

New Technology Roll Call

Exhibitors target heat treat advancements at ASM/Gear Expo

Matthew Jaster, Senior Editor

Co-located once again with Gear Expo is Heat Treat 2013, the 27th ASM Heat Treating Society Conference and Exposition. ASM welcomes innovators, influencers and decision makers in the heat treating industry for a mix of education, technology and networking opportunities. Above all else, the exposition floor is an opportunity for gear and heat treat attendees to discuss the technologies that are changing the industry in 2013. *Gear Technology* asked heat treat exhibitors from both show floors (Gear Expo/ASM) to discuss some of the key heat treat products that will be on display in Indianapolis. Many exhibitors will also be presenting educational sessions during the show.

"The ASM Heat Treat/Gear Expo 2013 show will be a great experience for those who visit our booth. They will have the chance to interact with Ipsen in a fun way, and maybe even win some prizes, while learning about our specific offerings in equipment, controls and service, as well as our new product developments and our global support network," says Geoffrey Somary, president and CEO at Ipsen. "We will be featuring some exciting new technologies for gear manufac-



Heat Treat 2013

**27th ASM Heat Treating Society Conference and Exposition
September 16-18, 2013**

Indiana Convention Center, Indianapolis

www.asminternational.org/content/Events/heattreat

The ASM Heat Treating Society Conference and Exposition is once again co-located with AGMA's Gear Expo. This year's show celebrates the 100th anniversary of the ASM Heat Treating Society, which began as the Steel Treaters Club in Detroit.

In addition to a comprehensive technical program, the conference will include three special "Heat Treating Master Series" sessions that will focus on heat treating pioneers whose research transformed heat treating technology. The sessions will include lectures by current experts in the heat treating field on the contributions and impact of past heat treating giants Walter Jominy, Marcus Grossmann and Edwin Northrup.

The technical program runs from September 16-18, but the exhibition hall is open only Tuesday, September 17 (9 a.m. until 6 p.m.) and Wednesday, September 18 (9 a.m. until 5 p.m.). Note that the Gear Expo portion of the exhibition hall is open one additional day— Thursday, September 19.

For more information, visit www.asminternational.org/content/Events/heattreat.

turers and we will have experts available to offer in depth information on those new technologies and product offerings."

These featured technologies cover a vast range of Ipsen's premium vacuum and atmosphere product lines including, but not limited to, the AvaC process for vacuum carburizing with acetylene, ideal for incorporation into their TurboTreater and vacuum oil or

gas quench furnaces, and Atlas integral-quench atmosphere furnace. Additionally, furnaces well-suited for low-pressure carburizing, such as the Turbo2 Treater, will also be represented.

Additionally, at the ASM conference surrounding the show, Ipsen will present two topics of interest to the gear industry entitled "Redefining Quenching Technology" and "Bright Tempering: Achieving High-Quality Appearance During Tempering" where experts will discuss a new set of definitions for gas quenching and describe how to reduce cycle time while increasing uniformity through the use of both vacuum and convection heating, respectively.

Inductoheat, Inc. will again be highlighting the latest advancements in induction heating technology and introducing attendees to the new Statipower IFP (Independent Frequency & Power) power supply.

"Specifics of gear geometry demand a particular process control algorithm of induction hardening. In the past, the process control recipe was limited to an available variation of power and frequency vs. heat time. Recent innovations bring unique ability of novel inverters

to independently control both power and frequency during static hardening or scan hardening operations, which optimizes electromagnetic and thermal conditions at initial, intermittent and final stages of tooth hardening,” says Dr. Valery Rudnev, director of science and technology for Inductoheat.

“As an example the Statipower IFP inverter provides the ability to independently change during heating cycle, the frequency and power. This capability represents the long-awaited dream of commercial induction heat treaters, since it provides the greatest process flexibility. Statipower IFP is a uniquely designed IGBT-type power supply oriented for induction surface hardening applications, allowing independently adjustable frequency via CNC-program in a 5-40 kHz frequency range and power in the range of 10-360 kW. This concept substantially expands heat treat equipment capabilities for processing parts by programming power and/or frequency changes *on the fly*, optimizing hardening gears of different modules with various tooth geometries,” he adds.

