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Ambrell Group Awards Induction Heating System to Georgia Tech

Georgia Institute of Technology, Atlanta, Ga., won an Ameritherm (an Ambrell Group company, Scottsville, N.Y.) Hot-shot 2-kW induction heating system in the Ambrell group of companies’ world-wide induction heating system give-away. Georgia Tech’s crystal vapor deposition application was one of hundreds of induction heating applications submitted during the contest. The system was installed in a chemical vapor deposition (CVD) apparatus as part of a cold wall reactor. www.ameritherm.com.

Heidtman Steel Plans Continuous Annealing Facility

Heidtman Steel Products Inc., Toledo, Ohio, with direct and joint-venture production facilities totaling over two-million square feet and serving over 1,200 customers in a variety of industries, plans to construct a new continuous annealing (CAL) facility that will cost approximately $225,000,000 including downstream

Microstructure Target Cooling for Strip Cooling in Hot Rolling Mills

Siemens Metals Technologies, Erlangen, Germany, offers rolling mill operators a complete package of solutions for strip cooling in hot rolling mills. Microstructure Target Cooling includes a process model, automation, and closed-loop control systems, as well as mechanical components such as various cooling valves. The process model enables precise calculation and control of phase transformation in the steel and, thus, reliable and efficient production of modern materials such as multiphase steels or special deep drawing steel grades. Deviations from the specified cooling curve are compensated within just 200 milliseconds. Siemens cooling valves are characterized by their well-defined switching times and a large bandwidth of available cooling capacity, which means that high-quality steel grades can be produced even with short cooling sections.

The cooling of hot rolled strip is a process step that is crucial for the quality of the steel that is produced. The cooling curve has a major influence on the mechanical properties of the steel. With the help of the Siemens process model (which is based on a thermodynamic description of the cooling process and in particular takes into account Gibbs’ enthalpy for phase transformation of the steel) in combination with a model-predictive control system, the entire cooling curve can be controlled along the line. For its entire range of products, the rolling mill operator is thus able to keep a comprehensive control of the microstructure changes caused by phase transformation during the cooling process. Any deviations from the set points are corrected within 200 milliseconds. This not only ensures constant quality along the whole strip but also enables efficient and reliable manufacture of multiphase steels.

For example, specific properties of the material in the case of deep drawing steel grades can also be specified precisely. Moreover, the strip cooling model increases the flexibility of the rolling mill; it is possible to switch over production between different types of steel whenever the situation demands and new steel grades can be included in production without altering software or model parameters.

The Microstructure Target Cooling solution, which belongs to the Siroll family of products for rolling mills, also includes mechanical components such as cooling valves for diverse applications. In addition to standard valves with cooling rates of up to 1.5 MW/m², Siemens Metals Technologies supplies turbo-cooling valves with cooling rates of up to 2 MW/m² and an intensive cooling system that enables the dissipation of more than 4.5 MW/m² of heat. Well-defined switching times for the valves (less than one second in the case of quick-switch valves) ensure precise control of the amount of water everywhere on the strip. The combination of high cooling rates and short switching times enables the production of high-quality steel grades even in hot rolling mills having short cooling sections. This is especially advantageous if plant operators cannot or do not want to change the built structures when modernizing their installations. For more information on solutions for steelworks, rolling mills, and processing lines, visit www.siemens.com/metals.
Seco/Warwick and Retech Systems in Strategic Alliance

Seco/Warwick Group, Meadville, Pa., and Retech Systems LLC (www.retechsystemsllc.com), Ukiah, Calif., entered into a strategic alliance agreement to combine resources and expertise to engineer, manufacture, sell, and service Retech’s vacuum processing equipment worldwide. Retech recently established an office in New Jersey to serve as a center of excellence for the Retech Vacuum Arc Remelt product group and to support joint efforts with the Seco/Warwick S.A., Swiebodzin, Poland, vacuum team. Mr. Artur Wiechczynski, based in Swiebodzin, Poland, will coordinate all activities between the two companies. The agreement allows Retech and Seco/Warwick to combine their expertise and jointly develop new products, as well as providing Retech with an important strategic partner to provide its PACT (plasma arc centrifugal treatment) systems used for reduction and processing of hazardous waste to European customers. The PACT system is the only licensed, operating plasma system in the world today. Retech is a fully integrated manufacturer of thermal vacuum processing equipment, and premier supplier of plasma arc, electron-beam, and casting furnaces for melting of titanium. www.secowarwick.com.

