



## Technical Education Sessions

### OCTOBER 15 – EMERGING TECHNOLOGIES 1 ROOM 210

**TIME:** 8:00 am – 8:35 am  
**TITLE:** Dry Operating Vacuum Installations to Support Sustainability Initiatives  
**PRESENTER:** Norbert Palenstijn – Leybold USA, Inc.

The global shift towards sustainable manufacturing practices has also become a driver in the heat treat industry. The presentation underscores the importance of adopting dry vacuum systems in lieu of oil-flooded systems to enhance efficiency, sustainability, and environmental stewardship in industrial processes.

#### Key Take a Ways:

- The global shift towards sustainable manufacturing practices has also become a driver in the heat treat industry.
- The significance of vacuum heat treatment across industries.
- The pivotal role of dry operating vacuum installations in heat treatment furnaces and the benefits of modern dry vacuum pumps over traditional oil-flooded systems.
- Overall, it underscores the importance of adopting dry vacuum systems to enhance efficiency, sustainability, and environmental stewardship in industrial processes.

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**TIME:** 8:50 am – 9:25 am  
**TITLE:** Recent Advances in Heat Treatment Within Metal Additive Manufacturing  
**PRESENTER:** Thomas L. Christiansen – Center for Heat Treating Excellence (CHTE)

The presentation covers new aspects of heat treatment related to metal additive manufacturing and is based on the presenter's most recent research. This includes various examples spanning from high carbon "Damascus" steel to titanium alloys. It is showcased that tailored heat treatment can result in new properties in AM parts.

#### Key Take a Ways:

- Metal additive manufacturing (AM) can result in highly unorthodox microstructures which require unorthodox heat treatment strategies!
  - Heat treatment is pivotal for the performance of AM products.
  - High carbon steels can be fabricated by AM, but special heat treatment procedures are required.
  - Heat treatment combined with AM can be used for making ultra-high strength stainless "Damascus" steel.
  - Atmosphere control is important in heat treatment of most AM parts.
  - New processes such as high temperature solution nitriding (HTSN) can be highly relevant for AM stainless steel.
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**TIME:** 9:40 am – 10:15 am  
**TITLE:** The Processing of High-Temperature Materials: “Wonder Coatings” in Aerospace, Energy & Semiconductors  
**PRESENTER:** Thomas Palamides/Sylvain Bentivegna – PVA TePla MPA Industrie

High-temp coatings (ie. SiC, SiN...) in industry are on the rise as engineers seek higher performance materials. Commercial adoption is now driven by tight tolerances in process engineering and the safe handling of complex chemistries. Hypersonics in aerospace. Nuclear reactor cores and fuel coatings in energy. Thermal coatings in semiconductors.

**Key Take a Ways:**

- The talk will begin with a general educational exploration of how chemical processes are used to grow ceramic substrates.
- How and why various types of materials coatings are applied.
- Industry applications will be highlighted.
- Case studies and real-world examples may be showcased.
- Emphasis will be places on safe handling of materials.

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**TIME:** 10:30 am – 11:05 am  
**TITLE:** Vacuum Carburizing IS Carburizing At Its Best!  
**PRESENTER:** Dennis Beauchesne - ECM USA, Inc.

It is common knowledge that fundamentals of the heat treat industry have not changed much over the last 50 years – but what about equipment and technology? At the forefront of heat treat innovation, let’s discuss vacuum carburizing and how it dominates both small batch processing and high-volume captive operations.

**Key Take a Ways:**

- Understanding vacuum carburizing through examples/comparisons.
- Understanding options for processes/processing methods, gases used and results.
- Understanding capacity control using flexible modular systems.
- Understanding vacuum carburizing and environmental regulations (reduction of CO<sub>2</sub> furnace emissions).



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# OCTOBER 15 – FURNACE EQUIPMENT & MAINTENANCE 1 – ROOM 212

**TIME:** 8:00 am – 8:35 am  
**TITLE:** Cleaning Dirty Quench Oils  
**PRESENTER:** Greg Steiger - Idemitsu

In this presentation, we will compare the use of bag filtration versus centrifuge filtration for contaminated quench oil. We will also compare both methods of filtration on a clean quench oil.