On Monday, September 16th, Rudnev will be giving his presentation titled, “Novel User-Friendly Computer Modeling for Induction Heating and Heat Treating.” The presentation number is 34660 and it will take place from 10:30 a.m. to 11:00 a.m. In addition, Robert Madeira, vice president of heat treating, Inductoheat Inc. will be giving his presentation titled, “Induction Hardening

of Steel and Cast Iron Components.” The presentation number is 34661 and it will take place from 9:00 a.m. to 9:30 a.m.

Surface Combustion boasts more than 645 patents and 75 registered trademarks and will be showing off a few of its technical accomplishments during the show. “Surface Combustion offers one of the most complete lines of heat treating equipment for gear manufacturers. This includes vacuum processing, atmosphere processing, carburizing and nitriding, including designs from small batch systems to fully automated high volume

continuous furnace systems,” says John Gottschalk, director engineered products at Surface Combustion, Inc.

Eldec LLC will be featuring new heat treating solutions for gears and shafts. “We are introducing the MIND-M, a compact induction heat treating system that you will want to see for your lean production requirements,” says Mark Davis, sales engineer at Eldec. “The Eldec MIND-M is the compact, *smaller sibling* of the full-featured MIND Modular Induction Hardening System from Eldec. The eldec MIND-M Flexible



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Integrated System is a complete, integrated, lean system for your induction hardening application — or any other induction heat treating process for low-volume parts. The energy source is integrated into the machine base with active coolant and quench system (if needed)."

The MIND-M can be transported "as is," featuring the smallest footprint of any complete system up to 150 kW Medium Frequency (MF) or 30 kW High Frequency (HF). The spacious working area allows for different modules and workholding devices to be freely positioned. This creates flexibility for various work parts and applications.

ALD-Holcroft will be discussing both its ModulTherm and SyncroTherm processes during the show. The ModulTherm allows power consumption to resemble actual production levels instead of full power and SyncroTherm offers one-piece-flow that can keep pace with gear cutting equipment or can be operated as a high speed, small batch furnace. "Holcroft will be providing an 'open tap' each afternoon of the Gear Expo," says Bill Gornicki, VP sales

and marketing for ALD-Holcroft. "We encourage all participants to stop by for a cold beer and open discussion on heat treatment of gears."

Solar Manufacturing will present a full-scale display of its new and improved 2IQ production vacuum furnace. Its innovative design gives fast, powerful quenching with the low resistance and high efficiency gas flow. A 150 hp motor drives a high-speed turbine fan to recirculate the quench gas straight through the water-to-gas heat exchanger and then into the hot zone at high velocity. Tapered graphite gas nozzles are specifically directed at the workload for optimal cooling. The high-tech Solar PowerSave Hot Zone reduces heat loss and operating expenses.

Raytek, a provider of infrared thermometry, recently enhanced its modular MI3 system by adding new communication boxes for integrating the digital temperature sensors into the control level. In addition to Profibus and Modbus units, and a version with four galvanically isolated analog outputs, new options include a robust die-cast zinc housing and 6TE DIN rail housing.

The new Profinet boxes are suitable for time-critical applications as they can transmit data to a higher-level PLC in real time. The Ethernet version features a 64 MB data logger that can store up to 24 days of recorded data at a 1 s saving interval. It supports TCP/IP4 and, based on an integrated HTTP server, provides its own landing page with direct access to the temperature data, as well as product information and manuals via any standard internet browser. A user-friendly control panel and a large LCD display facilitate on-the-spot configuration of functions, such as peak and valley hold, as well as intelligent averaging.

