

# Merit Gear

## EXPANDS HEAT TREATING CAPABILITIES



**Plunge—accelerated—cooling of the large furnace loads prior to quenching can be accomplished by passing cool air through the inside of the radiant tubes (courtesy Merit Gear).**

Merit Gear LLC, a precision gearing company, has invested in a major plant expansion to accommodate in-house machining and heat-treating equipment. The company was founded in 1952 to service tractor replacement and general machine applications. Merit Gear has continuously expanded its capabilities and operations to service and broaden its customer base. That includes new industries that utilize gearboxes in applications such as mining, water well drilling, oil field, fire trucks and the rapidly growing wind energy market.

This recent investment consisted of a 52,000-square-foot building expansion, of which 10,000 square feet were dedicated to a heat treating cell and additional machining equipment. The expansion has allowed Merit Gear to increase machining capability for processed parts up to 132" (3.35 meters) in diameter. The in-house heat treating capability, which was previously limited to small-batch, integral quench furnaces, has been increased to include large-atmosphere, pit-type furnaces and auxiliary equipment capable of processing 30,000-pound loads up to 90" in diameter. The new heat treating equipment was designed to process large gear and pinion products that require optimal temperature and atmosphere control to meet challenging process requirements.

The heat treating facility expansion was designed, manufactured and installed by Surface Combustion, Inc., located in Maumee, OH. The heat treating cell features three radiant-tube-heated, atmosphere-type pit carburizing furnaces, two direct-fired pit temper furnaces and two companion oil quench tanks. Surface Combustion completed the commissioning of the equipment and the training of Merit Gear's personnel in January of 2009. In addition to the heat treating equipment, auxiliary equipment to complete the expansion included two 25-ton building cranes, a washer system and a shot blast system.

### Heat Treating Equipment Design Features

The new pit-carburizing furnaces include many features and provide consistent, repeatable process cycles resulting in high-quality parts being produced. The furnaces are in effect heated by radiant tubes surrounding the outside diameter of the workload area. These tubes use non-recuperated natural gas burners. This design approaches the system efficiency of recuperated designs due to the correct application of the burners on long heat treating cycles required for deep case depths. As an added feature, "plunge cooling"—or accelerated cooling of the large furnace loads prior to quenching—can be accomplished by passing cool air through the inside of the radiant tubes.

Each pit-carburizing furnace is configured to operate with Merit Gear's existing nitrogen/methanol atmosphere system. The system includes a high/low flow feature to allow atmosphere conservation during the long heat-treating cycles. A closed-loop carbon potential control system is included for precise furnace atmosphere control. This system utilizes a process controller and oxygen probe arrangement to monitor carbon levels in the furnace. As an enhancement



**Each quench tank includes multiple agitators working in conjunction with a fully baffled workload area to direct high-velocity oil around the parts to be quenched (courtesy Merit Gear).**



The expansion has allowed Merit Gear to increase their machining capability for processed parts up to 132" (3.5 meters) in diameter (courtesy Merit Gear).

to the control system and its capabilities, a sample part test port is included in the furnace cover to allow in-process evaluation of the carburizing process. The test port provides for the removal of test pins for quenching and review of the results prior to completion of the cycle for the load being processed. This evaluation allows for the long furnace cycles to be adjusted in real time as needed for precise part carbon profiles.

To provide uniform temperatures and atmosphere flow to the work being processed, each furnace is provided with Surface Combustion's patented vibration damping fan design mounted on the furnace cover. The fan works in conjunction with an internal alloy shroud for improved atmosphere and heat circulation. Thermal profiles performed during the commissioning period of the furnaces showed temperature uniformity within the effective workload area of the furnace to be within  $\pm 10$  degrees Fahrenheit between the temperatures of 1,550 and 1,750 degrees Fahrenheit.

After heating and processing parts in the carburizing furnaces, the overhead building crane is utilized to remove the load and transfer it into one of the 30,000-gallon oil quench tank systems. Each quench tank includes multiple agitators working in conjunction with a fully baffled workload area to direct high-velocity oil around the parts being quenched. The quench system includes an air-to-oil heat exchanger system and a gas-fired immersion radiant-tube heating system to either cool or heat the oil and provide precise control of the quench oil temperature for the critical quenching process.