Seco/Warwick Supplies High Pressure Quench Furnace to Coperion

Seco/Warwick Corp., Meadville, Pa., received an order for a 6-bar high-pressure quench furnace from Coperion Corp., for its heat treat facility in Wytheville, Va. The VPT furnace is equipped with a 24 in. x 24 in. x 36 in. (600 x 600 x 900 mm) hot zone and is rated for 1,300 lb at 2400°F (590 kg at 1315°C). The unit is an advanced cold wall, front-loading vacuum furnace with an internal recirculation blower and heat exchanger, and graphite insulation and heaters. www.secowarwick.com.

LOI Installs Hot Skid System at Cascade Steel

LOI Inc., Pittsburgh, Pa., installed its Adapt Hot Skid System at Cascade Steel, McMinnville, Oreg. The system was selected by Cascade Steel because of its ability to reduce both the thermal skid marks in billets and water consumption compared with the existing skid system. LOI’s patented “double offset” was incorporated into the long skids to ensure that the reduction in the thermal skid marks met Cascade’s expectations. In addition, the heat loss to the water was greatly reduced resulting in more heat going into the billets and less into the cooling water. This resulted in a reduction in MMBtu/ton compared with the existing skid system. www.loi.

H₂Gen Innovations Supplies Seven Hydrogen Generation Units

H₂Gen Innovations Inc., Alexandria, Va., supplied seven HGM 2000 on-site hydrogen generation units to AREVA-NC Inc. (Bethesda, Md.; www.inc.areva-nc.com) for production of high-grade hydrogen, which will be used to process nuclear materials at the U.S. Department of Energy’s (DOE) depleted uranium hexafluoride-conversion facilities. Three of the units will be installed at the facility under construction in Portsmouth, Ohio, and the other four will be installed in the facility under construction at Paducah, Ky. AREVA is one of the partner companies of Uranium Disposition Services LLC, which is under DOE contract to construct and operate the conversion facilities. H₂Gen has already placed 11 HGM 2000 units in the field. In addition to the sale of equipment, H₂Gen will be providing maintenance and support services for an expected period of one year. www.h2gen.com.

Retech VAR furnaces range in capacity from laboratory to production units.

The plasma arc centrifugal treatment (PACT) system provides high-processing temperatures (1200 to 1600°C) to destroy hazardous waste.

Typical HPQ system

The pumping system, power supply, and cooling system enable handling a wide range of industrial heat treatment applications and material including quench hardening, degassing, annealing, and solution heat treatment of tool steels. The cooling gas recirculation system includes a multinozzle gas feed arrangement to optimize the uniformity and rate of cooling of the load during quenching. www.secowarwick.com.
BeaverMatic Delivers Three Car Bottom Furnaces

Beavermatic Inc., Rockford, Ill., a furnace equipment manufacturer, delivered three car bottom furnaces to a Texas-located energy-systems corporation. Heavy-duty furnace construction allows for a 30,000 lb (13,600 kg) maximum gross load capacity, while easily handling loading and unloading via crane or transfer cart. Two furnaces are approximately 15 ft high × 11 ft wide × 19 ft long (4.5 × 3.3 × 6.8 m) with an internal load size of 4 ft high × 4 ft wide × 6 ft long (1.2 × 1.2 × 1.8 m) with a maximum gross load of 15,000 lb (6,800 kg). The third, larger furnace has an internal load size approximately 5 ft high × 5 ft wide × 12 ft long (1.5 × 1.5 × 3.6 m) with a maximum gross load capacity of 30,000 lb. Gears and pinions for massive size pumps used in sub-sea oil recovery are some of the components being processed at maximum temperatures of 1400°F (760°C) using Honeywell (www.honeywell.com) controls. www.beavermatic.com.