## Key Take a Ways:

- How does quench oil become contaminated.
  - What types of filtration are available to remove contamination from a quench oil.
  - Mechanisms of filtration equipment.
  - Recommendations on cleaning a quench oil.
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**TIME:** 8:50 am – 9:25 am  
**TITLE:** Reducing Your Carbon Footprint with Improved Furnace Linings  
**PRESENTER:** Mark Rhoa – Chiz Bros

With the increased focus on reducing a company's carbon footprint. This presentation will focus on electrically heated furnaces linings and their benefits.

## Key Take a Ways:

- The benefits of a ceramic fiber lined furnaces with electric elements.
  - How a furnace system like this is engineered for specific applications.
  - We will also discuss the following other ways to reduce emissions:
  - Improvements in thermally efficient products.
  - Maintenance best practices.
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**TIME:** 9:40 am – 10:15 am  
**TITLE:** Tube-Type Advanced Ultraviolet Flame Detectors  
**PRESENTER:** Tosh Ueda – Azbil North America, Inc.

Shutdowns during heat-treat operations are costly and painful. As a manufacturer of flame safety control products, we will cover the types, principles, and characteristics of available flame detectors and how the tube-type detectors are manufactured. We will also discuss responses to the unavoidable breakdown of the flame detectors.

## Key Take a Ways:

- Flame detection type, detection principles, and characteristics.
  - Tube-type flame detection mechanism and its manufacturing process.
  - Flame detector breakdowns and new enhancements that mitigate these problems.
  - Required function/specification of flame detector in the industrial furnace market.
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**TIME:** 10:30 am – 11:05 am  
**TITLE:** Valve Train Fundamentals  
**PRESENTER:** Robert Sanderson – Rockford Combustion

Learn valve train fundamentals, fuel train components, valve proving systems, and more. Get hands-on with press indicators, control valves, and grasp pressure drop essentials. Elevate your expertise in just one session!

**Key Take a Ways:**

- Valve Train Fundamentals
- Components of a fuel train and their functions
- Valve Proving Systems: Understanding and application
- Vent Valves: Importance and operation
- Press Indicators: Practical insights
- Control Valves: Optimization techniques
- Test Ports: Utilization and significance
- Grasping Pressure Drop essentials
- Sizing rules of thumb for efficient combustion systems



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# OCTOBER 15 – HEAT TREAT BUSINESS 4.0 & DIGITAL TRANSFORMATION – ROOM 220

**TIME:** 8:00 am – 8:35 am  
**TITLE:** Advancing Your Career in Heat Treating - Creating Value through Industry Involvement  
**PRESENTER:** Heather Falcone – Thermal-Vac Technology, Inc.

Unlock Your Potential: Elevate your Heat Treat Career! Join our exclusive session on leveraging industry involvement to advance your expertise and bring value to your company. Learn from seasoned professionals and gain insider insights. Take charge of your career trajectory and become a leader in the world of heat treatment.

## Key Take a Ways:

- Why get involved in the industry?
- Where to start?
- The structure of the major industry opportunities, their importance, and how to access them.
- AMEC, NADCAP, CQI-9, ASTM, AWS/AMS, MTI leadership, YES training, MTI Academy, MTI technical committees.
- Business case to present to owners and bosses.
- Ensuring you provide value, rules of engagement and expectations.
- Ensuring you bring back value to your company, what a good report-out looks like.
- Building your network and the value you provide to your network.
- Next steps.

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**TIME:** 8:50 am – 9:25 am  
**TITLE:** How to Reduce Labor Costs Through Furnace Optimization and Automation  
**PRESENTER:** Matt Clinite – IPSEN

A presentation on ways to optimize your furnace to improve throughput and reduce labor costs associated with running heat treat furnaces.

## Key Take a Ways:

- Automate loading of furnaces
  - Automate racking of parts
  - Automate sequence of furnace events
  - SCADA systems to consolidate recipe databases
  - Automate report generation
  - Optimize furnace recipes for reduced cycle times
  - Automation of pre-post heat treatment processes
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**TIME:** 9:40 am – 10:15 am  
**TITLE:** Smart Heat Treatment: Industry 4.0 Innovations for Environmental and Energy Efficiency  
**PRESENTER:** Peter Sherwin – Watlow

This talk dives into sustainable heat treatment, blending Industry 4.0 and the thermal loop (electric heaters, sensors, controls, and data management). It highlights recent innovations to boost energy efficiency and sustainability in metal processing, marrying advanced thermal management with digital progress.

