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INTERWIRE TRADE EXPOSITION

Atlanta Preview...

28-45

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CNC Coiler Increases Capacity: ...page 26

STRAIGHTENING & CUTTING ROUNDP...P. 50
ELIMINATE SECONDARY OPERATIONS  HAX 3D TURRET SERIES FORMERS

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Spotlight: Wire Handling
WIRE MESH WELDING MACHINE

Applications:
Structure Supporting Mesh, Concrete Reinforcing, Wire Mesh, Fencing Mesh, Security Fences, Various Machines for Metal Material Attaching Processes - all made in Taiwan.

3-1/16 mm diameter wires applicable.

WIRE FORMING EVENTS

April 28 – 30, 2015
Intewire 2015, Atlanta, GA, USA
www.wirenet.org / www.intewire15.com

May 12 – 15, 2015
wire Russia 2015, Moscow, Russia
www.wire-russia.com / www.mdna.com

September 16 – 18, 2015
wire Southeast Asia 2015, Bangkok, Thailand
www.south-east-asia.com / www.mdna.com

October 6 – 8, 2015
wire South America 2015, São Paulo, Brazil

October 19 – 22, 2015
SMI Metal Engineering eXpo™, Charlotte, NC, USA
www.metalengineeringexpo.org

April 4 – 8, 2016
wire 2016, Düsseldorf, Germany
www.wire.de / www.mdna.com

June 7 – 8, 2016
WAI 2016 Operations Summit & Wire Expo, Uncasville, CT, USA
www.wirenet.org

September 26 – 29, 2016
wire China 2016, Shanghai, China
www.wirechina.net
www.mdna.com

October 5 – 7, 2016
SPRING WORLD® 2016, Rosemont, IL, USA
www.casmi-springworld.org

October 5 – 7, 2016
Wire & Cable India 2016, Mumbai, India
www.wire-india.com / www.mdna.com

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FX 10 Ø 0.15 - 1.10
FX 15 Ø 0.25 - 1.50
FX 30 Ø 0.40 - 3.00
Trade Show Content

I just came back from a fastener industry trade show in Germany that featured a fair amount of technology for springmakers and wire formers; enough that the fastener show organizers tried, unsuccessfully in 2013, to spin off part of the exhibition into a stand-alone event focussing on spring and wire forms.

The fastener industry event, called Fastener Fair Stuttgart, is super successful and a must-see for European fastener professionals, and something nice to do for those engaging in bending and coiling wire or using the resulting wire products. The Stuttgart show caused me to reflect on the fundamental differences between American and European trade shows, which include the following:

- The exhibits in Europe are generally larger and made from more expensive materials such as hard walls and painted drywall versus pipe and drape in the USA.
- Show visitors in Europe seem to spend more time at each exhibitor location, often staying for sit-down meetings and/or beverage and food hospitality, something that is only seen on a smaller scale in the USA.
- American shows often have many activities to go along with the exhibits—conferences, receptions, association meetings and golf outings—which are pretty much absent at the European trade fairs that I have attended over the last 20 years.
- Asian exhibitors and visitors travel easily to European and American venues, but the numbers of Turkish and Indian exhibits and visitors are substantially higher in Europe than in the USA.

My conclusion: both American and European shows are valuable for doing business, locally and internationally. The main differences are that the Europeans often take a longer break between shows and they put more money and time in planning and executing their exhibits and attendance at exhibitions. In the USA, while we may be more cost conscious and often in a hurry, the American attendee is very interested in doing more than just visit exhibits when justifying time away from the office or factory and the costs to attend. This is clearly represented in the two main American trade shows in 2015 that have content for springmaking, wire forming, mesh welding and rebar processing: Interwire 2015 in Atlanta, GA, USA, and the SMI Metal Engineering eXpo™ in Charlotte, NC, USA. Both have a fair amount of nonexhibit content to offer show attendees while the upcoming wire Russia 2015 trade fair, which could be considered a European affair, has a typically heavy reliance on exhibit stands.

Nonexhibit content offered this year in Atlanta and Charlotte are shown in the sidebar at the right, and our previews on Interwire and wire Russia exhibits start on pages 28 and 68. The SMI exhibits will be featured in our next issue, but this month, we have some SMI content details, starting on page 58.

Mike McNulty, Editor
mcnulty@wireformingtech.com
You're invited. WAFIOS is pleased to announce the opening ceremony of the WAFIOS Midwest Technical Center on May 21, 2015. Join us for technical symposiums and hands-on demonstrations. WAFIOS machinery on demonstration include:

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FPM Heat Treating Receives Nadcap Accreditation

FPM Heat Treating, Elk Grove Village, IL, USA, announces that it has received an additional Nadcap Scope of Accreditation for Carburizing, Carbonitriding and Hardening and Tempering. With this addition, FPM’s Elk Grove Village facility is now approved to provide a broad variety of thermal processing services since receiving its first accreditation in 2007 for Vacuum processing.

