



Furnaces North America Set to Offer 20 Powerful Technical Sessions During Conference

At each Furnaces North America (FNA), a group of Conference Captains are selected to review and select from a series of abstracts, the absolute best presentations that hit at the heart of technical or training needs for the heat treating industry. This year's team studied a set of surveys conducted by the Metal Treating Institute and Industrial Heating Magazine to both commercial and captive heat treaters to see where training is most needed.

FNA 2008 would like to thank this year's slate of Conference Captains for volunteering their time to formalize a set of top presentations for this year's conference. The 2008 Conference Captains represented a quality balance of Commercial Heat Treaters, Associate Suppliers and FNA's Media Partner. They are:

- John Gottschalk – Surface Combustion, Inc.
- Pat McKenna – Nevada Heat Treating, Inc.
- Reed Miller – Industrial Heating Magazine
- Bryan Jageman – Peters' Heat Treating, Inc.
- Jim Roberts – Eclipse Combustion, Inc.
- Shawn Sova- Modern Industries, Inc.

FNA 2008 will deliver sessions that focus on the following set of topics:

- Controls and Pyrometry
- Vacuum Technologies
- Heat Treat Plant Systems
- Energy Efficiencies
- Nitriding
- Induction
- Atmosphere Carburizing
- Vacuum Surface Treatments

A full outline of the program schedule with detailed descriptions and the names of each speaker are on the following pages.

Tuesday, October 21

TRACK 1—Controls & Pyrometry

8:00 am

The Keys to AMS 2750D

Presented by Jake Kacsik & Andrew Bassett – Conrad Kacsik Instrument Systems, Inc.

This interactive session will be a real world discussion on AMS 2750D and how to comply with this specification. The session will be presented from the perspective of a heat treater, whether commercial or captive and will discuss relevant issues and solutions encountered among other AMS 2750 & NADCAP clients. This session will clear up the confusion and misinterpretation of the specification and is conducted using real world examples and applications.

9:30 am

Redundant Control on a Furnace

Presented by Steve Miller – Eurotherm

What do you do when your furnace encounters a primary sensor and goes into a fault condition? This session will discuss the key solutions and remedies to keep your furnace operational and your heat treat line moving.

TRACK 2—Vacuum Technologies

8:00 am

Transferring a Part to Low Pressure Vacuum Carburizing and Gas Quenching; The Full Analysis

Presented by Dennis Beauchesne – ECM USA, Inc.

ECM will illustrate the process in which the evaluation of a customer application will be reviewed in detail using Low Pressure Vacuum Carburizing and High Pressure Gas quenching. The selection of the part loading, carburizing cycle, and quench pressure parameters will be discussed in detail. Test results from this customer application will be discussed as well as distortion improvements shown using gas quenching versus other media quenching. This will be a complete evaluation using operating costs comparisons as well. In this presentation microstructure profiles will be shown along with part photos and charts which will illustrate the potential cost savings in switching an existing part to Low Pressure Carburizing and High Pressure Gas Quenching.

9:30 am

Atmosphere & Vacuum Carburizing... Where They Are Suitable and Where They Are Not

Presented by Ralph Poor – Surface Combustion, Inc.

Atmosphere carburizing has been challenged recently by vacuum or low pressure carburizing in many applications. Some have been successful and make technical and financial sense. Some have not. This presentation will examine the strengths and weaknesses of both processes.

Tuesday, October 21

TRACK 3—Heat Treat Plant Systems

8:00 am

The Emerging Role of Composites in Heat Treating

Presented by Charles Ego – Schunk Graphite Technology LLC

Looking to bring some stability and predictability back into your cost structure? With energy costs skyrocketing and alloy fixtures inevitably destroying themselves over time, wouldn't it be nice to reverse these trends and start saving some money? For most applications, the use of c/c composite fixturing systems can help you do just that. This session will give you the keys to success using composite fixturing systems.

9:30 am

A New Type of Order Tracking for Commercial Heat Treaters.

Presented by Kevin Pludeman – Cornerstone Systems, Inc.