**Key Take a Ways:**

- The Significance of Industry 4.0 in Heat Treatment: Understanding how digital transformation enhances sustainability and operational efficiency.
- Components of the Thermal Loop: Insight into how electric heaters, sensors, controls, and data management systems work together to optimize thermal processes.
- Benefits of Advanced Thermal Technologies: Examples of energy savings and improved process control through innovations by Watlow and Eurotherm.
- Real-World Applications: Case studies demonstrating the effective implementation and results of these technologies in metal processing.
- Strategies for Compliance and Sustainability: How integrating these technologies helps meet environmental regulations and achieve sustainability goals in manufacturing.

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**TIME:** 10:30 am – 11:05 am  
**TITLE:** The Evolving Economic and Environmental Outlook and How to Choose Heat Treat Technology  
**PRESENTER:** Dave Wolfe – ECM USA, Inc.

The future of heat treating is strong with the ability to adapt to evolving economic and environmental standards, but some heat treaters seek more insight into available equipment to meet these new requirements. This paper will review upcoming regulations/part requirements, and discuss existing technology, available upgrades, and new equipment.

**Key Take a Ways:**

- Understanding what furnaces and technology are available.
- Understanding new regulations when considering a new furnace.
- Understanding the emissions from furnace processes.
- Understanding robotic or advanced automation in relation to heat treating.



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# OCTOBER 15 – OPERATIONAL EFFICIENCIES

## ROOM 222

**TIME:** 8:00 am – 8:35 am  
**TITLE:** Advanced Predictive Maintenance Strategies for Vacuum Furnace Efficiency and Uptime  
**PRESENTER:** Aymeric Goldsteinas – IPSEN

Discover how cutting-edge predictive maintenance software is meeting consumer demand for enhanced efficiency and reduced downtime in heat-treating operations. Explore the latest advancements in machine learning, which are resulting in better data accuracy for diagnostics and troubleshooting and driving developments like anomaly detection and automated parts ordering and service scheduling.

### Key Take a Ways:

- AI technology is increasing efficiency in heat-treating operations.
  - Predictive maintenance software is incorporating machine learning and anomaly detection to minimize downtime.
  - Advanced part detection applications will streamline and automate the ordering process and service scheduling.
  - They can incorporate strategies for smart manufacturing into their own factories.
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**TIME:** 8:50 am – 9:25 am  
**TITLE:** The Impact of Oil Quenching – A Look at the Carbon Footprint and Cost of Vacuum vs. Atmosphere Processing  
**PRESENTER:** Bryan Stern – Gasbarre Thermal Processing Systems

This presentation will review a case study comparing energy consumption, operating cost, and emissions between a gas-fired atmosphere integral oil quench furnace and an electric batch vacuum oil quenching furnace.

### Key Take a Ways:

- A case study comparison between a gas fired atmosphere and electric vacuum oil quench furnace running a similar workload and process
  - A summary of the two pieces of equipment, their specifications, similarities, and differences
  - An overview of the workload and process used for the comparison
  - A brief outline of the information sources and methodology used to calculate the results
  - A general introduction to carbon emissions terminology such as scopes and emissions factors
  - A review of the results of the comparison for energy consumption, operating cost, and equivalent carbon emissions for each piece of equipment
  - An understanding of how some key variables such as burner tuning, energy source, gas infrastructure, water systems, location, and equipment configuration can impact the results and what to focus on when considering the choice between atmosphere and vacuum equipment
  - A summary of takeaways from the comparison and resulting analysis
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**TIME:** 9:40 am – 10:15 am  
**TITLE:** Efficient Furnace Power Solutions  
**PRESENTER:** Brian Turner – RoMan Manufacturing

Explore the critical role of advanced power distribution systems in optimizing vacuum furnace performance. Our presentation delves into the latest control technologies—VRT, SCR, and IGBT—and their impact on energy efficiency, load management, and overall furnace operation, offering practical insights for improving heat treatment processes.

