



Quality Expo Exhibits Gear Measuring Equipment

Dedicated gages for measuring pitch diameter, a flexible bench system for measurement over balls, and nests for measuring features of straight bevel gears.

These were among the many gear-related products featured at Quality Expo, held April 19–21, at the Donald E. Stephens Convention Center in Rosemont, a Chicago suburb. Held for more than 20 years, this year's expo displayed inspection, testing and measurement equipment, software and services from more than 200 exhibitors.

Pitch diameter gages were the main gear products exhibited by Comtorgage Corp., based in Slatersville, RI. The handheld gages are for use on the shop floor, in high volume production of gears and splines.

In such production, employees may be required to make frequent, accurate measurements of dimensions at the machines to monitor quality. Comtorgage specializes in dedicated gages, each one measuring a specific dimension of a part of specific type and size.

"The gage is dedicated to the application and is not adjustable for a wide variety of sizes," said Kim Gradolf, a Comtorgage regional sales manager. "Using a gage designed for only one dimension, for a high production part, will be far more accurate and repeatable than an adjustable gage."

Comtorgage's pitch diameter gages cost about \$1,500–\$3,000.

Gradolf said the gear industry mainly uses Comtorgage's gages to measure bore size, major diameter, minor diameter, outside diameter and pitch diameter of spur, helical and ring gears and most types of internal and external splines.

Comtorgage also designs and manufactures standard and customized gages for measuring threads, bores, keyways and other features. Measurements can be viewed via analog dial or digital readout or can be transmitted directly to computers or data collectors.

At the Marposs display, flexibility was a major feature of its

main gear product, a bench system for measurement over balls. The system is retoolable, allowing it to measure gears with a variety of diameters.

Its other major feature was the cushioning mechanism for the retractable ball. The mechanism can be adjusted so if a person lets go of the retractable arm, the ball will slowly settle against its gear, not slam into it.

"It can be used on a shop floor, or it can be used in a lab," said Gary Sicheneder, Marposs Corp.'s manager–new market development.

The system can be attached to a column for amplifying and displaying results, to a computer or to a dial or digital indicator. The system, with a column, costs \$6,000–\$7,000.

The bench system is part of the M62 product line, which covers all of Marposs' gear-related products. The company also exhibited a number of master gears and handheld spline gages.

Located in Auburn Hills, MI, Marposs manufactures and supplies products for applications requiring measurement, control, and data management at each stage of the production process.

At Euro-Tech Corp.'s exhibit, bevel gear nests were a featured item among its gear-related products.

Made by Frenco GmbH of Altdorf, Germany, the ground nests can be used to measure back face runout, pitch diameter, O.D. roundness and shaft concentricity in the case of a bevel gear shaft. The nests are made so straight bevel gears rest on their pitch diameters and reference those diameters for machining or inspection.

"The tooth-to-tooth index repeatability of a Frenco ground nest is second to none in accuracy," said Jerry Kowalsky, president of Euro-Tech, which is located in Menomonee Falls, WI.

A nest costs about \$2,400–\$3,000, depending on bevel gear size and quantity produced.

Euro-Tech also displayed indicating spline gages for internal and external splines and clamping systems for toothed profiles.

Euro-Tech, a sales and engineering company, represents European-made gages and tooling, including arbors, chucks, drills, measurement systems, taps and accessories.

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EVENTS

Solving and Avoiding Gear Failures: AGMA Offers 14th Annual Seminar



“Gear failure can lead to company failure,” says gear consultant Robert Errichello. “Whether your company manufactures gears, sells lubricants or uses gears, you need to know how to prevent gear failures and how to correct them if they occur.”

Consequently, the American Gear Manufacturers Association is sponsoring the 14th Annual Gear Failure Analysis Seminar. The seminar is taught by Errichello and gear failure analyst Jane Muller, both of GEARTECH, located in Townsend, MT.

Attendees will learn gear failure modes, what causes them, how to fix them, how to prevent them and what to watch for. Students will be able to examine sample gears showing the modes. Also, they can bring samples or photographs of their own failed gears and discuss them during the seminar’s workshop.

The seminar includes a written test and a practical test with real gear failures, allowing attendees to practice failure analysis. They then present their analyses to the class.

“What we teach is directly applicable to everyday problem solving,” Errichello says.

Past students included gear engineers, users and reasearchers, maintenance and lubricant technicians, and managers.

The seminar will be held twice in 2005: June 20–21 and Sept. 19–20. Each offering is limited to 30 people.

Charlie Fischer, AGMA’s manager–technical division, expects the June offering to sell out by early May. Fischer handles registration for the seminar, which has sold out for several years running.

The seminar costs \$625 per AGMA member, \$845 per non-member. The cost includes a 272-page manual, which has copies of seminar presentations, reference technical papers and an atlas of 36 photographs showing all failure modes and briefly explaining each mode.

The seminar will be held at Big Sky Resort in Big Sky, MT. Attendees can reserve rooms by calling the resort and can obtain a special room rate, \$125 a night for a single or double room, by mentioning the AGMA during reservation.

To register:

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PM²TEC Conference

The streets of Montreal will be abuzz with metallurgy talk this summer when the International Conference on Powder Metallurgy & Particulate Materials hits the Palais du Congress.

The conference, held June 19–23, includes special sessions that could be of interest to gear designers and manufacturers. On June 21, Special Interest Session 4 will cover P/M Solutions for the Next Frontier: Gears and Driveline Components, a program that will review the state-of-the-art in gear manufacturing technologies and the appropriate powder metallurgy response. Presentations will debate the performance of powder metal gears as compared to traditional wrought gears. Other discussions include “A Predictive Model Development for P/M Gear Rolling,” “Rolling Contact Fatigue of Surface Densified Gears,” and “Trends in Gear Manufacturing Technology.”