Every commercial heat treater would love to know the location of the orders in the plant. To do this now requires operator input such as: barcode scanners, keyboards, or touch screens. To be effective, the operator must make the entry in a timely fashion. Failure to do so results in faulty information. This session will share the latest technology in automatically tracking each step of your jobs as they move around the plant. During this presentation, you will see some actual working modules. The session will discuss the setup, equipment required, how the technology works, the benefits that can be derived from it, and other functions that it can perform. Technology is the key to productivity and profits in the future.

TRACK 4—Energy Efficiencies

8:00 am

Emerging Combustion Technology - Case Studies and Some Future Look on Energy Efficiencies

Presented by Jim Roberts – Eclipse Combustion, Inc.

During this session, Eclipse Combustion will look at both energy efficiency and low emission technologies that have been applied and what the final impact is on a company's energy efficiency including payback scenarios. The session will also give an overview of the emerging and future development or improvement on the Combustion technology front.

9:30 am

ROI Analysis of Combustion Control for Gas-Fired Heat Treating Furnaces

Presented by Marathon Monitors, Inc.

Recently, operational costs for the heat treating industry have risen - substantially driven by escalating energy costs and skyrocketing nickel prices. Energy prices, which once represented less than 12% of typical operating costs, now often consume 20% or more of the operational budget. It has been suggested that equipping gas-fired furnaces with sensor and control systems that optimize the fuel-to-air ratio could lead to dramatic energy savings. This session will share the latest developments for control systems with cost-effective alternatives being presented.

Tuesday, October 21

TRACK 5—Nitriding

8:00 am

Practical Methods to Quality Nitriding

Presented by Craig Sytsma – Eltro Services, Inc.

This presentation will feature key solutions to practical methods to nitriding including cleanliness and methods to clean, part loading for maximum efficiency, how to run multiple treatments of parts to maximize loads, current relationships between temperature and pressure, energy input vs. energy output and adequate and efficient treating method programs.

9:30 am

Processing Economics and Reduction of NH₃ consumption Through Controlled Gas Nitriding

Presented by Jack Kalucki – Nitrex Metal, Inc.

Controlled nitriding and nitrocarburizing are two ways to reduce energy and gas consumption leading to lower energy costs. This process control technology generates optimal nitrogen concentrations, eliminating brittleness and controlling white layer. Since controlled nitriding reproduces results, time is cut to meet specifications. This presentation shows how controls lead to concrete cost reductions and a "greener" process.

Wednesday, October 22

TRACK 1—Induction

8:00 am

Innovative Induction Technologies

Presented by Dr. Valery Rudnev – Inductoheat

The latest innovations in induction heating will be discussed, including simple solutions for everyday induction heat treating problems, novel approaches to induction heat treating of critical automotive components, including spiral, hypoid and bevel gears, crankshafts, camshafts and others as well as innovations in induction heating of oil industry tubular goods.

9:30 am

Advances in Induction Brazing

Presented by Justin Mortimer – Radyne Corporation

Induction brazing is becoming a key element in one piece material flow and the integration of induction brazing into the modular manufacturing cells. Enhancement in these areas has resulted in a great potential for induction brazing to be utilized more effectively and across a broader spectrum of industries. The discussion will cover an introduction to induction brazing systems including advantages and disadvantages with respect to traditional brazing techniques and how they apply to different products and how to determine and design a system that is effective and efficient. This session will also cover unusual and unique induction heating resolutions to brazing requirements including recently developed atmosphere containment techniques.

TRACK 2—Vacuum Technologies

8:00 am

Manage Vacuum Furnaces for Maximized Profitability & Productivity

Presented by Robert Huckins – G-M Enterprises

Optimizing vacuum furnace operation for maximized profitability and productivity can be a challenge today. Customers' quality demands require strong attention to the right process control, correct operator and maintenance procedures to yield the best quality part, as determined by the customer. These "proper" practices cost you, the heat treater, time and money. If the right methods are too expensive for the net cost to run the part, profits will be lost. In this presentation we will cover the designs in a vacuum furnace & management practices that help maximize profitability & productivity.