FPM says it works hard to produce top-quality heat treatments to meet the stringent aerospace specifications. Adding these processes to its Nadcap Scope gives it the ability to provide a greater range of services to the aerospace industry and helps customers gain more business.

FPM Heat Treating received this Nadcap accreditation for demonstrating their ongoing commitment to quality by satisfying customer requirements and industry specifications.

“Achieving Nadcap accreditation is not easy. It is one of the ways in which the aerospace industry identifies those who excel at manufacturing quality product through superior special processes. Companies such as FPM Heat Treating work hard to obtain this status and they should be justifiably proud of it,” said Joe Pinto, Executive Vice President and Chief Operating Officer at the Performance Review Institute. “PRI is proud to support continual improvement in the aerospace industry by helping companies such as FPM Heat Treating be successful, and we look forward to continuing to assist the industry moving forward.” www.fpmht.com

DEM Delivers Cold Rolling Line to India

DEM Costruzioni Speciali Srl, Udine (UD), Italy, has just successfully delivered a Cold Rolling Line to a giant manufacturer of stainless steel wire in India. The line draws AISI 316L wire with a maximum inlet of 7.5 mm diameter. The end product is coiled in spools of a maximum weight of 2000 kg.

The finished wire shape is triangular, for the production of screens for oil, water and liquid filtration systems.

Beyond this specific application, the DEM line can also be set to produce different final shapes, thanks to a quick roll-changing system.

The line configuration is the following: horizontal payoff, driven by motor; pre-straightening module, with 10 idle rolls; three Profile Rolling Stands, with driven horizontal capstans; horizontal and vertical straightening unit, composed of two panels consisting of seven rolls each; laser measurement for closed-loop control and dimensional adjustment of the final material; and horizontal spooler featuring the automatic adjustment of the rotating speed with the line speed.

All production parameters can be displayed, selected, stored, retrieved and modified through the color screen HMI. DEM developed the whole automation system and the electrical plant through its own specialists.

The line grants excellent toler-
Insteel Industries to Consolidate Facilities

Insteel Industries, Inc., Mount Airy, NC, USA, has announced that it will be closing its prestressed concrete strand (PC strand) facility in Newnan, GA, USA, and moving the manufacturing to its other three PC strand production facilities located in Gallatin, TN, USA; Houston, TX, USA; and Sanderson, FL, USA. The Newnan facility was acquired from American Spring Wire Corporation in August 2014.

The consolidation of the plants is expected to result in the elimination of 20 positions at the Newnan facility. Employees of the Newnan facility will be offered employment at Insteel’s other facilities together with relocation and transition assistance. It was anticipated that operations at the Newnan facility would cease by the end of March 2015 and the PC strand-related equipment would be relocated to Insteel’s other facilities.

Insteel expects to incur total costs of around US$0.8 million in connection with the closure of the Newnan facility, which includes US$0.4 million for equipment relocation costs, US$0.3 million for asset impairment charges and US$0.1 million for employee separation costs.

The future cash expenditures associated with the closure of the Newnan facility are expected to represent around US$0.5 million of the US$0.8 million of total costs. The annualized cost savings from the consolidation of the plants is expected to be approximately US$3.0 million.

“The actions we are taking to consolidate our PC strand facilities will strengthen our market leadership position by aligning our manufacturing capacities with the requirements of our markets and reducing our operating costs,” said H. O. Woltz III, Insteel’s President and CEO. “Our decision to close the Newnan facility was made only after thoroughly evaluating other alternatives and we are committed to making the transition as smooth as possible for the employees who are impacted.”

investor.insteel.com
NEWS WIRE

Central Wire Industries Acquires Hempel Wire Limited

Central Wire Industries, Perth, Ontario, Canada, has acquired Hempel Wire Limited, located in Rotherham, UK, a manufacturer and distributor of stainless and nickel alloy wire. The business was purchased from Hempel Special Metals Holding GmbH, an international distributor of specialty metals, part of the F.W. Hempel & Co. Group of companies, headquartered in Oberhausen, Germany. Hempel Wire manufactures and distributes both round and profile wire in a wide variety of alloys including virtually all stainless steels and nickel alloys. Founded in Rotherham in 1983, Hempel Wire reported sales of £9 million last year and has approximately 45 employees.