Another feature of the event will be the exposition, with 130 exhibitors showing off their products. The Modal Shop, a manufacturer of structural and acoustical sensing systems for engineers, including many in the gear industry, will be there. Among the products The Modal Shop will exhibit is a nondestructive test system based on resonant inspection. The system can be used on powdered metal parts for end-of-line 100% inspection.

Scott Sorensen, marketing manager at The Modal Shop, believes the powder metallurgy conference is becoming increasingly important for the marketplace.

“As powdered metal parts become more widely used and find their way into more and more consumer products, the industry is poised to grow, and this show helps spread the word,” he says.

Admission prices range from \$75–\$1,300, depending on the number of sessions to be attended.

For more information:
Metal Powder Industries Federation
Phone: (609) 452-7700
Internet: www.mpif.org

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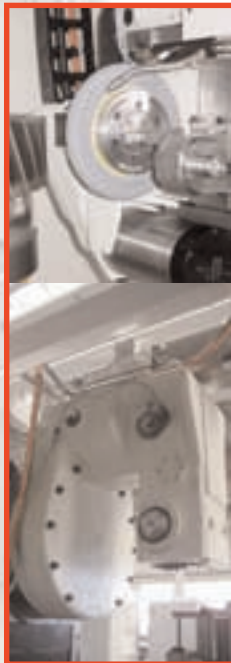
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EVENTS

Learn to Lessen Noise: Ohio State University's Gear Noise Short Course

Whether in the housing of an electric toothbrush or the transmission of a luxury sedan, gears should be quiet. If they aren't, then companies face two problems: gear noise and dissatisfied customers.

To solve the first, and thereby solve the second, companies need to know about gear noise, from its causes to how to minimize it.

To learn that, The Ohio State University, located in Columbus, offers the Basic Gear Noise Short Course. The course, which will be held Sept. 13-15, is for gear designers and noise specialists who encounter gear noise and transmission design problems. Past students also included manufacturing engineers.

Course attendees learn about the types of gear noise and their causes, especially the main cause: transmission error. They also learn how to measure, analyze and reduce gear noise. Prevention is taught as well, with students learning to design gears to minimize the major causes of noise. They also learn to predict transmission errors from design and manufacturing data. Other topics include shaft and gear tooth dynamics, transmission dynamics, and housing dynamics and acoustics.

The course includes lectures, demonstrations and a workshop. Laboratory and software demonstrations illustrate gear noise measurement and analysis techniques. Many of these demonstrations use the resources of two university facilities, the Acoustics & Dynamics Laboratory and the Gear Dynamics & Gear Noise Research Laboratory, also known as the GearLab.

In the workshop, attendees can bring tapes of measured gear noise data for examination via spectrum analyzers.

The course is taught by Dr. Donald R. Houser and Dr. Rajendra Singh. Houser is director of the Gear Dynamics & Gear Noise Research Laboratory. Singh is director of the Acoustics & Dynamics Laboratory.

The course costs \$1,390 per person. The cost includes continental breakfasts, lunches and a dinner.

Attendees must register in advance, no later than Aug. 31. Hotels and their telephone numbers are listed on GearLab's website. Attendees are responsible for their transportation from Columbus' airport.

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EVENTS

May 24-26—Decision Tools for a Lean Manufacturing Environment.

TechSolve facility, Dayton, OH. Concentrates on the collection of machining data and utilizing it to make lean manufacturing decisions, communicating solutions to upper management and managing lean manufacturing projects across interdependent company departments. \$795 for TechSolve members and \$895 for non-members. For more information, contact the organization by telephone at (800) 345-4482 or on the Internet at www.techsolve.org.

May 24-26—EASTEC 2005 Advanced Productivity Seminar.

Eastern States Expo Center, West Springfield, MA. Regional event bringing together buyers and sellers of machine tools and metalworking technology. Pricing information is available by request from the Society of Manufacturing Engineers. The society can be contacted by telephone at (800) 733-3976 or on the Internet at www.sme.org.

May 24-26—Fundamentals of Parallel Axis Gear Manufacturing.

Pheasant Run Hotel & Conference Center, St. Charles, IL. Seminar includes computer-based visual aids, text and interactive presentations on the topics of gear nomenclature, basic mathematics for manufacturing personnel, gear hobbing, gear shaping, cutting tools and proper hob maintenance, inspection techniques and the AGMA standard, production estimating, gear finishing processes, and troubleshooting. \$795 includes meals. For more information, contact Koepfer America by telephone at (847) 931-4121 or on the Internet at www.koepferamerica.com.

June 5-7—Machine Components 2005.

Shanghai International Exhibition Centre, Shanghai, China. The 2005 Gear Technology Exhibition for China and the 2005 International Fastener Technology Exhibit for China. This show encompasses the fastener, gear, chain transmission, spring, powder metallurgy, hydraulic and pneumatic industries. For pricing and registration information, visit the exhibition's website at www.macomponents.com.

June 6-9—KISSsoft Calculation Programs.

KISSsoft facility, Zürich, Switzerland. The first day is an overview of KISSsoft and shaft/bearing calculation methods. June 7-8 are dedicated to the theory of geometry and strength calculations for gears as well as gear design determination and optimization. Finally, a seminar titled "KISSsys: Modeling a System of Machine Elements" will take place June 9. €400 or \$516. For more information, contact KISSsoft by e-mail at info@KISSsoft.ch or on the Internet at www.KISSsoft.ch.

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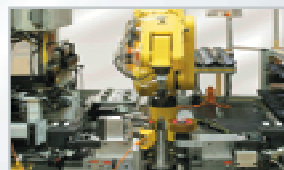
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