

ASM Heat Treat Show 2011

Matthew Jaster, Associate Editor

Co-located with Gear Expo once again is the ASM Heat Treating Society's 26th Conference and Exhibition. Here are some of the new products and technologies available to attendees at Heat Treat 2011:

Inductoheat Booth # 1611



Inductoheat provides quality induction heating and heat treating equipment with flexible and innovative systems that offer long-life performance. At Gear Expo/Heat Treat 2011, the company will present its gear hardening systems. Just like gears, induction heating is all about precision. The company's accurately controlled, induction gear hardening systems provide specific metallurgical patterns, minimum shape distortion, increased wear resistance and contact fatigue strength.

Inductoheat offers gear hardening patterns for flank hardening, flank and tooth hardening, hardening of the tooth tip, root hardening, hardening of the entire tooth, profile hardening (uniform and non-uniform) and flank and root hardening. Gears include spur, helical, bevel, hypoid, ring, worm, rack and pinion, planetary gear sets, involute, bearing races, idler, spiral, helical and differential. The company provides

process development, metallurgical analysis, hardness pattern verification, single-coil dual-frequency technology, single-shot, scanning tooth by tooth and a large range of gear and bearing diameters.

Additionally, Inductoheat offers the Single Coil, Dual Frequency Induction Gear Hardening System that can be used for high-volume, single-shot induction hardening of internal wide-face, gear-like components. The company has recently designed and built an induction heating system for medium and large gears that can harden the gear teeth or flanks, along with ball races.

For more information:

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Ipsen, Inc. Booth # 2123/2133

With more than 60 years of thermal processing expertise, Ipsen provides the solutions for energy and cost efficiency, reliable robust equipment, manufacturing and service, aftermarket support, engineered components, retrofits and upgrades, thermal processing and furnace maintenance training. Ipsen's thermal processing



systems can be found in the aerospace, medical, energy, chemical and automotive industries.

The latest innovations from Ipsen include the Titan, an all-new, modular, standardized, skid-mounted heat treating system that is delivered in half the time of competitive furnaces, and is installed in just a few days. The control system supports multiple languages, provides real-time data acquisition and stores up to a thousand recipes. Titan's small footprint, manufacturing versatility, operational simplicity and financial flexibility (purchase, lease or rent) all add up to greater profitability and response time. Ipsen's talented team of engineers was able to create a quality heat treating furnace at an affordable price by developing an all-new design and by standardizing the production process. Titan offers a wide range of sizes, versatility of processes, speed and uniformity, while maintaining cost effective pricing, delivery and operation.

Additionally, the company will be exhibiting its new HybridCarb system. **continued**

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The new HybridCarb from Ipsen is an ultra-efficient gassing system designed to replace endothermic generators and other gassing systems. Its core strength is precision gas control. Instead of burning excess gas off, the process gas is reconditioned and reused, increasing efficiency up to 90 percent. HybridCarb allows for the reduction of more than 40 tons of CO₂ per year—the equivalent of planting 220 trees.

For more information:

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**Sandvik Heating
Technology
Booth # 2118**

Sandvik Materials Technology, of which Kanthal is a brand, is a manufacturer of products based on advanced metallic and ceramic materials. The company's products and services contribute to their customer's productivity, reliability and cost efficiency while reducing their environmental impact in a wide variety of industry segments. Earlier this year, Sandvik launched new furnace rollers made from Kanthal APMT that outlast rollers made from conventional alloys by more than four times. Kanthal APMT, an iron-chromium-aluminum (FeCrAl) alloy, is suitable for high temperature applications such as furnace rollers, used for transporting products that are annealed in air atmosphere. In particular, Kanthal APMT is characterized by a unique combination of high creep strength and excellent resistance to oxidation at high temperatures, critical

for high-performance furnace rollers. Tubes made from Kanthal APMT can withstand temperatures up to 1,250 degrees C (2,280 degrees F).