**Key Take a Ways:**

- Understanding the critical components of vacuum furnace power distribution systems.
  - Comparing VRT, SCR, and IGBT technologies for furnace power control.
  - The impact of load configurations on energy efficiency and operational costs.
  - Best practices for minimizing disturbances to the utility grid.
  - Practical insights for improving furnace performance and heat treatment quality.
  - The role of heating elements, electrical feedthroughs, and conductors in achieving precise temperature control.
  - How to select the right power control technology based on specific heat treatment applications.
  - Strategies for optimizing power factor and reducing energy consumption in industrial settings.
  - The benefits of close coupling the power system to furnace feedthroughs for improved efficiency.
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**TIME:** 10:30 am – 11:05 am  
**TITLE:** What is Stoichiometric Combustion and Why is it Important?  
**PRESENTER:** Roy W. Hardy – PSENERGY, LLC

Heat treated parts are often processed through gas-fired furnaces. In those cases, a heat treaters' business performance is dependent on the furnace's combustion system performance. This presentation explores the impact, on a furnace's performance, of maintaining Stoichiometric combustion. Includes case studies to illustrate the variability of combustion systems.

**Key Take a Ways:**

- What is combustion?
- What is Stoichiometric combustion?
- Why is Stoichiometric combustion important?
- Impact on Furnace Performance of "Rich" Combustion
- Impact on Furnace Performance of "Lean" Combustion
- What is the industry standard for maintaining Proper Combustion?
- What are the results of the industry standard?
- Is there a better way to maintain Proper Combustion?



# OCTOBER 15 – PROCESS ADVANCEMENTS 1

## ROOM 224

**TIME:** 8:00 am – 8:35 am  
**TITLE:** Impact of Ferritic Nitrocarburizing and Different Combinations of White Layers and Post-Oxidations on the Corrosion Resistance of Grey Cast Irons  
**PRESENTER:** Jack Kalucki – Nitrex Metal, Inc.

Explore how ferritic nitrocarburizing and various white layer combinations enhance corrosion resistance of grey cast irons. We also examine properties such as appearance, roughness, and hardness. By comparing different machining methods, carbon contents, and post-oxidation media, we reveal optimal conditions for mitigating corrosion, crucial for applications such as brake rotors.

### Key Take a Ways:

- Discover the effectiveness of ferritic nitrocarburizing and diverse white layer combinations in enhancing the corrosion resistance of grey cast irons.
- Understand how variations in white layer thickness, porosity, and post-oxidized layer thickness contribute to optimizing corrosion resistance.
- Gain insights into mitigating corrosion mechanisms such as graphitic and pitting corrosion, particularly relevant for applications like brake rotors.
- Explore the impact of different machining methods and carbon contents on corrosion resistance.
- Learn about the efficacy of different post-oxidation media, including N<sub>2</sub>O, CO<sub>2</sub>, air, and steam, in enhancing corrosion resistance.

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**TIME:** 8:50 am – 9:25 am  
**TITLE:** Is Low Pressure Carbonitriding a Practical Hardening Option?  
**PRESENTER:** Don Marteeny – SECO/VACUUM Technologies, LLC

Carbonitriding is a case hardening process that provides surface layers with superior wear resistance in steels with limited hardenability. As a low carbon emissions alternative to atmospheric carbonitriding, low pressure carbonitriding was investigated and a recipe optimized for common steels in a case study which will be presented and discussed.

### Key Take a Ways:

- Low pressure carbonitriding is a variation of low pressure carburizing that can serve as a low carbon alternative to atmospheric carbonitriding.
- Recipe development is a key challenge in the transition from atmospheric to low pressure carbonitriding.
- Gases, time, temperature, and furnace equipment all play a key role in determining the successful outcome of low pressure carbonitriding.



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**TIME:** 9:40 am – 10:15 am  
**TITLE:** Modern Quenching: High Convection Quench  
**PRESENTER:** Noah Kantor/Thomas L. Christiansen – Center for Heat Treating Excellence (CHTE)

The presentation describes fundamentals of quenching and how they relate to final properties of heat-treated steel components. Intensive quenching (IQ) and high-pressure gas quenching (HPGQ) are discussed and current research with practical industrial applications. IQ and HPGQ are compared to classical quenching. Mechanical property optimization with these methods is demonstrated.

**Key Take a Ways:**

- Quenching remains an integral component of heat-treating steel substrates.
- “Non-traditional” quenching methods such as IQ and HPGQ can provide considerable benefits to part performance over standard methods.
- By using rapid quench, various pitfalls associated with typical quenching can be mitigated.
- Minimized scrap or reworked material associated with: part distortion or out of spec, non-uniform hardened case, unintended through hardening.
- IQ can potentially be used as a more sustainable and cost-effective substitute to carburizing.
- Post processing such as machining and secondary heat treatments can be minimized with both IQ and HPGQ.
- Specific optimization and tailoring of microstructural and resulting mechanical properties can be determined.