CEC Supplies Drop-Bottom Furnace to Quartz Mountain Aerospace

Consolidated Engineering Company (CEC), Kennesaw, Ga., a provider of quality heat processing technology and specializing in aluminum heat treatment systems, will build and install a new drop-bottom furnace for Quartz Mountain Aerospace (Altus, Okla.; www.qmaero.com), which plans to incorporate heat-treating to its in-house manufacturing operations. CEC’s furnace will be designed and built to meet the updated Aerospace Material Specification AMS 2750D. This specification is currently being used by the National Aerospace Defense Contractors Accreditation Program (NADCAP). Over the past several years, CEC has supplied several furnaces which meet AMS 2750D. Quartz Mountain Aerospace is the former Luscombe Aircraft Corp., which in March began manufacturing a light aircraft designed for private use. The Model 11E is designed with a spring-steel tricycle landing gear and a 185-hp fuel-injected engine, and Garmin avionics. The 110,000-ft² plant is projected to be producing 200 airplanes per year by 2009, and has sufficient orders for three years of production. www.cec-intl.com.

Process-Electronic Controls for Nitriding Furnaces

Process-Electronic Inc., St. Laurent, Quebec, Canada, will modernize the controls of a nitriding furnace housed in the Tulsa, Okla., facility of Wellman Products Group (WPG), a manufacturer of friction materials, stampings, and powder-metal parts. The hardware/software retrofit package includes a Process-Electronic Protherm 400 controller, an ammonia analyzer, and preprogrammed nitriding processes, as well as nontypical recipes for a combination of nitriding and carburizing processes. As part of the upgrade, the new controls will enhance the reliability and repeatability of the nitriding process, enabling less skilled operator involvement than previously possible with the manual method, and equally improve the company’s benchmark for product first-pass yield (the percentage of treated plates that successfully complete the nitriding process with no rework). These enhancements will also allow WPG to lower their operational costs because of reduced gas consumption, shorter process times, and the elimination of auxiliary equipment and process gases. Installation and startup were completed the first quarter of 2007.

Process-Electronic’s control system for hardening bolts and gears of passenger car engines used in the Mercedes-Benz and Smart model series. The furnace is fully automated using a PLC-based system comprising the Protherm 600 for real-time supervision and accurate process control. The furnace will also be tied into the Protherm 9000 plant automation system by Process-Electronic. The automation structure, implemented several years ago, currently consists of six chamber furnaces, as well as material handling and storage systems. Furnace start-up and its integration to the automation platform were completed in the fourth quarter of 2006. www.process-electronic.com.

SSt to Upgrade Controls at Ford Transmission Plant

Super Systems Inc. (SSt), Cincinnati, Ohio, will supply state-of-the-art controls and software. Continues next page
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ware used in the heat treating department at Ford Motor Co.’s Sharonville, Ohio transmission plant as part of the company’s $200 million investment at the facility. The SSI systems meet the company’s requirements of single-loop controllers for temperature and percent carbon on the continuous furnaces. The controllers, together with a supervisory control and data-acquisition system, provide complete traceability of furnace loads. SSI’s SuperDATA supervisory control and data acquisition software allows operators and supervisors to have full control of the process, monitor alarm and event functions, and view the process historically and in real-time. The Sharonville plant is considered a center of excellence within Ford for its production of gears and transmission components. SSI develops and manufactures products for the thermal process industry including oxygen probes, analyzers, controllers, software solutions, and engineered systems. www.supersystems.com.