Central Wire Industries, which was founded in 1955, manufactures and distributes stainless steel, nickel alloy and copper and brass wire products throughout the world. The company, which maintains eight manufacturing facilities—six in the USA and two in Canada—has 360 employees. Central Wire provides products to many major industries including aerospace, petrochemical, food-processing, medical, automotive and marine.

The acquisition comes after Hempel Wire’s recent purchase of certain trademarks, trade names and intellectual property from Fox Wire Limited in neighboring Sheffield. These acquisitions enable Hempel Wire to take a position as the leading supplier of round and shaped stainless steel wire in the UK. Included in this transaction were the rights to the SUPA family of alloys including SUPA 75, which is a well-known and long-standing leader in oil and gas industry applications.

The transaction was completed on Friday, February 27, 2015. www.centralwire.com

Wheelabrator Group Technology Center Opens in Canada

Metallic surface preparation expert, Wheelabrator Group (Canada) Ltd., Burlington, Ontario, Canada, celebrated its grand opening with a ribbon cutting ceremony and luncheon after moving to a brand new location and office complex in Burlington.

This brand new office facility offers spacious conference rooms and modern work stations for engineering and sales, in order to help the team offer state-of-the-art technology for standard and custom wheel and airblast equipment. Wheelabrator also offers complete equipment services on their enhance its global footprint as the surface treatment supplier of choice.

“We are committed to expanding our presence in China with one voice to the customer through our wholly owned organization,” said Joris Merckx, President, Chemetall. “As a specialist in surface treatment, we aim to offer absolutely the best in service along with the most innovative technologies and effectively address shifting market and customer needs.”

The company said that China is a key growth market for Chemetall.

“With our very strong focus on the automotive market and our long-term relationship with leading automotive manufacturers, we are ideally positioned to further develop the business, provide advanced innovative technologies to the market and create value for our customers in this region,” said Jin Hui, Managing Director, Shanghai Chemetall.

Today, China is the largest automotive market in the world. With its broad portfolio of surface treatment technologies, Chemetall expects to actively participate in the dynamic growth of automotive-related businesses such as automotive components, coil and cold forming industries.

Established as a joint venture with two Chinese partners in 1995, Shanghai Chemetall today houses the recently modernized, highly equipped and expanded regional R&D and Technical Center, administrative offices and over 220 dedicated employees to support customers in the region. www.chemetall.com
a global level, which is unique in the industry, providing the necessary support to keep equipment running at optimum capacity. Replacement parts, services, equipment modernization, maintenance and training help customers to reduce operating costs, maximize productivity and upgrade to the latest technologies to support manufacturing improvements.

“Wheelabrator continues to see steady growth in all of North America. Our new facility will allow our dedicated team of service and sales engineers to respond even faster to customer queries,” said Andrew Carmichael, President & COO, Wheelabrator Group.

www.wheelabratorgroup.com

wire Russia 2015 Offers Business Opportunities

The next staging of wire Russia, The International Wire and Cable Trade Fair in Russia, will take place from May 12 to 15, 2015, at the ZAO Expocent in Moscow, Russia. Over 250 exhibitors from more than 27 nations are expected to participate, presenting their latest technologies for the wire and cable industry to trade visitors from the Russian Federation. Despite the difficult economic climate experienced in recent years, the wire and cable sectors regard the future with optimism due to an ongoing increase in investment in Russia.

Many sectors rely on products from the wire, cable and wire-processing industry since they are essential for transmitting electrical energy, electronic data and mechanical forces. In order to meet increased product requirements, machinery and technology is needed that adapts to a large range of specifications while continuing to offer the same high degree of production quality with minimum resource consumption. As a result, the current modernization

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It starts in the labs and carries right through to the customer’s floor. Dörken’s team of coating experts works with OEMs, parts manufacturers and coaters worldwide to produce coatings that set new standards in fastener corrosion protection. From springs, brackets and clips to nuts, bolts and screws... Dörken tests topcoats and basecoats under the most stringent standards to provide best-in-class performance in corrosion protection, consistent torque and tension values and resistance to chemical attack. Looking for that superior finish? Look to Dörken.

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- DELTA®-SEAL Topcoat systems for a variety of metals
- DELTA®-SEAL Clear and black topcoats for zinc and zinc alloy electroplating

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517.522.4600

From the start, it’s all about the finish.
requirement of Russia’s economy is enormous and provides international companies rewarding business opportunities within the wire and cable industry. wire Russia 2015 will be an ideal gateway to this lucrative market.

The exhibitors at wire Russia 2015 will display the latest in wire manufacturing and finishing machinery (including cable, fastener and spring manufacturing machinery), process technology tools, auxiliary process technology materials, measuring and control technology as well as test engineering and special wires and cables.