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**TIME:** 10:30 am – 11:05 am  
**TITLE:** The Canary in the Furnace: Ceramic Disks Give Early Alerts to Temperature Changes in Heat Treatment Furnaces  
**PRESENTER:** Tom McInerney – Orton Ceramic Foundation

The question in many heat treaters’ minds is, “Why would I want more documentation on my furnaces?” Shrinkage devices can be the early warning sign that further temperature monitoring is necessary.

**Key Take a Ways:**

- Straight forward, cost-effective method to determine process temperatures without the use of wires or electronics.
- How do they work?
- Verify furnace uniformity and reproducibility of thermal processes.
- Digitize and record the thermal process by using a digital micrometer to measure the final dimension and determine the temperature equivalent.
- Can be used for the sintering, brazing, and heat treating of metals (ferrous and non-ferrous) but can also be used in a variety of applications, including single/fast firing of tiles and sintering dental zirconia.
- Possible to monitor from 850C to 1750C.



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# OCTOBER 16 – EMERGING TECHNOLOGIES 2 ROOM 210

**TIME:** 8:00 am – 8:35 am  
**TITLE:** Enhancing Vacuum Carburizing Efficiency: A Case Study of Solvent Cleaning in Airtight Degreaser at Mercury Marine  
**PRESENTER:** Stefan Lukowski – SAFECHEM

The presentation explores how Mercury Marine, leading manufacturer of marine propulsion, transitioned from atmospheric carburizing to vacuum carburizing, and how in doing so, it has also replaced aqueous spray washer with solvent cleaning in an airtight degreaser in order to meet the stringent cleanliness standards required for successful vacuum carburizing.

### Key Take a Ways:

- The cleanliness requirements for successful vacuum carburizing.
- Why solvent cleaning in an airtight degreaser can significantly enhance vacuum carburizing efficiency.
- The working mechanism of an enclosed (airless) cleaning system.
- The unique properties of modified alcohol solvents.
- How solvent cleaning enables quality and consistent cleaning results as well as the highest safety and sustainability standards.
- The advantages of solvent cleaning compared to aqueous cleaning.

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**TIME:** 8:50 am – 9:25 am  
**TITLE:** Application of Vacuum Sintering and Hot Isostatic Pressing Sintering for Tungsten Carbide Production  
**PRESENTER:** Giorgio Valsecchi – TAV Vacuum Furnaces

Cemented carbide is a popular material to produce tools and applications requiring high hardness coupled with high toughness. In this presentation, the processes and equipment used to manufacture such material will be discussed, with a focus on vacuum furnaces and HIP furnaces used for sintering of cemented carbide.

### Key Take a Ways:

- Understand the fundamentals of the sintering process for tungsten carbide.
- Differences between vacuum sintering and sinter-HIP for such materials, in terms of equipment, applications, and expected properties of the parts.



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**TIME:** 9:40 am – 10:15 am  
**TITLE:** Quintus Purus: Development of Clean HIP Processing  
**PRESENTER:** Chad Beamer – Quintus Technologies, LLC

Quintus has continued the development of High-Pressure Heat Treatment to now also include functionality for clean-HIPing. This strategy utilizes industry best practices and an automated system bakeout routine for heat treatments of oxygen sensitive alloys to make sure the basics is in place for minimizing oxidation during the HIP process.

**Key Take a Ways:**

- Describe the challenges present with HIP processing making it difficult to process AM parts free of discoloration and oxidation.
- List the materials and applications most at risk for surface oxidation and the reasons to avoid it such as mechanical reliability, corrosion performance, inconsistent chemical milling, and visual appearance.
- Define the Purus/Clean HIP strategy as it relates to addressing the root causes to avoid oxidation.



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# OCTOBER 16 – FURNACE EQUIPMENT & MAINTENANCE 2 ROOM 212

**TIME:** 8:00 am – 8:35 am  
**TITLE:** Flexible Gas Burner Technology: Preparing for Varying Fuel Compositions  
**PRESENTER:** Steven R. Mickey – WS Thermal Process Technology, Inc.

