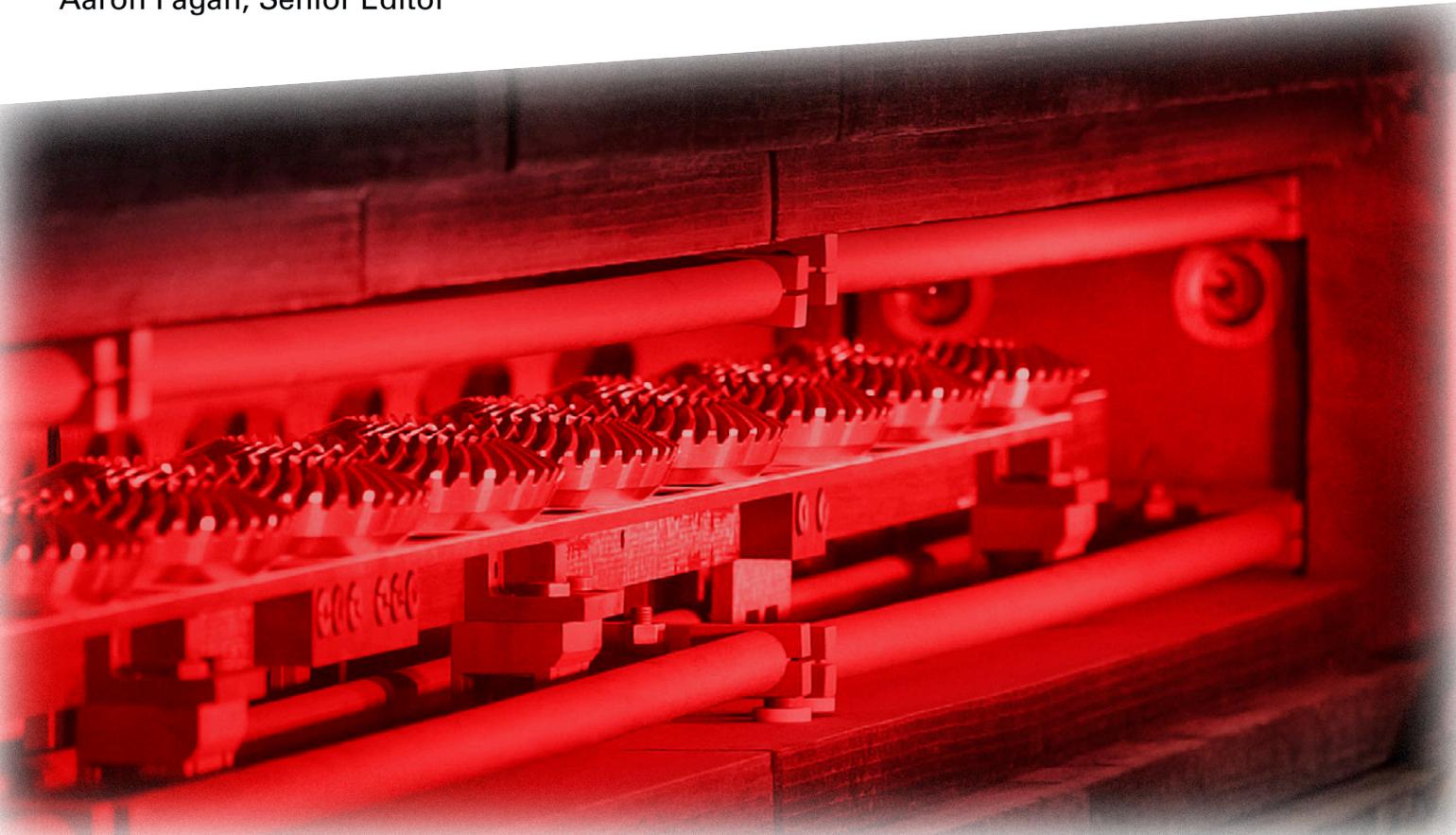


# Feel the Burn

Heat Treat 2023 is right around the corner

Aaron Fagan, Senior Editor



*Credit: SECO/Vacuum*

Heat Treat 2023 is the Heat Treating Society's 32nd conference and expo for heat treating professionals featuring three days of face-to-face networking opportunities with approximately 200 heat treat exhibitors/companies. All the top heat-treating companies will offer the latest research and industry insights during more than 100 technical programs. This year's show includes a VIP-guided industry tour, as well as student/emerging professionals initiatives, including free college student registration, Fluxtrol Student Research Competition, and the ASM Heat Treating Society Strong Bar Student Competition. Heat Treat 2023 is colocated with Motion + Power Technology Expo 2023 with access to additional exhibitors. The event takes place October 17–19, 2023 at Huntington Place in Detroit.

The largest of its kind in North America, the Heat Treat Conference and Expo bridges the gap between research with industry—bringing together heat-treating professionals, materials experts, global innovators, researchers, influencers, and decision-makers from around the globe. Below are a few booth previews along with a sidebar featuring some select networking and educational opportunities to look out for.

# Networking and Educational Opportunities

The show features **100+ technical presentations and networking opportunities**

—(please note that details and times are subject to change)—  
