

# Heat Treating and Plating of Fasteners

October 14-15, 2015

Chicago, Illinois USA Hilton Garden Inn - O'Hare Airport

## About the Seminar

This two-day seminar was developed for engineers and technical personnel to gain a high level, broad understanding of why and how fasteners and other similar items are heat treated and plated or coated. The demands on today's fasteners are ever increasing and these two process steps play a critical role in how well the fastener will perform its intended function.

This seminar will begin by exploring the fundamental metallurgical transformations and principals that yield the mechanical changes desired by the fastener designer or engineer. Each process will be examined in greater detail to understand how the process achieves these underlying principals and what practical effects it has on the fastener. Control points will be investigated to gain an understanding of, not only how the process remains in control, but also how it can go wrong and the consequences when it does.

Day two will explore platings and coatings. There are a multitude of good options today and this seminar shall look at those favored by large fastener consuming industries. In addition to gaining an understanding of the plating or coating system, this seminar shall explore the application processes, significant control points, how they impact fastener performance and common pitfalls and errors. Unlike most of the processes utilized in manufacturing fasteners which have changed little in recent years, this seminar shall explore how the plating and coating processes and options are evolving rapidly to address ever increasing demands for performance and friendliness to the environment.

## Who Should Attend

Fasteners are used extensively in every industry. Since the mechanical performance and physical characteristics are, in fact, critical in many instances, this seminar is very beneficial to professionals that are working on design, development, application engineering, fastener procurement, and quality assurance. If you are involved in the fastener supply chain or are an end user and seek to gain a better understanding of the fundamentals of heat treating and plating of fasteners, this course is designed especially for you.

## Concepts Covered

- ✓ Metallurgical transitions
- ✓ Hardenability
- ✓ Quench and Temper
- ✓ Austempering
- ✓ Case Hardening
- ✓ Annealing
- ✓ Induction Hardening
- ✓ Furnace Types
- ✓ Furnace Atmosphere
- ✓ Quenching
- ✓ Tempering
- ✓ Heat Treating Control Points
- ✓ Heat Treating Potential Failure Modes
- ✓ Electroplating
- ✓ Barrier Coatings
- ✓ Crystalline and Oxide Finishes
- ✓ Mechanical Plating
- ✓ Dip Spin Finishes
- ✓ Plating Potential Failure Modes
- ✓ Current Issues in Plating

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## Benefits of Attending

- ✓ Gain an understanding of what is occurring when a fastener is heat treated
- ✓ Become familiar with the common heat treating processes for fasteners
- ✓ Understand when to specify specific processes or equipment
- ✓ Recognize potential failures modes
- ✓ Gain an understanding of the benefits of different platings and coating
- ✓ Understand when to specify certain plating or coating processes
- ✓ Gain insight into plating and coating performance and relative cost to achieve these goals
- ✓ Explore current issues in regulation and environmental protection