9:30 am

Improving LPC and HPGQ Quality via Advanced Control Systems

Dr. Klaus Loeser – ALD-Holcroft

A technical presentation discussing quality improvements via advanced control systems developed and deployed in the automotive drivetrain processing industry. This session will discuss vacuum carburizing via recipe operated controls, recipes generated by simulation software (VC-Sim), recipe development during pre-production runs and carburizing samples used for quality control. The session will also cover important process parameters controlled during process including temperature, boost/diffuse cycle determination, carburizing gas flow and process pressure.

Wednesday, October 22

TRACK 3—Heat Treat Plant Systems

8:00 am

Rule Your Shop and Market with REAL Shop Floor Technology

Presented by Todd Wenzel, MCSD – Throughput Consulting, Inc.

Relentless customer phone calls, searching the shop looking for orders, unnecessary re-temperers, scrapped parts, hours spent manually updating furnace logs, shop and office communication breakdowns, poor quality consistency, calibration schedules ignored, orders not ready for shipping... Find out how to eliminate these and other challenges from your shop.

9:30 am

Selecting and Properly Specifying a Cooling System For Your New Furnace

Presented by Bruce Williams – HydroThrift Corp.

This session will go through the process of correctly selecting and specifying a cooling system for a furnace. The discussion will review the types of cooling systems normally used on furnaces along with their strengths and weaknesses, the engineering requirements and terms to properly develop a cooling system quote, and emergency back-up systems to provide cooling in case of power loss. You will learn useful information to properly specify and employ furnace cooling systems and why cooling systems should not be an afterthought to the furnace purchase.

TRACK 4—Atmosphere Carburizing

8:00 am

Beta-Control in Carburizing - A New Approach to Cutting Heat Treating Costs

Presented by Michael Winter – Process Electronic GmbH

This presentation will demonstrate that deploying Beta-Control in combination with a diffusion controlled recipe can cut carrier gas costs by up to 50 percent in gaseous carburizing processes, reduce process time by 5-20 percent, and similarly minimize negative effects such as surface oxidation (intergranular).

9:30 am

Understand Atmosphere In Carburizing Applications Using Simulation and Real-Time Carbon Diffusion

Presented by Stephen Thompson & Jim Oakes - Super Systems, Inc.

In gas carburizing, the source of carbon is a carbon-rich furnace atmosphere produced either from gaseous hydrocarbons, for example, methane (CH₄), propane (C₃H₈), and butane (C₄H₁₀), or from vaporized hydrocarbon liquids. Using theoretical steps with anticipated process variable inputs, the prediction of the carbon available to the steel surface and diffusion can be simulated. Also inputs captured during a real-time run can predict the carbon build up in a part for a selected load. This session will cover the basic principals of atmosphere carburizing including sensor and control technology. We will look at information using 3-gas analysis versus oxygen probes and review what an atmosphere would look like during a carburizing run. See how infrared analysis, dew point and oxygen probe technology can be used to provide the same information. We will review real world scenarios with actual data that compares simulation versus calculated carbon transfer and diffusion against met lab results. We will also compare the same run in different furnaces to see the effects that variables have on the end result.

Wednesday, October 22

TRACK 5—Vacuum Surface Treatments

8:00 am

New Vacuum Gas Nitriding Furnace

Presented by Don Jordan – Solar Atmospheres, Inc.

Vacuum processing produces an extremely pure starting atmosphere for nitriding, eliminating the need for nitrogen purging, and provides excellent thermal and atmosphere uniformity. Owing to these highly controlled processing conditions, modern-day instrumentation can precisely run the nitriding process through maintaining the requisite nitriding potential. Fully-automated programmable cycles provide the highest quality product, including controlling “white layer.” The low thermal mass graphite hot zone allows rapid heat-up and cool-down, the latter accentuated by circulating nitrogen gas across a water cooled heat exchanger. Processing is considerably quicker and more economical than the traditional retort method. The horizontal, front-loading furnace design accommodates work loads up to 2500 pounds.

9:30 am

Modeling Vacuum Carburizing Cycles

Presented by Maciej Korecki – Seco/Warwick Corp.

Modeling vacuum carburizing cycles prior to actual furnace runs saves users both time and money by enabling them to pre-test and configure the cycle