University of Wisconsin Offers Seminar for Gear Designers and Users

Gear buyers and users get a better understanding of gears, so they can make better decisions as customers. Gear manufacturers get a broader view of gear technology, which may make their companies more profitable.

Those are the practical benefits that Ray Drago, P.E., sees for the people who attend his course, "Advanced Gear Design & Theory." Held at the University of Wisconsin–Milwaukee, the three-day seminar for gear designers and users emphasizes selection, design, application and use of gears.

The benefit for gear buyers and users: "They understand the language better, the terminology better and make better consumers," says Drago, a gear technology consultant. "They're in less danger of getting the wrong product."

Drago says gear manufacturers may learn they missed gear manufacturing developments. He cites an attendee who first heard about high profile contact ratio spur gears in Drago's course. The gear manufacturer asked Drago about the gears and took Drago's answer back to his company, which improved its products as a result, making gears that ran smoother and quieter.

"They had a competitive advantage at very little cost to them," says Drago, who is founder and chief engineer of Drive Systems Technology Inc., a mechanical power transmission consultancy started in 1976.

Drago says attendees' gear experience can vary widely, with students ranging from college interns to chief engineers. Still, attendees must know elementary algebra, geometry and trigonometry. Knowledge of materials' basic strengths is helpful, but not essential.

The course will next be held June 28–30 by the UW–Milwaukee's School of Continuing Education.

In the seminar, students learn drawing data requirements, specifications, and formats, covering tolerancing and basic geometry data—both reference and required. They learn the basics of load capacity rating. Discussion of gear rating includes AGMA rating standards and explanation of models for assessing bending strength, durability and scoring hazard.

Attendees are taught about quality control, too, including AGMA quality recommendations. They're taught about composite and elemental inspection and about tests of tooth contact patterns, like rolling checks and single-flank tests.

Other topics cover types and selection of lubricant, types of additives and methods of applying lubricant. Gear failure modes are also discussed, and failed gears are presented to illustrate various modes.

Attendees learn about gear materials—ferrous and nonferrous—and heat treat processes for case hardening, including carburizing, nitriding, induction hardening and flame hardening.

Also, the course reviews gear generating processes—including hobbing, gear shaping, face milling, gear grinding—and gear forming processes—such as slotting, milling, broaching, precision forging and powder metallurgy.

The class has no defined size limit, but Drago says he prefers to keep the course to fewer than 40 students, so it can be interactive.

The class consists of PowerPoint presentations, with time allotted after each presentation for group questions and answers. Some presentations include videos. Two common videos cover gear manufacturing processes and the theory of gear tooth action.

Each attendee will receive a binder with 100+ pages of class materials. The materials will consist of color copies of the PowerPoint slides used in presentations and an extended supporting text for most covered topics.

Also, students may bring pictures, drawings and notes regarding their specific gear designs and applications to discuss with Drago after each day's class.

The course costs $1,095 per attendee and includes class materials, continental breakfasts and lunches. Students pay for their lodging and other meals themselves.

Attendees are responsible for getting to and from the airport and to and from the university's Center for Continuing Engineering Education. The center, however, is part of the Grand Avenue Mall; several hotels are part of the mall or are within a few blocks of it.

Students reserve their own hotel rooms, but hotel information is mailed with their enrollment confirmations. When reserving rooms, students should mention they're attending the UW–Milwaukee seminar to obtain the best rates.

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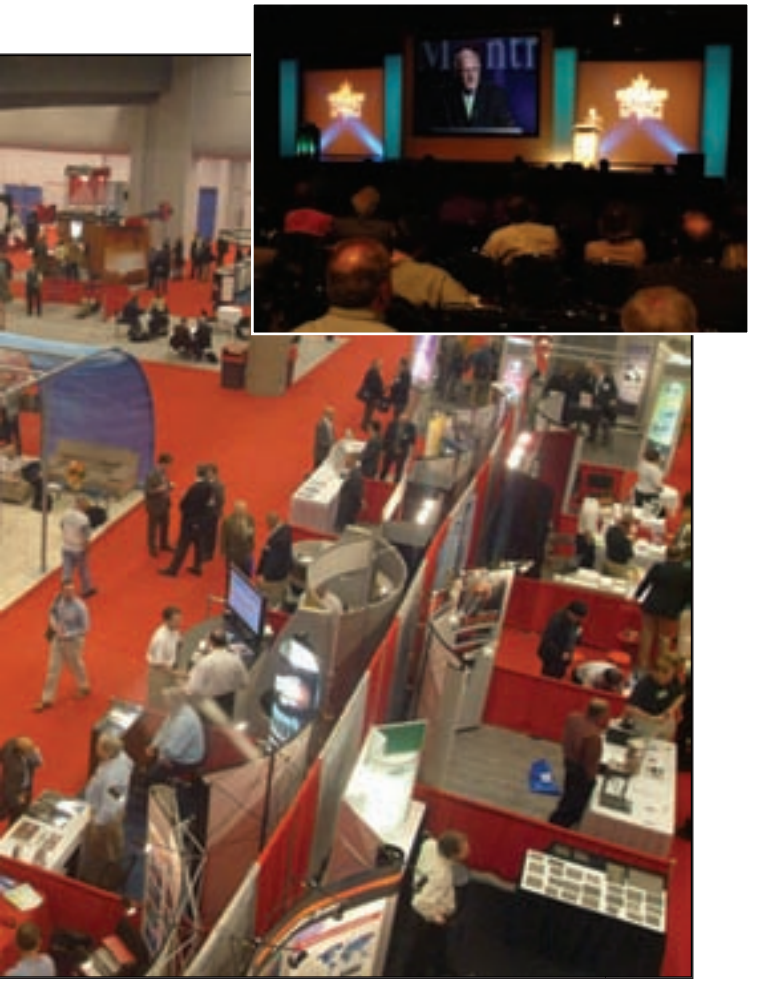
Shorter Version of the MPIF/APMI International Conference