At the completion of the quench portion of the heat treating process, the parts and fixture are transferred to the batch washer unit. The washer is an integrated cleaning unit that uses a gas-heated, alkaline-type system. It incorporates a

continued

THE ART OF TOOLS!  
**SUPER MAX line**

**Hobbing with Ingersoll!**  
 A Leader in ICI Gear Machining Tools  
 and Your Most Experienced Source  
 for Indexable Hobbing Cutters!

Segmented designs with  
 angled screwholes for  
 easy indexing

Visit us  
  
 Booth #1336



401 South Linn St • Rockford, IL 61108 • 815.398.1300 • Fax: 815.397.4000 • www.ingersoll-ctc.com



**HAVE YOU SEEN KISSOFT LATELY?**

NEW RELEASE 10/2008 INCLUDES:

- ⚙️ NEW USER INTERFACE
- ⚙️ NEW SHAFT DESIGN AND ANALYSIS
- ⚙️ NEW BEARING DESIGN AND ANALYSIS
- ⚙️ ENHANCED GEAR DESIGN AND ANALYSIS

**DOWNLOAD YOUR FREE EVALUATION COPY FROM WWW.KISSsoft.COM**

KISSsoft USA, LLC  
 3719 N. SPRING GROVE ROAD  
 JOHNSBURG, ILLINOIS 60051  
 PHONE (815) 363 8823  
 DAN.KONDRITZ@KISSsoft.COM

**KISSOFT**  
 Calculation programs for machine design

high-pressure spray arrangement to remove residual quench oil from the parts prior to the tempering portion of the cycle.

Two direct gas-fired pit temper furnaces are provided—not only to provide the post-quench temper requirements, but also to allow for load pre-heating prior to loading into the pit-carburizing furnaces.

The furnaces have a wide operating temperature range to service both the pre-heat and temper portions of the overall process requirements. The maximum operating temperature is 1,200 degrees Fahrenheit. The furnaces are an extension of Surface Combustion's patented high-convection design, which utilizes a circular wind flow along the inside of the furnace wall in conjunction with a second circular pattern in the center of the furnace. These patterns are fed back to the cover-mounted fan unit and burners to promote overall temperature uniformity throughout the work area of the furnace. With this design, the measured temperature uniformity in the effective workload area was within  $\pm 10$  degrees Fahrenheit.

### Specific Heat Treatments

As previously stated, components heat treated in Merit Gear's new pit furnace equipment include very large gears and pinion products. The largest gear products may exceed 12,000 pounds per gear, with gross loading capacity in the furnaces being 30,000 pounds for multiple-part loads. The typical carburizing process cycles require very deep, effective case depths between 0.080" and 0.120". Cycles to obtain these case depths can require days.

The current and future growth of the energy market requires ever-increasing part sizes, specifically requiring larger and better-engineered gearboxes.



**Merit Gear has invested in a major plant expansion to accommodate in-house machining and heat treating equipment (courtesy Merit Gear).**

es. Merit Gear has invested in the equipment and technology to produce these products efficiently.

### For more information:

Merit Gear LLC  
810 Hudson Street  
Antigo, WI 54409-0468  
Phone: (800) 756-3748  
Fax: (715) 623-2290  
[info@meritgear.com](mailto:info@meritgear.com)  
[www.meritgear.com](http://www.meritgear.com)

Surface Combustion, Inc.  
1700 Indian Wood Circle  
Maumee, OH 43537  
Phone: (419) 891-7150  
Fax: (419) 891-7151  
[info@surfacecombustion.com](mailto:info@surfacecombustion.com)

## PM Conference

### AWARDS FELLOW, DISTINGUISHED SERVICE

The 2009 International Conference on Powder Metallurgy and Particulate Materials took place June 29 in Las Vegas, and the industry used the opportunity to present awards to Animesh Bose, named to the 2009 Class of Fellows, and several individuals recognized for distinguished service to the field of powder metallurgy.