**including the following:**

## Tuesday, October 17

7:00 am–9:00 am

**ASM Women in Engineering  
Breakfast (Joint with IMAT and  
AGMA)**

9:00 am–10:00 am

**Applied Technology / Processes  
and Applications: Energy  
Consumption and Efficiency**

Session Chair: *Mr. Dennis Beauchesne*

**Atmosphere Technology and  
Surface Engineering I**

Session Chair: *Prof. Mei Yang*

**Microstructural Development /  
Characterization I**

Session Chair: *Prof. Robert L. Cryderman*

10:30 am–11:30 am

**Applied Technology / Processes  
and Applications: Quality Control**

**Microstructural Development /  
Characterization II**

Session Chair: *Prof. Robert L. Cryderman*

1:00 pm–1:40 pm

**New Trends in Global Heat  
Treating**

1:00 pm–2:20 pm

**“Green” Heat Treating / Low  
Carbon I**

**“Green” Heat Treating / Low  
Carbon II**

**Vacuum Processes and  
Technology**

2:30 pm–4:30 pm

**Keynote, Dr. Stefanie Tompkins,  
Defense Advanced Research  
Projects Agency (DARPA)**

4:00 PM–5:30 PM

**FLUXTROL STUDENT  
RESEARCH COMPETITION—  
PHASE 1—POSTER  
PRESENTATIONS**

**HTS STRONG BAR STUDENT  
COMPETITION—PHASE 1—  
POSTER PRESENTATIONS**

Session Chair: *Mr. Robert C. Goldstein*

6:00 pm–9:30 pm

**ASM ANNUAL AWARDS  
RECEPTION AND BANQUET  
(Marriott)**

9:30 pm–11:00 pm

**ASM PRESIDENT’S RECEPTION  
(Marriott)**

## Wednesday, October 18

9:15 am–10:00 am

**Keynote, Dr. Iver Anderson,  
FASM, Ames Laboratory presents  
“Heat Treatment Effects on Sintering  
of Highly Grain-refined Dy-free Nd-Fe-B  
Anisotropic Magnets”**