This presentation will discuss modern burner and radiant tube technology for industrial heating applications. It will discuss how to achieve high efficiency and low NOx emissions while providing a solution for the use of green fuels such as hydrogen in particular.

## Key Take a Ways:

- Burner and Radiant Tube Types
- Efficiency vs. NOx Emissions
- Flameless Combustion
- Green Fuels and varying fuel compositions
- Hydrogen Combustion

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**TIME:** 8:50 am – 9:25 am  
**TITLE:** The Future of Vacuum Oil Quenching  
**PRESENTER:** Bob Hill – Solar Atmospheres of Western PA  
Trevor Jones – Solar Manufacturing

Despite decades of relentless innovation, the constraints of high-pressure gas quenching have become increasingly evident. Even with the utilization of specialized inert gas blends and heightened gas pressures, the gas cooling efficacy compared to liquid quenchant cooling particularly for heavier cross sections has its limitations.

## Key Take a Ways:

- Learn about the metallurgical advantages of this furnace.
- Understand how this furnace can enhance production efficiencies.
- Learn how to enhance the health and safety of all employees.
- Learn how to keep their plants free from fires and explosions for the future.
- Be good stewards for our environment and the world.



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**TIME:** 9:40 am – 10:15 am  
**TITLE:** Understanding the Cooling Curve Test  
**PRESENTER:** D. Scott MacKenzie – Quaker Houghton

In heat treating, the cooling curve test is often used as a tool to compare quenchants, or as a method to insure that the quenchant being used is suitable for continued use. Understanding the cooling curve test, can insure that the quenchant used will satisfy current requirements.

**Key Take a Ways:**

- Understanding the cooling curve test.
- Understanding the influence of different variables on the cooling curve test.
- Understanding when deviations are critical.
- Applications of the cooling curve test.



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# OCTOBER 16 – ENERGY & GASSES ROOM 220

**TIME:** 8:00 am - 8:35 am  
**TITLE:** Ensure Reliable Atmosphere Supply with Onsite Generation  
**PRESENTER:** David Wolff – Nel Hydrogen

Metal thermal processing atmospheres provide critical protection for furnace loads. If the right atmosphere is not available, your production stops. With the supply of delivered liquified and compressed nitrogen and hydrogen gases lagging demand, on-site generation provides critical price stabilization and supply assurance.

## Key Take a Ways:

- What are supply options for atmosphere gases.
- What challenges are affecting delivered gases supplies.
- What options exist to overcome delivered gases challenges?
- What are advantages of generated gases, and what is involved in switching from delivered to generated gases?
- How will generating hydrogen and nitrogen save users money, both initially, and over time.
- How to learn more about making your own atmosphere gases?
- Can I use onsite gas generation as a means to improve my plant environmental footprint?
- How to implement furnace atmosphere generation without a significant capital expense.

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**TIME:** 8:50 am – 9:25 am  
**TITLE:** Mixing and Control of Hydrogen Applications  
**PRESENTER:** Matthias Rieken – Honeywell Thermal Solutions

The production methods and combustion characteristics of hydrogen are widely known, but mixing and safe control can be a challenge for the user. This presentation will discuss various methods of fuel blending and gas-air mixture control options, to ensure reliable combustion.

## Key Take a Ways:

- Exchange characteristics of natural gas to hydrogen.
- Design aspects of hydrogen pipelines.
- Safety requirements for hydrogen pipelines.
- Natural gas to hydrogen mixing concepts.
- Control concepts for gas mixtures.



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**TIME:** 9:40 am – 10:15 am  
**TITLE:** Power Quality Issues Facing the Industrial Heat Treat Industry  
**PRESENTER:** Tony Busch – Control Concepts, Inc.

Electrification of industry, and the demand for Electric fired furnaces is increasing. Switching to electric from gas will require a better understanding of all utility cost. Power utilization will be very more important and users and equipment manufacturer, will need to be aware of potential utility penalties and regulations.

**Key Take a Ways:**

- Basic understanding of power factor, peak demand, and harmonics.
- Understanding of Point of Common Coupling (PCC).
- Provide understanding of distinct types of power control and their effects on the utility.
- Explain the difference between Phase Angle control and Zero Voltage control.
- How phase angle control affects power factor and harmonics?
- What Impact Zero Voltage control has on Peak demand.
- System Solutions for power factor & harmonic correction.
- Do you always need to add systems correction?
- Provide information on types of power quality correction devices.
- Advantages of Active Harmonic Filters.
- How can reducing harmonics save you money?