The following professionals received a Distinguished Service to Powder Metallurgy Award: Gary L. Anderson, vice president of engineering, Keystone Powdered Metal Company; John C. Hebeisen, former president, Bodycote HIP, Inc.; Thomas J. Jesberger, chief technology officer, Abbot Furnace Company; Shiz Kassam, director of advanced product engineering, Keystone Powdered Metal Company; Lou Koehler, president, Koehler Associates LLC; Kalathur S. Narasimhan, vice president, chief technology officer, Hoeganaes Corporation; Charles L. Rose, former sales manager of PM Tooling division, Bronson & Bratton Inc.; John A. Shields, Jr., principal, PentaMet Associates, LLC and president, Mill Creek Materials Consulting; Thomas L. Stockwell, Jr., former business account manager, Burgess-Norton Mfg.; Ted A. Tomlin, former vice president of tech-



The MPIF handed out various industry awards at the Industry Recognition Luncheon held during PowderMet2009 (courtesy of MPIF).

nology, FloMet LLC; and Robert F. Unkel, former manager of PM marketing, Cincinnati Incorporated.

Bose is president of Materials Processing, Inc., in Haltom City, TX. The Fellow Award is given to American Powder Metallurgy Institute (APMI) members who have made significant contributions to the society and have great expertise in PM technology and the practice or business of the PM industry. Fellows are elected based on their professional, technical and scientific achievements, continued professional growth and development, mentoring/outreach and APMI contributions.

With 25 years dedicated to the PM industry, Bose is recognized for his work in materials processing. His promotion of powder injection molding technology is known internationally from his licensing and technology transfer undertak-

**continued**



Animesh Bose (right) accepts the 2009 Fellow Award from Nick Mares, APMI president (courtesy of MPIF).

**THE ART OF TOOLS!**  
**SUPER MAX line**

**Gashing with Ingersoll!**  
 A Leader in ICI Gear Machining Tools  
 and Your Most Experienced Source  
 for Indexable Gear Gasher!

Custom indexable roughing  
 and finishing cutters for  
 your specific tooth profile

Visit us  
**GEAR EXPO 2009**  
 Booth #1336

**Ingersoll**  
 Cutting Tools

100 South Grand Ave • Rockford, IL 61104 • Tel: 815/965-4013 • Fax: 815/965-0019 • www.ingersoll-cut.com

**Innovative Machine Tool Solutions**

**New O.E.M. Machines**  
**BOURN & KOCH** Gear Hobbers & Gear Grinders  
**FELLOWS** Gear Shapers  
**ROTO-CHECK** Gear Inspection Systems  
**BOURN & KOCH** Hob & Shaper Cutter Inspection Systems  
**FELLOWS** Lead & Involute Masters  
**ROTO-GRIND** Precision Rotary Inspection Tables

**Remanufacturing / Retrofitting**  
**BOURN & KOCH, FELLOWS, BARBER COLMAN, GLEASON, LIEBHERR & PFAUTER**  
 Gear Hobbers, Gear Shapers & Gear Grinders  
**M&M, KLINGELNBERG, HOEFLER, ROTO-TECHNOLOGY & ITW** Gear Inspection Systems  
**Recalibration of your Lead & Involute Masters**

**O.E.M. Parts / Service / Attachments / Field Retrofits / CNC Enhancements**

**Parts:**  
 Bourn & Koch/Barber Colman 800/860-4013  
 Fellows 802/674-6500  
 Roto-Check/Roto-Grind 937/859-8503

**Service:** 800/860-4013

**BK** Your True Machine Tool Source  
 2500 Kishwaukee St. Rockford, IL 61104  
 tel 815/965-4013 fax 815/965-0019  
 www.bourn-koch.com bournkoch@worldnet.att.net

**Star SU** Sales Enterprise Partner www.star-su.com  
 Machines proposed & sold through the Star SU direct selling group