10:30 am–11:30 am

**FLUXTROL STUDENT  
RESEARCH COMPETITION—  
PHASE 2—ORAL  
PRESENTATIONS**

Session Chair: *Mr. Robert C. Goldstein*

11:45 am–12:30 pm

**HTS STRONG BAR  
COMPETITION—BEND  
TESTING**

1:00 pm–2:40 pm

**Simulation & Modeling I:  
Process Simulation (CFD/FEA)**

Session Chair: *Mr. Andrew L. Banka, PE.*

1:00 pm–3:00 pm

**Materials Durability /  
Mechanical Testing / Non-  
Destructive Testing**

Session Chair: *Mr. Jason Orosz*

**Residual Stress / Panel Session**

Session Chair: *Dr. Lesley D. Frame*

3:30 pm–4:50 pm

**Industry Internet of Things**

Session Chair: *Ms. Trisha Rouse*

**Quenching Technologies I:  
High Pressure**

Session Chair: *Dr. Mohammed Maniruzzaman*

3:30 pm–5:10 pm

**Heat Treating: Induction  
Heat Treating**

Session Chair: *Mr. Robert J. Madeira,  
President*

6:00 pm–9:00 pm

**Networking Event at the  
Waterview Loft**

## Thursday, October 19

9:15 am–10:00 am

**Keynote, Dr. Marvin Barnes,  
NASA presents  
“Ordinary Materials, Extraordinary  
Applications”**

10:30 am–12:10 pm

**Atmosphere Technology  
and Surface Engineering II:  
Nitriding and Cleaning**

Session Chair: *Dr. Olga K. Rowan*

**Quenching Technologies II**

Session Chair: *Mr. David A. Guisbert*

**Simulation & Modeling II:  
Process Simulation (CFD/FEA)**

Session Chair: *Mr. Stefan Habean*

### SECO/Vacuum—Booth 2101

At the ASM Heat Treat Show, SECO/Vacuum will feature technologies for “the future of heat treating”:

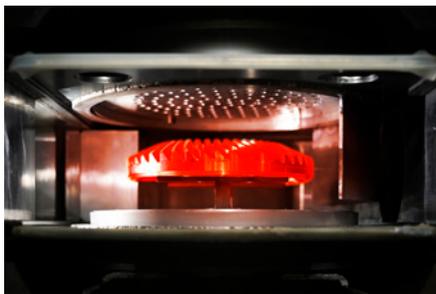
#### Vector Single-Chamber High-Pressure Gas Quench Vacuum Furnace

Vector is SECO/Vacuum’s single-chamber gas quenching vacuum furnace using high-pressure quench (2 to 25 bar) which can be applied to a wide variety of heat-treating processes and applications. It provides important capabilities for producing high uniformity in heat-treated parts, high consistency in workloads, and high speeds in batch processing with low consumption of power and process gases.

#### Casemaster Evolution Multichamber Gas or Oil Quench Vacuum Furnace

SECO/Vacuum offers two configurations of its CaseMaster Evolution. The two-chamber furnace, called D type, is a dual-chamber furnace with one chamber for vacuum heat processing and a second chamber for oil or gas quenching. The three-chamber furnace, called T type, provides the same chambers as the D type plus a third pre-heating (and/or pre-oxidation chamber) which increases productivity through semi-continuous batch processing. In the three-chamber approach SECO/Vacuum’s PreNitLPC process can be added for even higher productivity.

#### 4D Quench Single-Piece Flow Vacuum Furnace



SECO/Vacuum 4D Quench for single-piece quenching with distortion control and prediction.

SECO/Vacuum’s 4D Quench furnace is a vacuum heat treatment solution for single-piece quenching with distortion control and prediction. It is designed to

heat or re-heat products such as gears on a single conveyor deck. It consists of a vacuum heating chamber and a high-pressure nitrogen quench chamber equipped with transportation mechanisms. It enables customers to replace oil quenching with a clean, environmentally friendly, cost-effective nitrogen quenching technology. 4D Quench was designed for those who want to significantly increase the production quality and economy of high-volume gears and power transmission components to produce totally uniform parts in a completely hands-free environment.

#### Pit-LPC Vacuum Furnace



The new SECO/Vacuum Pit-LPC vacuum furnace.