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# OCTOBER 16 – QUALITY, COMPLIANCE, MATERIALS - ROOM 222

**TIME:** 8:00 am – 8:35 am  
**TITLE:** 2024 AMS Specification Updates  
**PRESENTER:** Andrew Bassett – Aerospace Testing & Pyrometry, Inc.

The presentation will review the key elements to the array of changes be approved in various AMS specifications including 2750.

**Key Take a Ways:**

- Understand the key elements to the changes approved in various AMS specifications (including 2750).
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**TIME:** 8:50 am – 9:25 am  
**TITLE:** CMMC's Impending Impact On The Metal Treating Industry  
**PRESENTER:** Joe Coleman – Bluestreak Consulting

This presentation will review the importance of obtaining CMMC certification and its implications for metal treaters in the DoD supply chain who fail to comply. If your company deals with Controlled Unclassified Information (CUI) through handling, storing, transmitting, or processing, this presentation contains crucial information for you.

**Key Take a Ways:**

- Understanding CMMC's Significance
  - Enhanced Cybersecurity Protection Standards
  - Safeguarding Sensitive Information
  - Current Requirement Framework
  - Origins in Compliance Challenges
  - Security Control Overview
  - Beyond Cybersecurity
  - C3PAO Certification Process
  - Compliance Validation
  - Mandatory Compliance
  - Collaboration with CMMC Experts
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**TIME:** 9:40 am – 10:15 am  
**TITLE:** Deep Dive Into Top Nadcap Audit Findings  
**PRESENTER:** Doug Shuler – Pyro Consulting

Every year, as changes in specifications and checklists happen, new finding from spec interpretations always happen. In this session you will learn the top Nadcap audit findings that heat treaters are experiencing and the corrective actions being implemented for compliance.

- Attendees will learn how to recognize hydrogen embrittlement in steel components bad on
- Attendees will be introduced to the philosophical branch called epistemology

# OCTOBER 16 – PROCESS ADVANCEMENTS 2

## ROOM 224

**TIME:** 8:00 am – 8:35 am  
**TITLE:** Igniting Innovation: Using Data & AI to Automate a Heat Treat Operation  
**PRESENTER:** Sefi Grossman – Combustion

Learn how to collect and use data to observe, react, and optimize heat treatment processes, seamlessly connecting operations with administration using automation and artificial intelligence. Discover how this integration enhances efficiency, minimizes errors and unlocks new insights for a more efficient heat treatment operation.

### Key Take a Ways:

- Learn the trends & impact of AI in heat treatment.
  - Know in real time where everything is across your entire process.
  - Remove paperwork & go paperless.
  - Predict & overcome downtime automatically.
  - Find anomalies & redundancies in your process.
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**TIME:** 8:50 am – 9:25 am  
**TITLE:** Maximizing Heat Treat Operational Efficiency: Digitize Your Data for Automation  
**PRESENTER:** Sefi Grossman - Combustion

Learn how digitizing your data can transform your day to day operations. Explore the efficiency of entering data once and utilizing it across operations, all anchored by a single central point of truth. Discover how this approach integrated with tools you can deploy can enhance productivity, accuracy and accountability.

### Key Take a Ways:

- Apply accountability & demystify employees.
  - Reduce risk & stress.
  - Become less dependent on human knowledge & capabilities.
  - Eliminate errors.
  - Remove paperwork & go paperless.
  - Start the baseline of digitizing an automated process.
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**TIME:** 9:40 am – 10:15 am  
**TITLE:** The Potential of Networked Process Controllers and Digital Twin in Heat Treatment  
**PRESENTER:** Frank Pietracupa – Nitrex Metals

This presentation is about the possibilities of outsourced model development in contrast to edge computing on the one hand and the possibilities and potentials that the use of digital twins enables in the area of products on the one hand and in relation to processes on the other.

**Key Take a Ways:**

- Process controllers linked to IoT platforms.
- Learning and analytics based on a holistic.
- Execution of complex machine learning processes in a secure and high-performance environment.
- Execution of models on the controllers.
- Digital twins in the area of products and in relation to processes.