**fellows** **BOURN & KOCH** **Barber Colman** **RotoTech**

**BOURN&KOCH INC**

**Preferred Choice -  
Complete Satisfaction**

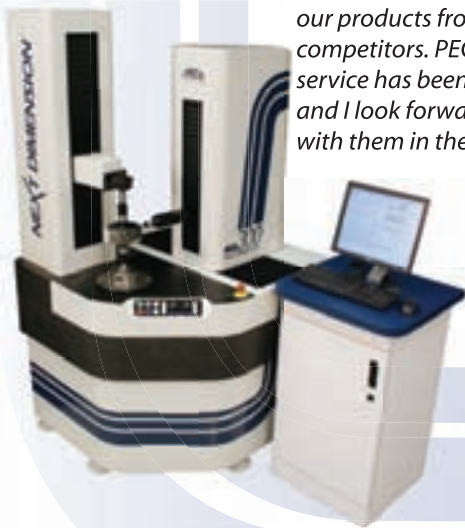
**ND300**  
NEXT DIMENSION®

CNC gear measurement system

Proven, Practical...PECO

"The ND300 is able to take extremely precise measurements of various gear types that we test. This allows us another method to differentiate our products from our competitors. PECO's customer service has been extraordinary and I look forward to working with them in the future."

Kevin Streck  
Lubrizol



Call today at 800.998.4191  
Outside the USA at +1.937.667.7105  
[www.GearInspection.com](http://www.GearInspection.com)



**NEWS**



The following industry leaders received MPIF's Distinguished Service to Powder Metallurgy Award at PowderMet2009 (shown from left to right): Charles L. Rose, John A. Shields, Jr., Thomas L. Stockwell, Jr., Ted A. Tomlin, Robert F. Unkel, Kalathur S. Narasimhan, Lou Koehler, Shiz Kassam, Thomas J. Jesberger, John C. Hebeisen, and Gary L. Anderson (courtesy of MPIF).

ings. He has also made contributions in alloy development emphasizing refractory metals, carbides, hard metals, inter-metallic compounds and other advanced materials.

Bose received a bachelor's degree in metallurgical engineering and a doctorate in engineering from the Indian Institute of Technology, Kharagpur. He co-founded Materials Processing, Inc. in 1999, which specializes in precision injection molding of hard materials, cermets and advanced ceramics.

Bose has been a member of APMI for more than 23 years, and he has served on the board of directors. He also has served as co-chairman of several international conferences, including six Metal Powder Industries Federation (MPIF) conferences on tungsten, refractory and hard materials, and he has served on various technical program committees. He has authored over 115 technical papers, several books and is named in eight U.S. patents.

**GEAR CUTTING TOOLS**   
**MADE IN SWITZERLAND**



**SCHNYDER** **HANIK CORPORATION**  
US Distributor  
GEAR CUTTING TECHNOLOGY  
60 YEARS OF TOP TECHNOLOGY  
PHONE 630-595-7333  
FAX 630-595-7343  
www.hanikcorp.com  
email: hanikcorp@aol.com

ph: 011-41-32-344-0400 • fax: 011-41-32-344-0404 • [www.schnyder.com](http://www.schnyder.com) • [mail@schnyder.com](mailto:mail@schnyder.com)

**Kisssoft**

**APPOINTS  
ENGINEERING MANAGER**

James Marsch is now engineering manager, North America for Kisssoft, U.S.A., LLC. He has over 40 years of practical engineering design and manufacturing experience including eight years of specific application support and consulting projects involving metal and plastic gearing for a range of customers. He has been employed by Allis-Chalmers, Harnischfeger Corporation, Morris Material

Handling and Universal Technical Systems.

Marsch will provide engineering consulting, customer support and training in North America for Kisssoft. "We are fortunate to have Jim join our team here and look forward to offering our customers more services," says Dan Kondritz, national sales manager for Kisssoft, U.S.A.

## Moore Gear

### COMPLETES BUILDING EXPANSIONS

Moore Gear and Manufacturing's Hermann, MO facility now includes approximately 54,750 square feet after two expansion projects were completed.

The east side of the building is now 7,500 square feet bigger than before. This improved the shipping department by adding loading docks and space for maneuvering shipments in and out of the factory. A former industrial facility adjacent to the property was acquired as part as the expansion to the west side of Moore Gear. This is a 13,500-square-foot building that rests on four and half acres of level land. Moore intends to use the facility to store surplus machines, stock material and to free manufacturing space in Moore's original building.

The building expansions also included new additions in CNC equipment to increase capacity and productivity. Machinery added includes a CNC gear hobber, hob sharpener, gear checking machine, 10-foot long CNC machining center, gear rack milling machine and cylindrical grinder.