CORE to Provide Low NOx Burners to Nucor Steel Utah

Core Furnace Systems Corp. (CORE), Pittsburgh, Pa., a designer and manufacturer of reheat furnaces, will supply its latest generation of flameless low NOx burners for the existing walking hearth reheat furnace at Nucor Steel’s Plymouth, Utah, facility. The energy-efficient flameless burners will reduce NOx levels to 0.07 lb/MMBtu or less. CORE also will design and supply a new EnCORE process control and automation system to replace the existing system. The EnCORE system includes Level 1 and Level 2 control and provides energy savings through an advanced thermal modeling program. Installation will be completed in the fall of 2007. www.corefurnace.com.

Magnaflux System Shipped to Chicago Powdered Metal Products

Magnaflux Quasar Systems, Glenview, Ill., shipped its process-compensated resonant test system (PCRT) to Chicago Powdered Metal Products, said to be one of the largest independent powder metal parts manufacturers in the U.S. The system will be used to ensure reliable and timely shipments of the highest quality powder metal parts from the company’s Schiller Park, Ill., plant. The Magnaflux system, a Quasar 3100 PCRT system with two test heads, will be used to inspect all production for a new automotive program at the plant. The Quasar 3100 performs computer-controlled part classification, removing human judgment from the NDT process. It is capable of a steady test rate in excess of 400 parts per hour and part change-over requiring less than 10 minutes. www.quasarinf.com.

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processing equipment. It is estimated the project will create 200 jobs. The facility will be capable of producing advanced and ultrahigh strength steels including martensitic grades. With a capacity of 500,000 short tons per year, it will produce material thicknesses from 0.015 to 0.090 in. (0.4 to 2.3 mm) to a maximum width of 65 in. (1,651 mm). Heidtman sees an emerging growth in demand for these products, especially in the automotive market. The company is looking at several Midwest locations for the project including sites in Ohio, Michigan, and Indiana, but has not ruled out other locations including the southern U.S. due to the growing number of automotive plants in that region. www.heidtman.com.

H2Gen Recognized for Its Low-Cost Hydrogen Generator

H2Gen Innovations Inc., Alexandria, Va., received a DOE Hydrogen Program R&D Award from the U.S. Department of Energy (DOE). The award, “In recognition of Outstanding Achievement in Technology Innovation,” stems from H2Gen’s development of hydrogen-generation technology, which is expected to meet the DOE hydrogen cost target of $2.50/gallon of gasoline on an energy equivalent basis by 2010. H2Gen manufactures and sells hydrogen generators that convert natural gas to hydrogen at the point of use, eliminating the high cost of transporting hydrogen, and eliminating the need for installing a hydrogen pipeline system. DOE awarded a multiyear, cost-shared contract to the company in 2005 to scale up their generator and to reduce equipment costs so hydrogen could be produced at a gas station, and, when used in a fuel cell vehicle, result in a cost-per-mile driven that would be no more than a conventional gasoline vehicle. The DOE contract also funds experimental work to produce hydrogen from ethanol, opening up the potential of low-cost renewable hydrogen for fuel-cell vehicles.

The technology award was received on behalf of H2Gen at the annual DOE awards luncheon by Dr. C.E. (Sandy) Thomas, president, and Dr. Frank Lomax, chief technology officer, principal investigator on the DOE contract, and primary inventor of the H2Gen reformer and gas cleanup systems. www.h2gen.com.

Houghton International Touts Metalworking Industry Certified Professionals

Fluid supplier Houghton International, Valley Forge, Pa., announced that eight of its employees are now classified as Certified Metalworking Fluid Specialists by the Society of Tribologists and Lubrication Engineers (STLE). To achieve CMFS certification, an industry standard for professional recognition, applicants must pass the STLE exam, which tests their knowledge of fluid management processes, including metal removal chemistry, fluid condition management, health and safety, and cost/benefit analysis.
They must also complete a minimum of 20 hours of training, and demonstrate relevant work experience involving metalworking fluids. Certification lasts three years, and professionals renew CMFS status it by retaking the exam and demonstrating continued activity in the industry. The program began in 2005 when major automotive and aerospace corporations proposed that certification be a requirement for doing business.