Consequently, furnace rollers made from Kanthal APMT remain straight and rigid at these temperatures, reducing the tendency to sag and bend—problems commonly associated with conventional metallic tube materials such as nickel-chromium (NiCr) alloys. The superior performance of these rollers boosts productivity, reduces maintenance costs and contributes to a cleaner environment. For traditional rollers, excessive oxidation in standard high-temperature furnaces with open-flame burners limits these rollers' lifespan sometimes to only six to 12 months before reconditioning is required, compared to up to four years with rollers made from Kanthal APMT.

The new rollers require only one maintenance stop instead of two, providing seven to eight days extra production. With a typical production rate of one ton an hour, the steel mill can expect to produce an extra 170 tons a year. The higher reliability also means that costs for large numbers of spare rollers can be eliminated.

Rollers made from Kanthal APMT, together with a new roller design, offer a superior surface that actually improves the quality of the tube products. In contrast, traditional rollers can compromise the quality of tubes due to the rough and uneven surfaces formed on these rollers. In addition to the higher temperature capabilities, rollers made from Kanthal APMT require less, if any, water for cooling purposes, reducing energy requirements and providing a furnace designed with these rollers a greener approach to tube manufacturing.

For more information:

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Solar Manufacturing Booth # 2305

Solar Manufacturing and Solar Atmospheres, Inc. will share a booth at the exhibition. Solar founder and CEO William R. Jones will be honored with the William R. Jones Honorary Symposium, held on Monday October 31 from 3:00–5:30 p.m., followed by a meet and greet reception. Several representatives from both companies will present materials in the conference sessions. Solar Atmospheres will also discuss low-pressure vacuum carburizing that minimizes distortion and discoloration along with repeatable results. An in-house R&D team of metallurgists is also available for process development and consultation. Solar Atmospheres recently welcomed a custom-built horizontal 20-bar vacuum furnace (40" wide x 50" deep x 36" high, 3,500 maximum load) to its Hermitage, PA facility. Designed and built by sister company Solar Manufacturing, this new furnace is the fastest cooling furnace in the Solar fleet, and one of only a few of its kind in the United States. The excessive pressure and high-speed gas velocities of the 20-bar furnace simulate the benefits of oil quenching. Using inert gas as an alternative to oil minimizes distortion and provides a much cleaner and greener process. Solar can also better serve customers requiring vacuum carburizing by increasing core hardnesses of large cross-sections—a particular benefit to those in the gear industry. President Bob Hill states, "By adding these unique capabilities of the 20-bar to our resources, we can now effectively process a wider range of materials and assist more customers than we could with our 10-bar furnaces." The high-tech furnace was designed with many innovative features to improve cost-efficiency and results including an improved gas-flow system to minimize pressure drops and a radial heat



exchange. State-of-the-art technology is incorporated throughout including an interactive touch screen interface and compact design.

For more information:

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United Process Controls Booth # 1623

United Process Controls (UPC) recently upgraded the system controls of two surface combustion batch IQ furnaces used by precision gear manufacturer United Gear and Assembly. Located in Hudson, Wisconsin, United Gear and Assembly is an ISO/TS 16949 registered contract manufacturer of precision gears and shafts and is a strategic/core supplier to several global OEMs. While the three-decade-old HMI systems performed satisfactorily for the lifetime of the installations, they were falling behind the technological curve on important functions such as recipe development and management, digital data processing, and SCADA integration. Other concerns included availability and cost of spare parts, as

well as lowering operating costs through improved energy efficiency. A CQI-9 compliant control system was also a key requirement.

The modernized HMI platform based on Protherm 600 controllers from UPC offers a new level of speed, accuracy and flexibility in creating and modifying carburizing recipes. Menu screens and programming are much more user-friendly when it comes to finding data and making changes, and new recipe entries are easier to create, thus reducing set-up time. Furnace I/Os and all process data coming back to the Protherm 600 are trended automatically, which helps pinpoint problems quickly and efficiently, saving operator hours and downtime. The enhanced controls also provide the United Gear plant with the option to integrate UPC instrumentation with SCADA at a future expansion. Furthermore, with quenching functions embedded into the Protherm 600, the system achieves effective utilization of the quench cycle and eliminates standby power consumption, conserving energy and reducing utility costs.



Future enhancements are planned for more furnaces, which will allow the company's heat treat operations to achieve operational reliability and maintenance savings.

For more information:

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