introduction of a new hob head—m FK 2.3—that delivers 27 kW spindle power and accommodates hobbing or gashing tools up to 220 mm diameter.”

“We will also introduce to the market the brand new WENZEL WGT 280 machine; a more compact version of the proven and successful WGT400,



for gear inspection of smaller workpiece applications. This CNC gear inspection machine is targeted for the automotive market, and for our gear-shops who may not need to inspect workpieces beyond 280 mm diameter.”

“Drake will promote its Model GS: TE 200 external thread grinder with a robot load pallet system,” says James Vosmik, Drake Manufacturing president. This model is widely used in automotive applications for steering worm gears.” (Drake is exhibiting in booth #311 with its gear systems reps, Koepfer America, LLC.)

“Star SU LLC will feature the Samputensili G250 Vertical CNC Grinder (for automotive and high production applications) with a video presentation at Gear Expo,” says Mark Parillo, marketing director for Star SU LLC.

“The inventor of continuous generating gear grinding, Reishauer AG of Wallisellen, Switzerland will demonstrate the RZ 260,” says Dennis Richmond, Reishauer Corp. vice president. “This machine sets the standard for gear grinding machines in this size range. The concept is based on the extremely successful RZ 150 series with several hundred machines installed in plants worldwide. The RZ 260 has not only been increased in size, all relevant components have been adapted to handle higher loads and forces which occur when grinding larger gears. Gears with an outside diameter of 260 mm and modules up to 5 mm can be



“On-line trade shows will never replace the sensory feel, smell, and taste of having that product in your hand or asking the manufacturer specific questions about a particular application”

Dennis Richmond, Reishauer

ground with highest reliability in the well-known Reishauer quality.”

With so much impressive hardware available, distinguishing yourself from your competitors seemingly becomes

more difficult at every turn. Old School due diligence is still required, of course; but, with each passing year, less traditional approaches to marketing are gaining more acceptance.

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**News of Note**  
Things are happening in the gear industry. Here's a look at some of the latest.

**Hardinge to Acquire Forkardt**  
Hardinge Inc. recently announced that it has entered into a definitive agreement to acquire Forkardt from Illinois Tool Works for \$34 million in a negotiated transaction. The acquisition will be funded with a combination of cash and debt. With well-established brands, Forkardt includes companies that are leading global providers of high-precision, specialty and customized workholding devices... [Read more.](#)

**Machine Tools Matter at EMO**  
From September 16 to September 21, 2013, this year's EMO Hannover will be opening its doors. At the world's premier trade fair for the metal-working sector, manufacturers of machine tools and components will be showcasing products, solutions and services for meeting the challenges involved in industrial production.

"Star SU implemented a social media strategy over the last year," Parillo says. "Trade show promotion—before, during and post-show—should no longer be looked at as nice to have, but as a necessity. Expect Star SU to communicate what our booth features, product news, and the pulse of the booth throughout AGMA on Facebook ([www.facebook.com/starsullc](http://www.facebook.com/starsullc)) and Twitter ([www.twitter.com/starsullc](http://www.twitter.com/starsullc)).

On a related point—what with all the online marketing and promotion capabilities (webinars, Skype, etc.) now available and increasingly pervasive, one wonders if the trade show is an endangered species.

Richmond believes that "Trade shows will always be relevant. When you're looking for a product—whether it be a car, machine tool, open gearing or pots and pans—on-line trade shows will never replace the sensory feel, smell, and taste of having that product in your hand or asking the manufacturer specific questions about a particular application."

"We are definitely in the digital age," Parillo acknowledges, "but there needs to be a balance of interactive tools and



From Reishauer AG of Wallisellen, Switzerland—the RZ 260 Gear Grinding Machine (courtesy Reishauer).



having the ability for your customers to get up-close-and- personal with our machines. Personally, I believe the show management teams at the shows we participate in have done a fantastic job of recognizing a younger audience and the emphasis the exhibitors are placing on the use of digital tools. Technology aside, trade shows will continue to present a tremendous opportunity to network and reinvigorate relationships.”

Gleason’s Finegan points out that “People have been predicting for several years that technology will hasten the demise of trade shows. And yet trade shows survive and have even grown in some industries. Technology will continue to provide new opportunities with respect to how we market and present ourselves and thus change the nature of shows, but the face-to-face and hands-on aspects of shows will always have appeal.”