**Sandmeyer Steel Names China Representative**

Sandmeyer Steel Co., Philadelphia, Pa., a producer of stainless steel and nickel alloy plate products used in the process industries equipment market, announced the appointment of ITC Group as the company’s representative office and sales support center in China. ITC, with offices in Guangzhou and Hong Kong, will assist Sandmeyer in penetrating the Chinese market for stainless steel and nickel alloy plate products. ITC’s chairman, Dr. Stanley Yuen, and Sandmeyer Steel’s CEO, Ronald P. Sandmeyer Jr., finalized the agreement at AchemAsia 2007 in Beijing, a trade show that targets the Asian process equipment industry market. www.sandmeyersteel.com.

**LumaSense Technologies Acquires Mikron Infrared**

LumaSense Technologies Inc., Santa Clara, Calif., a provider of sensing solutions, closed the acquisition of Mikron Infrared Inc., Oakland, N.J., a manufacturer of infrared noncontact temperature measurement and thermal imaging since 1969. Mikron represents the fourth acquisition LumaSense made since 2005. LumaSense’s strategy is to acquire leading companies with innovative technology and products and gain significant opportunities for synergies in research & development, manufacturing, and marketing & sales to realize scale and global reach for its customers. The company provides solutions and services in fiber optic and noncontact temperature measurement, thermal imaging, infrared temperature calibration services, gas analysis, and emissions monitoring to customers around the world. LumaSense Technologies’ acquisitions include: Luxtron Corp. (fiber optic temperature measurement sensors), Innova AirTech Instruments (trace-gas monitoring and analysis), Andros (nondispersive and dispersive infrared gas analysis), and Mikron Infrared (noncontact temperature measurement, thermal imaging systems, and blackbody calibration instruments). www.lumasenseinc.com.

**Airgas Acquires Aqua Ammonia Operations**

Airgas Inc., Radnor, Pa., acquired the aqua ammonia operations of Continental Nitrogen & Resources (CNR), Rosemount, Minn., which had more than $2 million in revenues in 2006. The business will be integrated into Airgas Specialty Products, a national distributor of ammonia products and services, various process chemicals, and refrigerants. Other operations of CNR were not included. Airgas Specialty Products, a leading supplier of ammonia products and services in the U.S. for nitrogen oxide abatement (DeNOx), metal finishing, water treatment, Helium Shortage Could Hamper Industry and Research

According to a report by the American Institute of Physics, College Park, Md., manufacturers, laboratories, and other organizations that depend on helium for their work are faced with a worldwide shortage of helium, which is boosting the price of the gas. A shortage of the gas has been predicted for several years, made worse due to a federal law passed in the mid-1990s that mandated the sale of federal helium reserve by 2015, which supplies nearly 40% of domestic needs. Replacing the reserve will not be easy.

Helium refiners extract natural gas from gas fields—mostly in Texas and Kansas in the U.S.—and cool it to below 90K. At that temperature, everything except helium liquefies, and the helium is distilled and compressed or further cooled to liquid form. Current sources of helium besides the U.S. include Algeria, Qatar, Poland, and Russia. The scarcity is due to helium production glitches around the world, such as plants overseas not coming up to speed as planned, and some production problems with U.S. plants. This points to the need to develop new helium sources. Unless other sources are developed, warn industry officials, the worldwide helium supply will continue to be squeezed. Worldwide demand for helium is growing rapidly, due in part to the growth of high-tech manufacturing in China, Japan, Taiwan, and South Korea, where helium is used in the production of semiconductors, flat-panel displays, and optical fibers.
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chemical processing, and refrigeration, has 24 locations nationwide for distribution of anhydrous ammonia and aqua ammonia products and services and seven locations for distribution of refrigerants.

Airgas acquired the ammonia business in 2005 from LaRoche Industries to form Airgas Specialty Products. Since then, process chemicals and enhanced refrigeration capabilities, through the January 2007 acquisition of CFC Refimax, have been added to the platform. www.airgas.com.