The new Pit-LPC vacuum furnace from SECO/Vacuum is another innovation designed for clean, uniform processing of large or parts requiring deep case depths. As a modern alternative to atmosphere furnaces, the Pit LPC can reduce heat treating costs and improve production while improving the environment by operating in vacuum at higher temperatures than atmosphere furnaces can achieve. The Pit LPC also increases heat treater’s production throughput without purchasing additional equipment, since a single Pit-LPC furnace is equivalent to the capacity of three atmosphere furnaces, and it can be reconfigured to fit into the space of an existing atmosphere furnace. Additionally, a single vacuum furnace provides more capability since it can handle gas carburizing on larger and longer workpieces.

The LPC vacuum Pit furnace is perfect for manufacturers carburizing large or long elements such as gears, bearings, drilling tools and other elements requiring thick case depths and it is a great furnace for companies who want to increase their production capacity without

purchasing additional equipment (1 Pit LPC = 3 atmosphere furnaces) or save space by replacing three machines with one that fits into the same space as one.

[secovacusa.com](http://secovacusa.com)

#### AFC/Holcroft—Booth 2219

Thermal processing is critical to producing the materials of modern life, yet they are unavoidably energy-intensive. But that doesn’t mean that heat treatment systems are impervious to ways to reduce their environmental impact. In fact, there are already many climate-aware improvements to traditional heat treatment systems that can be implemented, today. AFC-Holcroft is continually developing solutions to lessen the heat treatment carbon footprint and offers many forward-thinking ways to help safeguard the environment. In addition to their newly renovated manufacturing and offices reducing their own footprint—their Green Equipment Initiatives encompass options that can offer specific benefits towards energy savings, operating efficiencies, environmental safeguards, reduced carbon footprint, and general climate protection.

When it comes to the manufacturing of complex components such as gears, controlling distortion is a difficult, but necessary consideration for reducing the post-heat treat grinding process. There are opportunities to use various heat-treating processes to help reduce distortion and thereby reduce the overall grinding time, resulting in lower manufacturing costs and improvements in overall quality—but where are those opportunities? What is the best choice for your gear manufacturing operation?



AFC Holcroft UBQA (Universal Batch Quench-Austemper) System.

AFC-Holcroft uses molten salt during the quench portion of the heat-treating process in their UBQA (Universal Batch

Quench—Austemper) System, which can be an effective, safe, and environmentally friendly solution to help overcome the problem of part distortion resulting in the quench process.

Salt quench systems are playing a major role in the next generation of IC powertrains, the xEV market, and industrial power transmission systems worldwide. AFC-Holcroft's proven designs have been adopted by major multinational corporations across the globe, with greater acceptance than ever before.

[afc-holcroft.com](http://afc-holcroft.com)

### Gasbarre Thermal Processing Systems—Booth 1928

Gasbarre Thermal Processing Systems' continuous vacuum furnaces utilize the latest in control technology and offer repeatability and modular flexibility to meet the needs of virtually any vacuum heat-treating process. With temperature capabilities up to 2,650°F, they are designed to meet AMS 2750G requirements with uniformity up to Class 2 ( $\pm 10^\circ\text{F}$ ) and instrumentation configuration Types D and E. They can be equipped with oil or gas quenching modules with gas pressure capabilities up to 10 bar, making them ideal for hardening applications. Modular equipment design allows low-pressure carburizing dwell times and index rates to be fine-tuned to meet process and production requirements, optimizing the return on value for your investment.

In addition to their robust design and modular flexibility, Gasbarre's continuous vacuum furnaces offer several unique advantages over other types of vacuum heat treat equipment. Concurrent processing reduces the effective duration of the heat-treating cycle by eliminating work staging and vacuum pumping from floor-to-floor time. The resulting higher throughput allows for smaller load sizes which help overcome challenges with uniformity and repeatability associated with larger workloads required to achieve production rates in batch equipment.

Because heating and cooling are performed in dedicated sections of the furnace, thermal efficiency is dramatically improved over batch-style furnaces where the entire insulation assembly must be heated and cooled every cycle. Similarly, dedicated sections of the furnace reduce



Gasbarre continuous vacuum oil quench.