## Nordex

### Opens North American Headquarters

On May 5, German wind turbine manufacturer Nordex officially opened its U.S. headquarters in downtown Chicago. The decision to set up shop here was influenced by the central geographic location in North America, proximity

continued

THE ART OF TOOLS!  
**SUPER MAX** line

**Shaping with Ingersoll!**  
A Leader in ICI Gear Machining Tools  
and Your Most Experienced Source  
for Indexable Gear Shapers!

Roughing at 3-4  
times faster than  
conventional methods

Visit us  
**AAEXPO**  
2009  
Booth #1336

**Ingersoll**  
cutting tools

**SPIRAL BEVEL GEARS**  
(Transmissions)

Spiral & Straight Bevel Gear Manufacturing.  
Commercial to aircraft quality gearing.  
Spur, helical, splined shafts, internal & external,  
shaved & ground gears. Spiral bevel grinding.  
Midwest Transmissions & Reducers.  
ISO compliant.

**MIDWEST GEAR & TOOL, INC.**  
15700 Common Rd.  
Roseville, MI 48066 [midwestgear@sbcglobal.net](mailto:midwestgear@sbcglobal.net)

**CONTACT:**  
CRAIG D. ROSS  
(586) 779-1300  
FAX (586) 779-6790



**GROUND GEARS – Ten or Ten Thousand**

For small to medium quantities of spurs or helicals that have to meet close-tolerance AGMA or DIN specs, our Reishauer grinders and M&M gear analysis systems are the perfect combination.

For Long runs, we offer the unique Liebherr CBN grinding process with full SPC quality control and documentation.

So whether your needs are for ten or tens of thousands, we invite you to join the growing list of INSCO customers who rely on us for consistent quality, reasonable costs, and reliable delivery.



PHONE: 978-448-6368

FAX: 978-448-5155

WEB: [inscocorp.com](http://inscocorp.com)

412 Main Street, Groton, Massachusetts 01450

ISO 9001 Registered



(courtesy of Nordex)

to areas of major wind industry growth and environmental leadership by the city.

“Centering our business in Chicago brings us closer to our customers and suppliers and puts us in the heart of the wind industry,” says Ralf Sigrist, president and CEO of Nordex. “It will also support our strategy of generating 20 percent of global revenues here, while helping the U.S. to achieve its ambitious renewable energy goals and to build a vibrant domestic industry.”

Mayor Richard M. Daley expressed his enthusiasm and welcomed Nordex USA to Chicago at a news conference. “When a company such as Nordex makes a commitment like this one, it sends a strong message to the business community that our leaders work together and that Chicago can meet the needs of any company in the world—from the largest to the smallest.”

Nordex currently employs 2,200 people worldwide and has experienced over 50 percent growth in sales for the



(courtesy of Nordex)

**YOU CAN STILL BE A SUPER HERO**  
 Right now Heroes are the ones that get the job done with less expense

We are the design and build experts and the place to go to

**refurbish your current workholding**

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|--|--|--|--|--|

Fast turn around. Expert advice. On time delivery.

We refurbish all American and foreign manufacturer's products

**DREWCO WORKHOLDING**

**Call DREWCO at 262-886-5050**  
 or email us at [service@drewco.com](mailto:service@drewco.com) for a quote

fourth consecutive year, with 2008 sales reaching \$1.5 billion. "Nordex sees the U.S. as one of the biggest growth markets for wind energy in the world," Sigrist says. "That's why in addition to setting up operations in Chicago, we will also manufacture our turbines here."

Plans to build a manufacturing plant in Jonesboro, AR were announced in October 2008. Nordex estimates investing \$100 million in the factory, which should create more than 700 jobs in Jonesboro and 100 in Chicago by 2015. Construction is expected to begin this year and production planned for 2010. In Jonesboro, Nordex plans to manufacture every component of its multi-megawatt turbines except the tower, hoping for annual assembly capacity of 750 megawatts. Nordex is also looking to build a home grown supply chain in the country.

"Establishing a firm operating and manufacturing presence will enable Nordex to keep better pace with strong demand in the U.S., which has outstripped our ability to import turbines manufactured abroad fast enough," Sigrist says. "From Chicago, we will be in the capital of the wind industry, and from Jonesboro, we will be at a geographic center for product distribution."