Expo venue—or location—has often been the source of some pre- and post-show observations. Not so much this year, however. Indianapolis appears to be a consensus favorite.

“From a geographical perspective, Indianapolis is a desirable location as it’s within easy driving distance of Illinois, Michigan, Ohio and Wisconsin, where a majority of gear manu-

“Technology aside, trade shows will continue to present a tremendous opportunity to network and reinvigorate relationships.”




Mark Parillo, Star SU LLC

facturers are located,” Richmond says. “The city offers a diverse variety of dining establishments and hotel accommodations within easy walking distance of the convention center.”


“In the heart of the manufacturing sector, Indianapolis is an excellent choice—a great city and location for this year’s show,” Parillo concurs.


And, Indy is a “good location for Gear Expo,” Finegan believes.



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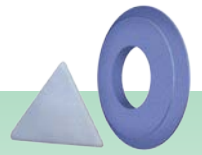
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“In the heart of the manufacturing sector, Indianapolis is an excellent choice—a great city and location for this year’s show.”

Mark Parillo, Star SU LLC

What do exhibiting companies expect/hope to gain or accomplish at Gear Expo? It helps to understand that the emphasis here is on exhibiting—not closing. While not at all unheard of, selling off the floor is not a typical occurrence. So what *do* companies look for? Here’s a sampling:

“(To) showcase our technology and demonstrate to the gear manufacturing community that Reishauer is the “industry standard” when it comes to productivity, quality and lowest-cost-per-piece,” Richmond says.

Parillo hopes that Star SU will “achieve a balance of providing awareness of our latest products and technology with our domestic customers at Gear Expo, along with making an impact at EMO during the same week.”

“To introduce the gear market to these new machine types: LC 500 and WGT 280,” says Yoders. “We are delighted to be displaying this new gear inspection machine in our booth this year, highlighting our partnership with Wenzel, which began in March 2013.”

And at Drake, “(To) visit with current customers; meet new prospects and promote the Drake brand,” says Vosmik. “(To) connect with recent graduates entering the job market and explore new machine tool technology.”

#### For more information:

**Drake Machinery (with)  
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# AGMA 2013 Fall Technical Meeting

The AGMA 2013 Fall Technical Meeting (FTM) provides an opportunity for you to receive the latest research in the field, network with your peers and learn about the latest methods and cutting-edge technologies in use in the gearing industry today.

Registration for the FTM includes a free pass to Gear Expo 2013. Registration is available through the AGMA website at [www.agma.org](http://www.agma.org).

## Early Bird Pricing (through August 16)

AGMA member \$835  
Nonmember \$1,185

## Regular Pricing (after August 16)

AGMA member \$935  
Nonmember \$1,285

## Single Session Pricing

AGMA member \$275  
Nonmember \$395

This year's FTM will feature 26 papers, presented in five sessions:

### Session I – Gear Manufacturing

**Sunday, September 15**

**1:00 p.m. – 5:00 p.m.**

### *Power Skiving of Cylindrical Gears with Bevel Gear Cutting Machines*

Dr. Hermann Stadtfeld, Gleason Corporation

### *Performance and Technological Potential of Gears Ground by Dressable CBN Tools*

Dr. Klaus Finkenwirth and Dr. Andreas Mehr, Liebherr-Verzahntechnik GmbH, and Dr. Fritz Klocke and Jan Reimann, RWTH Aachen University

### *Analysis of Gear Root Forms: A Review of Designs, Standards and Manufacturing Methods for Root Forms in Gears*

Dr. Gregory Hyatt, Nitin Chaphalkar, Orrin Kleinhenz DMG/Mori Seiki USA Inc.

### *Best Practices for Gearbox Assembly and Disassembly*

Jodi Bello, Chief Engineer, David Brown USA Inc.

### *Precision Shaped Grains Turn the Concept of Gear Grinding Upside Down*

Walter Graf, 3M

### **Session II – Gear Design Issues** **Monday, September 16** **8:00 a.m. – 12:00 p.m.**

### *High Gear Ratio Differential Planetary Drives' Analysis and Design*

Alexander L. Kapelevich, AKGears, LLC

### *Finite Element Analysis of a Floating Planetary Ring Gear with External Splines*

Dr. Vanyo Kirov and Dr. Yun Wang, Caterpillar Global Mining, LLC

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## AGMA 2013 Fall Technical Meeting (continued)