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process gas requirements for cooling and partial pressure. In addition to reduced utility consumption, the lack of thermal cycling and oxygen exposure dramatically improves the life of refractory consumables within the furnace, reducing maintenance costs and downtime.

Continuous vacuum isn't right for every gear-treating process which is why Gasbarre Thermal Processing Systems designs, manufactures, and services a full line of thermal processing equipment for virtually any process. Gasbarre's offering includes continuous and batch atmosphere and vacuum equipment, serving customers in the automotive, aerospace, industrial equipment, energy, and commercial heat-treating industries.

Gasbarre provides products and services that combine value and design flexibility through knowledge and understanding of your process. For each piece of equipment, Gasbarre takes a 360-degree approach. From sales and applications engineering to equipment design, manufacturing, commissioning, and aftermarket support, Gasbarre's team of engineers, metallurgists, and technicians aims to understand your process from all angles.

[gasbarre.com](http://gasbarre.com)

### Nitrex—Booth 2138

As a respected leader in surface treatment, Nitrex draws upon 40 years of expertise to deliver innovative thermal processing solutions to the gear manufacturing industry. With an extensive portfolio of end-to-end heat treatment solutions and a network of 15 global sites, Nitrex focuses on maximizing results for gear manufacturers and diverse industries alike.

At the forthcoming ASM Heat Treat 2023 exhibition, colocated with Motion and Power, Nitrex will showcase their esteemed thermal processing. From turnkey heat-treating furnace systems and process control solutions to software/digitalization and heat-treating services, they collaborate closely with gear manufacturers worldwide. Their support spans the entire journey—from prototyping to process refinement, low-to-high-volume heat treat orders, and even new installations or retrofit applications. The result is superior quality, bolstering gear manufacturing operations in diverse sectors, such as automotive, aerospace, defense, and mining.

Among their groundbreaking innovations, NITREG gas nitriding technology stands out. A vanguard in controlled gas nitriding, this technology remains a front-runner in surface hardening today. The NITREG-controlled gas nitriding process optimizes gear properties, enhancing tribological characteristics, minimizing distortion, and eliminating post-finishing steps. Beyond its technical prowess, this process champions sustainability, a dual benefit for both efficiency and environmental well-being. Nitrex has further expanded their capabilities with technologies like NITREG-C controlled nitrocarburizing, ONC post-oxidation, and NITREG-S controlled nitriding of stainless steels, offering enhanced wear and corrosion properties and broadening its range of treatable steels.

Additionally, their heat-treat service centers provide Low-Pressure Carburizing for special gears.

Using eco-friendly clean heat treatment technologies, Nitrex nitriding and vacuum furnaces not only ensure the highest standards of sustainable processing but also contribute to a reduced environmental footprint during the treatment of components. Their commitment to efficiency and sustainability is further evident in the UPC-Marathon product lines, which include oxygen probes, process control solutions, flow solutions, and endothermic/exothermic gas production systems. These not only future-proof assets for a longer service life but also optimize resource utilization while meeting the latest quality and safety standards.

Representing the latest in digitalization, QMULUS drives gains for both industry and the environment. As a holistic IoT solution, QMULUS digitizes the heat-treat shop floor, enabling



*Nitrex's solutions bolster gear manufacturing operations in diverse sectors, such as automotive, aerospace, defense, and mining.*

remote management, real-time visibility, and optimized operations and resources through advanced AI and machine learning—achieving a triple-bottom-line impact.

Located at booth number 2138, you can explore how their solutions can bring your manufacturing operations and gear performance to new heights. Don't miss their presentation on "Nitrided White Layer—Formation, Function, Usefulness, Variations, and Challenges: How is this helping Electric Vehicle Engineering?" on Thursday, October 19 at 11:50 am.

[nitrex.com](http://nitrex.com)



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