## Vestas Americas

### APPOINTS PRESIDENT



**Martha Wyrsh (courtesy Vestas Wind Systems).**

Martha Wyrsh has been selected to serve as president for Vestas Americas, the business unit responsible for wind turbine sales, installation and service and maintenance in the United States and Canada. Wyrsh has almost 20 years of experience in the North American energy sector. She began work June 15 at Vestas Americas' headquarters in Portland, OR.

Over the past two years, Wyrsh served as president and CEO of Spectra Energy Transmission, a Houston-based nat-

**continued**

**THE ART OF TOOLS!**  
**SUPER MAX line**

**Gear Cutting with Ingersoll!**  
A Leader in ICI Gear Machining Tools and Your Most Experienced Source for Low-Volume Gear Generation!

Standard indexable products and Superior Process Consultation

Visit us  
**GEAREXPO 2009**  
Booth #1336

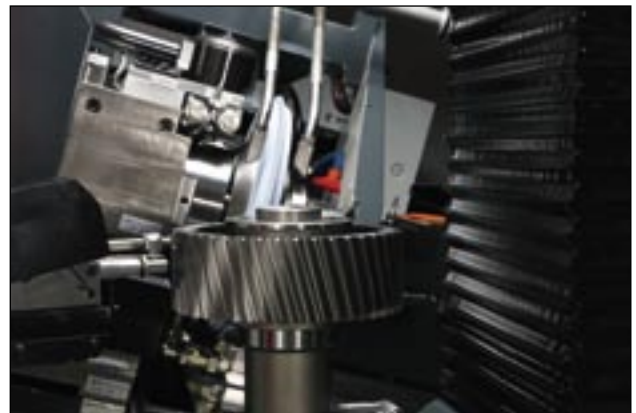
**Ingersoll Cutting Tools**

840 South Lyport Ave • Knoxville, IL 61739-2710 • 800-999-1336 • Fax: 815/267-8888 • www.ingersoll-inc.com



**NEXT Gear Technology**  
**September/October 2009**

Comprehensive Show Coverage  
Booth Listings and What's New in  
Machine Tools, Processes and Technologies.



(courtesy of Hofler)



A uniquely global publication focusing on on peening, blasting, cleaning and vibratory finishing!  
Also offering training courses!



Ask for free sample issue!

MFN (Metal Finishing News) is distributed in 67 countries and published 6 times a year.

[www.mfn.li](http://www.mfn.li)

**MFN offers training courses for:**  
**shot peening, flap peening and mass finishing**

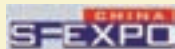


[www.mfn.li/training](http://www.mfn.li/training)

MFN is an Official Sponsor of FEMS



MFN is a Partner in Education in Nadcap



[www.sf-expo.cn](http://www.sf-expo.cn)  
MFN is the Official Cooperation Partner of SF EXPO

ural gas infrastructure company, and was president and CEO of Duke Energy Gas Transmission.

“Martha’s commitment to safety, customer satisfaction and communication, combined with proven business results, makes her an ideal fit for our growing North American market,” says Ditlev Engel, president and CEO of Vestas. “I know she will further enhance our vision of ‘wind, oil and gas’ in North America.”

## M.M. Gears Sold

Coimbatore, India-based LG Balakrishnan & Bros (LGB) has entered into an agreement to acquire 100 percent shares in M.M. Gears Pvt. Ltd., according to multiple sources in the Indian media.

LGB manufactures automotive chains, sprockets, tensioners and belts as well as blanking. The company had planned a strategy to enter the gear manufacturing industry, according to IndiaTimes, and M.M.’s 30,000-square-foot manufacturing facility is likely to aid this endeavor.

M.M. Gears is an ISO 9001:2000 certified company, established in 1995. The company produces gears, gearboxes, helical gearboxes, geared motors and non-standard gearboxes.

## Alpha Machining and Grinding Inc. Established

RP Machine Enterprises, Inc. has acquired the Statesville, NC division of Alpha/Sullivan Steel. The newly formed division is called Alpha Machining and Grinding Inc., and it is managed by Hank Kohl.

The acquisition provides RP with grinding capabilities up to 144 inches and a magnetic division to offer magnetic lifting devices, fixturing, tables and chucks. Some of the new division’s products and services will be on display at RP Machine’s booth, B-401, at Gear Expo.