

AGMA Debuts New Class on Gear Inspection

AAGMA is pleased to announce the creation of a new advanced engineering program focused on gear manufacturing and inspection. "Gear Inspection: Methods, Practices, Application & Interpretation for the Design Engineer" will be taught by Raymond J. Drago, P.E., Chief Engineer of Drive Systems Technology, Inc. The class will be held May 13-15th at the Lago Mar Resort in Fort Lauderdale, FL. Registration is now open, and AGMA expects this class to sell out quickly.

The basic purpose of this seminar is to provide a broad understanding of the methods used to manufacture and inspect gears and, much more importantly, a good detailed understanding of the manner in which the resultant information can be applied and interpreted in the design process. Equally important, it is not a tutorial in the mechanics of machine operation, rather the content addresses the relation between the manufacturing/inspection sequence and the detailed gear design process.

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 methodolo-

gy 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.

The seminar also covers the methods of specifying the data required to control both the manufacturing and inspection processes on an engineering drawing and in a specification. This includes both the data to be defined and the presentation of the data on the engineering drawing. It is critical that the design engineer understand the manufacturing and inspection processes that will be employed so that the intent of the design can be successfully translated into practice.

Most gear inspection centers on gear tooth geometry, however, various nondestructive and destructive tests (such as Ultrasonic, Magnetic Particle, Acid Etch, etc.) are also required to insure the quality of the basic gear material and the results of various heat treatment procedures. In this seminar we will cover the basics of a variety of these tests including their underlying theory,

application techniques and, most importantly, interpretation of the resultant data.

"During more than 40 years of gear technology experience, I have found that many designers have a limited understanding of some (but not all) basic gear manufacturing processes but this knowledge generally reflects a limited scope and does not extend to an understanding of the interaction between specific manufacturing techniques and the design process," Ray Drago said.

Similarly, while a basic understanding of the concept of a involute or lead or spacing chart is clear, for example, many in the design community have only a limited understanding of the actual meaning of the data provided and, most especially, how to determine if the gear that it represents is acceptable for use and whether the results meet a certain specification or not – and, perhaps most important of all, understand the difference between these two concepts. This same concern extends to nondestructive tests and examinations (NDT) such as Ultrasonic, Magnetic Particle, Acid Etch, etc. Many gear engineers have a basic idea of the use of these inspections but generally very limited understanding of their application and interpretation, especially as they impact the design process. This seminar aims to narrow and possibly close this information gap by providing gear design engineers with a good foundation in both manufacturing and inspections processes and procedures. □