*Application and Improvement of Face Load Factor Determination Based on AGMA 927 (Accurate and Fast Algorithm for Load Distribution Calculation, for Gear Pair and Planetary Systems, Including Duty Cycle Analysis)*

Dr. Ulrich Kissling, KISSsoft AG

*Investigations on Tooth Root Bending Stress of Case Hardened Gears in the Range of High Cycle Fatigue*

Dr. B.R. Höhn, Dr. K. Stahl, Dr. T. Tobie, Dr. N. Bretl, and S. Schurer, Gear Research Centre (FZG)

*Calculation of the Tooth Root Load Carrying Capacity of Beveloid Gears*

Dr. Jannik Henser, Dr. Christian Brecher and Dr. Markus Brumm, RWTH Aachen University (WZL)

*Striving for High Load Capacity and Low Noise Excitation in Gear Design*

Dr. K. Stahl, Dr. M. Otto and M. Zimmer, Gear Research Centre (FZG)

### Session III – Failure Analysis and Inspection

**Monday, September 16  
1:30 p.m. – 5:30 p.m.**

*Practical Considerations for the Use of Double Flank Testing for the Manufacturing Control of Gearing*

Ernie Reiter, Web Gear Services Ltd. and Fred Eberle, HiLex Automotive Center

*Gear Failure Analysis and Lessons Learned in Aircraft High-Lift Actuation*

Anngwo Wang, Seth Gitnes, Lotfi El-Bayoumy and Jonathan Davies, Moog Inc. Aircraft Group

*Metallurgical Investigation of "Tiger Stripes" on a Carburized High Speed Pinion*

M. Li, Lufkin Industries, Inc., P. Terry, P. Terry & Associates, and R. Eckert, Northwest Laboratories, Inc.

*White Structure Flaking in Rolling Bearings for Wind Turbine Gearboxes*

Hideyuki Uyama and Hiroki Yamada, NSK Ltd.

*The Anatomy of a Lubrication Erosion Failure – Causation, Initiation, Progression and Prevention*

Raymond J. Drago and Roy J. Cunningham, Drive Systems Technology, Inc. and Chad Smith, Chalmers & Kubeck

### Session IV – Gear Drive Components Tuesday, September 17

**8:00 a.m. – 12:00 p.m.**

*Dynamic Simulations of Radial Lip Seals Flowability in an Industrial Gearbox*

Michel Organisciak, Rossana Iervolino, Mickael Sansalone, Stellario Barbera, SKF Engineering and Research Centre, and Alex Paykin, SKF Sealing Solutions



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## AGMA 2013 Fall Technical Meeting (continued)

*Gear Lubrication – Long Term Protection for Wind Turbines*

Steve Mazzola, Kluber Lubrication North America LP, Dr. Michael Hochmann, and Juian Wald, Kluber Lubrication Munchen SE & Co.

*Gear Resonance Analysis and Experimental Verification Using Rapid Prototyped Gears*

Scott R. Davidson and Jeffrey D. Hayes, The Boeing Company, Philadelphia

*Influence of Gear Loads on Spline Couplings*

Dr. Carlos H. Wink and Marcelo Nakandakari, Eaton Corporation – Vehicle Group

*How to Spec a Mill Gear*

Frank C. Uherek, Rexnord Industries LLC

*Investigations of Bearing Failures Associated with White Etching Areas (WEAs) in Wind Turbine Gearboxes*

Robert Budny, Clipper Windpower, Robert Errichello, Geartech, and Rainer Eckert, Northwest Laboratories

### Session V – Materials and Heat Treatment

**Tuesday, September 17  
1:00 p.m. – 5:00 p.m.**

*Heat Treatment of Big Gear Components*

Gerhard Reese, Härtereirei Reese Bochum GmbH

*Ductile Iron for Open Gearing – A Current Perspective*

Fabrice Wavelet, Ferry Capitain and Michel Pasquier, CMD

*Innovative Induction Hardening Process for Improved Fatigue Performance of External Spur Gear*

Dr. Zhichao (Charlie) Li, Deformation Control Technology, Inc.

*Controlling Distortion in Heat Treatment through Press Quenching*

Art Reardon, Gleason Corporation

*Vacuum Carburizing Large Gears*

Nels Plough, Stack Metallurgical Services, Inc.

**Registration for the 2013 AGMA Fall Technical Meeting is available via the Gear Expo website at [www.gearexpo.com](http://www.gearexpo.com)**



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