The *Datatem Multidrop* software for remote operation and configuration is available free of charge. The MI3 system entails minimum commissioning costs per mea-



surement point since up to eight sensors can be connected to one communication box. Users can choose freely from the whole MI3 program: all sensors and boxes are compatible. Automatic head detection enables comfortable plug and play. Various spectral models, high data quality, and the wide temperature range from -40 to $1,800^{\circ}\text{C}$ ($3,272^{\circ}\text{F}$) make the MI3 system a solution for many applications, especially in process monitoring. Raytek Corporation will be presenting "Every Plant Needs an Ally" at the Solutions Center at 3:00 p.m. Wednesday, September 18th.

Nitrex Metal Inc. began with a range of gas nitriding technologies but through the years the company has developed other heat treating processes and product lines. R&D efforts in technologies, equipment and process controls include software development, safety measures and the design and implementation of environmental protection equipment. During the ASM show, Jack Kalucki and Dimitri Koshel will present "Influence of Steel Surface Conditions on the Nitrogen Uptake during Gaseous Nitriding Process" from 8:00 – 10:00 a.m. on Tuesday September 17th.

Known for the Internal Quench Furnace with Beaver Ram transfer system, BeaverMatic's product line includes temper furnaces, washers, endothermic gas generators, box furnaces, pit furnaces, continuous roller hearth and pushers, carbottom furnaces, and tip up furnaces.





The equipment is designed and manufactured to meet customer's specific process, throughput, time line, and budget for the aerospace, automotive, agriculture, defense, energy, power transmission, medical, petroleum, and transportation industries.

Today, BeaverMatic's commitment to extensive in-house capabilities assures customers product quality and dependability. BeaverMatic's in-house capabilities start in the design engineering department and continue with layout, bending, cutting welding, assembly and finishing. The latest tooling and fabrication equipment promotes volume in-house production, while preserving attention to such details as removing sharp edges from metal surfaces. Rigid

control over the quality of basic parts, components and assemblies is one of the many advantages that BeaverMatic customers know and appreciate.

BeaverMatic will feature the various Internal Quench Furnace configurations currently available. Known for its reliability since the early 1960s which it was first introduced, this furnace has a unique design concept that focuses on three basic objectives: 1) ease of operation, 2) maximum uptime, and

3) the ability to meet specific customer needs. The company will also feature the original Jack Beavers IQF with Rams as well as the Straight Through Single- and Two-Chamber IQFs and In/Out IQFs with Push-Push Load Transfer Mechanisms.

Partnering Up for Education

The Solutions Center will offer industry presentations throughout the week focusing on real world problem solving



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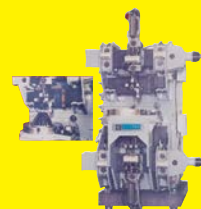
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Vertical 16" faceplate dia. table and horizontal 9" dia. air bearing table with integral motor drive and precision encoder.



Astro Guidance Test Platform

References the north star three axis (Ultradex) index system. System accuracy 0.3 arc second band, PC based control, IEEE-488 interface.



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for specific manufacturing techniques, products and technologies. Topics on the heat treat side include atmosphere troubleshooting, practical applications of heat treat process modeling, flame-hardening in the 21st century, real time carburizing, heat treatment of steel alloys and more. The Technical Program will include topics on brazing, cryogenics, emerging technology, induction heating, nitriding and carburizing, quenching, vacuum technology and equipment innovations, to name a few. (Please note that the presentations and programs are subject to change prior to the show).

Once again, ASM and Gear Expo will offer a joint education course that begins with gear materials in the morning and heat treatment in the afternoon. Additionally, plans have already been confirmed for Gear Expo and Heat Treat to collaborate once again for the 2015 show, according to Jenny Blackford, AGMA director of marketing and communications. "This has been a successful collaboration so far and we'd like to continue to work with the ASM in the future."

Industry presentations throughout the week at the Solution Center will give attendees the opportunity to see the latest manufacturing technologies and techniques from both the heat treat and gear industries.

"I really like the addition of the heat treatment exposition," says Tony Werschky, sales manager and partner for Delta Gear. "The two expos complement each other well and we truly have an interest in expanding our knowledge of the heat treat process. We have many times considered adding heat treatment to our core competency. The majority of our gears are heat treated and the new technology for heat treatment is ever changing." 

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