The MPIF/APMI International Conference on Powder Metallurgy & Particulate Materials will be held June 18–21 at the Manchester Grand Hyatt in San Diego and has been condensed into a three-day format.

Sponsored by the Metal Powder Industries Federation and APMI International, this year's conference is a 130-booth marketplace featuring 80 companies. The expo will be open Monday, June 19, and Tuesday, June 20. The exhibition will not conflict with major conference events, general sessions or program luncheons. Photomicrographs of unique P/M microstructures will be on display daily in the exhibit hall.

The session opens with a keynote presentation called "China and Your Bottom Line." Additional technical sessions covering topics as diverse as alloys, sintering, bearings, hard ceramics and titanium component technologies take place June 20–21.



New to this year's show is the poster program, featuring a display of international P/M-related posters. Authors will be available to discuss their posters from 2:15–3:45 on June 20. Awards for "Outstanding Poster" and "Poster of Merit" will be posted on June 20 prior to the designated discussion section.

For early arrivals, a golf excursion and a land-and-sea tour of San Diego are offered. Other highlights include "An Evening in Tijuana," which takes place on June 20. Registration and additional information about these events is available at the show's website: *www.mpif.org/meetings/2006*.

Full conference registration ranges from $1,150–$1,600 and includes two luncheons, a dinner, technical events, exhibits, preprints and proceedings. Additional pricing structures are offered. A block of hotel rooms has been reserved at the Manchester Grand Hyatt, starting at $195 per night.

EVENTS

June 5–7—AGMA Regional Gear School. Star SU facility, Hoffman Estates, IL. Concentrates on the relationship between the basic geometry of parallel axis gears and their inspection and manufacturing processes with an emphasis on logical troubleshooting. $750. Additional courses are planned for the West Coast and Southeast later in 2006. For more information, contact the Gear Consulting Group by telephone at (231) 829-3760.

June 18–21—International Conference on Powder Metallurgy and Particulate Materials. Manchester Grand Hyatt, San Diego, CA. Formerly known as PM²TEC, this conference is offered in a more condensed format for 2006. The exhibition features 130 booths showcasing PM equipment, powders, products and services. Special rates exist for MPIF and APMI members and speakers and session chairs. A variety of price packages from $45–$1,600 are available. More details are available on page 58. For more information, contact the Metal Powder Industries Federation by telephone at (609) 452-6692 or on the Internet at *www.mpif.org*.

June 19–22—Vibration Institute Symposium and Annual Meeting. Galt House Hotel & Suites, Louisville, KY. Technical papers in various vibration analysis disciplines including rolling element bearings, precision spindles, journal bearings, gearboxes, modal analysis/ODS, alarm settings and others. Numerous short courses and ISO certification tests will be offered as well as a vendor display area. Prices range from $100–$1,050. For more information, contact the Vibration Institute by phone at (630) 654-2254 or on the Internet at *www.vibinst.org*.

June 26–28—Gears in Vehicles 2006. Kultur-und Congress-Centrum, Graf-Zeppelin-Haus, Fredrichshafen, Germany. The largest gathering of the vehicle gears sector, the conference focuses on transmission requirements, gear shifting systems, transmission concepts, component optimization, dual-clutch transmission, hybrid CVT, commercial vehicle transmissions, converter automatic transmissions, 4WD systems and mechatronics. German and English are the official languages of the conference. For more information, including the price structure and registration details, visit the VDI Society Development, Design and Marketing website at *www.vdi.de/gif2006*.

June 28–30—Advanced Gear Design and Theory. University of Wisconsin-Milwaukee School of Continuing Education. This course is designed for the designer, user and beginning gear technologist. The main emphasis is on proper selection, design, application and use, rather than fabrication. A knowledge of geometry, trigonometry and elementary algebra is required. Course is taught by Ray Drago. $1,095. For more information, see page 57 and visit the school's website at *www.sce-eng.uwm.edu*.