Scrap Recycling Program Recovers Precious Metals
Lucas-Milhaupt Inc., Milwaukee, Wis., a Handy & Harman Co., now offers refining services to its customers. Recovery services are being provided through Handy & Harman of Canada Ltd. at its facility in Toronto, Ontario. Industries that can benefit from this program include industrial brazers, the electronics industry, mirror platers, and others. Materials accepted include silver-base metallic scrap such as brazing alloys, mirror plating sludge, flux-link scrap, and other copper/silver materials. The scrap-to-cash recovery program offers businesses an environmentally responsible and cost-saving alternative to more conventional refining or waste-disposal options. For example, a large industrial manufacturer that used to pay to have braze scrap removed as a hazardous material now receives payment from Handy & Harman for the recovered precious metal. www.lucasmilhaupt.com, or visit www.scrapofastcash.com.

Corrections

The chemical compositions of Alber & Duval XD15NW and VSG Essen Cronidur 30 in the article “Advancements in Precision Carburizing of New AeroSpace and Motorsports Materials,” (May/June HTP, Table 2, p 37) excluded nitrogen content. The alloys contain nominally 0.20 and 0.30% N, respectively.

There also is an error in the chemical compositions for VascoMax C-250, C-300, and C-350. The nominal values for Ti and Al are misplaced. The Ti values are listed under Nb and the Al values are listed under Ti. There is no nominal Nb in any of the VascoMax grades. ATI Allvac is the manufacturer of the VascoMax series of maraging steels.

We apologize for any inconvenience this may have caused.

Technology

DBT Test Systems Debuts Cutting-Edge Oil Reclamation Systems
Dayton T. Brown Test Systems (DBT Test Systems), Bohemia, N.Y., developed a new mobile oil-reclamation system that is said to increase productivity and cut downtime costs. The MORS-300 and MORS-800 mobile oil-reclamation systems use a patented vacuum distillation process to remove water, gases, and particulate contamination, from mineral-based or synthetic oils having viscosities of 50 to 2,000 SSU, at flow rates of 300 or 800 gal/h (0.31 or 0.84 liter/s). Typical oils reclaimed are hydraulic, turbine, quench, gear, cutting, transformer, transmission, compressor, and vacuum.

Oil contamination is the leading cause of damage to capital equipment used in manufacturing and testing. DBT Test Systems’ oil-reclamation systems increase productivity by reducing wear, and the need for component replacement. This helps to reduce downtime costs, which can range from $20,000 to more than $50,000 per hour in the manufacture of trucks, autos, and aerospace and construction equipment. Because the damage caused by contaminants like water, air, and particulates can occur slowly, it is often overlooked as a source of component failure. By using oil reclamation as part of regular maintenance, organizations can minimize wear, seal leakage, and corrosion, potentially saving millions of dollars annually. Companies that use oil-reclamation systems also save on oil replacement, disposal costs, and associated labor costs. An added benefit to oil reclamation is that it minimizes impact on the environment through the reduction of hazardous waste.

How oil reclamation works

Once the oil to be processed enters the unit, it passes through a 100-mesh inlet strainer and then into an inlet pump. The pump transfers the oil into a low-watt density heater that raises the oil temperature to approximately 140°F (60°C). The oil is then transferred to an ultrafine filter that removes and retains particulate contamination. As the filter becomes contaminant-loaded, a differential pressure switch gauge actuates a warning light that indicates the filter needs to be changed and shuts the unit off.

Following filtration, the oil flows through a level-controlled valve into the liquid-gas separation column where a vacuum is maintained. The oil flows over a proprietary packing material that disperses it into a thin film with a high surface area. Volatile liquid contaminants are boiled off, and noncondensable gaseous components are removed. The removed gas and vapors are then drawn out of the top of the column, flowing into a condenser where the steam and contaminants are condensed back into a liquid state and discharged into a condensate collection chamber. Finally, noncondensable gases are discharged through the vacuum pump, while water and other condensed liquids are automatically drained. Purified oil collects at the bottom of the column and exits from the system’s discharge pump. www.daytonbrown.com.