

## Welcome to the 2009 AGMA Technical Academy

Your job is about constantly learning, and the AGMA Technical Academy is here to help. Your education and training is vital to the success of any company. The more information you know, the more productive you can be on the job. AGMA provides a variety of advanced engineering topics that can help you do your job better – whether it's understanding how to design better gears, or to figure out why a failure occurred, or many other topics that you encounter on a regular basis.

When asked to describe their experience during a recent AGMA Technical Academy Seminar one student described it as "knowledge and experience transfer beyond the text books."

As a special bonus for 2009, if you register for more than one course from March–December 2009 you qualify for additional discounts – 15% if you register for two classes, or 20% off if you register for three or more courses.\*\* Upon completion of each seminar you will receive a certificate of completion.

We invite you to take a look at the enclosed descriptions of the course and to review the full seminar agendas on our website, [www.agma.org](http://www.agma.org).

Questions? Call 703.684.0211 or e-mail [events@agma.org](mailto:events@agma.org)

**"In a world where the only certainty is uncertainty, the one sure source of lasting competitive advantage is knowledge."**

– Ikujiro Nonaka, *The Knowledge-Creating Company*

\*\*Discount only applies to seminars offered from March through December 2009. May not be combined with any other discounts.

### Detailed Gear Design - Beyond Simple Service Factors

Date: March 24-27, 2009  
Location: Vienna, Virginia (Metro Washington, DC)  
Instructor: Raymond Drago, P.E., Drive Systems Technology, Inc.

By attending this course, you will be able to:

- Improve your gear designs
  - Better understand gear rating theory and analysis methods
  - Investigate differences in stress states among various surface durability failure modes
  - Discuss time dependent and time independent failure modes related to tooth design
  - Use computer generated graphics to examine mesh action and tooth interaction
  - Gain new insight into the concepts presented through illustrations and demonstrations
  - Use this classroom setting to put tried-and-true theories into practice
- Interact with a group of your peers and with a talented and well-respected instructor who will push your thinking beyond its normal boundaries. Join AGMA and Raymond Drago, P.E. of Drive Systems Technology, Inc. in Washington, DC for this intensive four-day program on detailed gear design, which now features a day of hands-on software training. Learn more about gear design and then participate in the solving of carefully crafted "problems" that will demonstrate the practical application of the optimization methods presented in the seminar.

Detailed Gear Design  
"Great course. It will teach you everything you wanted to know about gear design considerations, and even teach you things that you didn't even know you didn't know!"  
– Anonymous

### Gearbox System Design...The Rest of the Story - Everything but the Gears & Bearings! NEW for 2009!

Date: May 12-14, 2009  
Location: Fort Worth, Texas  
Instructor: Raymond Drago, P.E. & Steve Cymbala, Drive Systems Technology, Inc.

At last! A seminar that deals not with gears or bearings but rather with the process of wrapping well-designed gears and bearings into a gearbox that actually works! This includes things like lubrication and breathing systems, sealing provisions, and perhaps most importantly, housing design, dimensioning and tolerancing.



### Gearbox CSI – Forensic Analysis of Gear & Bearing Failures – Useful Tools for Optimizing Gearbox Design

Date: October 13-15, 2009  
Location: TBD  
Instructor: Raymond Drago, P.E. & Joseph Lenski, Jr., Drive Systems Technology, Inc.

Determining the cause of a failure in a gearbox is a bit of a "who done it" mystery. What caused the failure? The bearings, a gear, the lubrication, or a shaft problem? Where do you start, and how can you tell? The objective of this seminar, taught by Raymond Drago, P.E., and Joseph W. Lenski is to provide a better understanding of various types of gears and bearings and educate the designer with the limitation and capabilities of rolling element bearings and the gears that they support, so that the designer can properly apply the best gear - bearing combination to any gearbox, whether simple or complex.

"The Gear Box CSI seminar is definitely the right direction, I've been looking for this for a while. Ray is an excellent speaker who can get his point across with lots of examples and experience. He is also very practical and not overly analytical."  
– John

### Gear Manufacturing and Inspection: Methods, Practices, Application & Interpretation for the Design Engineer

Date: November 10-12, 2009  
Location: Clearwater, Florida  
Instructor: Raymond Drago, P.E., Drive Systems Technology, Inc.

This seminar provides a basic understanding of the methods and practices used to manufacture and inspect gears of various types including external and internal spur, single and double helical gears as well as bevel and worm gears. Descriptions of each of the basic methods are provided and both methodology and underlying theory are explained. The "features" associated with each manufacturing method are discussed with regard to their impact upon and their ability to refine, guide, and optimize, the design process. Similarly, interpretation of the results of all inspections is provided both in terms of meeting a "specification" and determining acceptability for a specific application while recognizing that these are two views of the same results. Emphasis is placed on interpretation of the inspection data provided by the various inspections for purposes other than simply determining accept/reject status.

For Complete Course Details  
& Agendas Visit [www.agma.org](http://www.agma.org)

**To Register:**

Please fill out the information below and return this form to AGMA by fax to 703.684.0242. Registration is on a first-come, first-served basis.

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Informal Name/Nickname: \_\_\_\_\_

Title: \_\_\_\_\_

Street Address/P.O. Box: \_\_\_\_\_

City: \_\_\_\_\_

State/Province: \_\_\_\_\_ Zip/Postal Code: \_\_\_\_\_

Country: \_\_\_\_\_

E-mail: \_\_\_\_\_

Telephone: \_\_\_\_\_

**Fees**

	Members	Nonmembers	
<input type="checkbox"/> Detailed Gear Design	\$1,895	\$2,395	\$ _____
<input type="checkbox"/> Gear Manufacturing & Inspection	\$1,395	\$1,895	\$ _____
<input type="checkbox"/> Gearbox: CSI	\$1,895	\$2,395	\$ _____
<input type="checkbox"/> Gearbox System Design	\$1,895	\$2,395	\$ _____

Discount (15% for 2 classes, 20% for 3 or more classes)

— \$ \_\_\_\_\_

TOTALS \_\_\_\_\_

**Payment Method**

Fees include all educational materials and scheduled meal functions. A certificate will be awarded upon completion of the seminar.

Check Enclosed       Credit Card

Credit Card No.: \_\_\_\_\_

Exp. Date: \_\_\_\_\_

Name on Card: \_\_\_\_\_

Signature: \_\_\_\_\_

Conditions of Sale: Payment must accompany this form. All cancellations must be received, in writing, by AGMA 30 days prior to the event. A \$50 processing fee will be assessed for each cancelled registration that results in a refund. Discount only applies to seminars offered from March through December 2009. May not be combined with any other discounts.



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Association

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# 2009 Advanced Engineering Programs



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& SAVE!**