The trade fair will again be jointly organized by Messe Düsseldorf and its subsidiary, Messe Düsseldorf Moscow, with the support of leading Russian and international industry associations: the All Russian Cable Scientific Research and Development Institute (VNIIKP), the International Wire and Cable Exhibitors Association (IWCEA), the German Wire and Cable Machine Manufacturers Association (VDKM), the International Wire and Cable Exhibitors Association France (IWCEA France), the International Wire & Machinery Association (IWMA), the Italian Wire Machinery Manufacturers Association (ACIMAF), the Wire and Cable Industry Suppliers Association® (WCISA®), the Austrian Wire and Cable Machinery Manufacturers Association (AWCMA-VÖDKM) and the Shanghai Electric Cable Research Institute (SECTI).

At the last staging of wire Russia in 2013, 250 exhibitors from 26 countries displayed their latest technologies. Together with the concurrently held trade fairs Metallurgy-Litmash, Tube Russia, Aluminium/Non-Ferrous and Russia Essen Welding & Cutting, wire Russia attracted some 10,850 visitors from all parts of the Russian Federation.

wire Southeast ASIA Returns to BITEC in 2015

wire Southeast ASIA, the 11th International Wire & Cable Trade Fair for southeast Asia, will return from September 16 to 18, 2015, at the Bangkok Trade & Exhibition Centre (BITEC) in Thailand. Driven by wire Düsseldorf, the industry’s leading international trade fair organized by Messe Düsseldorf, wire Southeast ASIA 2015 will provide a platform for companies presenting the latest wire and cable processing machinery as well as equipment and new technology and manufacturing solutions to a trade audience from the ASEAN wire, cable, automotive, construction, computer manufacturing and electrical engineering sectors.

A special feature at the event will be the USA group exhibit, organized by Messe Düsseldorf North American (MDNA), Chicago, IL, USA, and supported by the Wire & Cable Industry Suppliers Association (WCISA), Akron, OH, USA. To reserve exhibit space within this national pavilion, contact MDNA by phone at +1 312 781 5180.

wire Southeast ASIA 2015 will be organized by Messe Düsseldorf Asia, the subsidiary of Messe Düsseldorf in Germany, with the support of the International Wire & Machinery Association (IWMA), the Italian Wire Machinery Manufacturers Association (ACIMAF), the International Wire & Cable Exhibitors Association (IWCEA), the Austrian Wire and Cable Machinery Manufacturers Association (AWCMA-VÖDKM), the International Wire and Cable Exhibitors Association - France (IWCEA-France), the German Wire and Cable Machine Manufacturers Association (VDKM) and the Wire and Cable Industry Suppliers Association® (WCISA®).

When wire Southeast ASIA was last held in 2013 in conjunction with Tube Southeast ASIA, the two exhibitions attracted 387 exhibitors from 31 countries and over 6,880 visitors from 55 nations, for a 28% increase compared to the 2011 staging. www.mdna.com www.wire-southeastasia.com

New Strategic Partnership for Schlatter & Emmedu

Schlatter Industries AG, located in Schlieren, Switzerland, and Emmedu SpA, located in Fano, Italy, have initiated a long-term partnership on the use of Schlatter welding equipment in EMMEDUE® Advanced Building Systems. Both companies are long-standing experts in plant engineering and construction with the goal to provide their global customers with complex systems of the highest quality.

Decisive for the partnership between Schlatter Industries and Emmedu SpA was a convincing system concept and the high quality and productivity of the welding equipment.

The strategic cooperation exclusively covers the integration of Schlatter welding technology in the manufacturing process of Emmedu building systems. In addition, synergies will take effect in customer service, after sales and marketing.

Schlatter Industries AG is a world leader in plant manufacturing, providing resistance welding systems for specific industrial solutions. www.schlattergroup.com

Emmedue SpA is the world leader in the manufacturing and marketing of an innovative building system, which is seismic-resistant and offers thermal and acoustic insulation. www.mdue.it

Amanda Shehab Takes Over as Chairman of IWMA

The International Wire & Machinery Association (IWMA), located in Birmingham International
Park, Solihull, UK, recently announced that Amanda Shehab has taken over as the new Chairman of the IWMA. Shehab replaces the retiring IWMA Chairman, Steven Rika.

Amanda Shehab started her working life as an Engineering Apprentice in her father’s electrical engineering company located in Sheffield, UK. At the electrical engineering plant, Shehab learned how to rewind motors and repair all kinds of industrial machinery.

Following her graduation from the University of Bradford in 1991, with an honors degree in electrical and electronic engineering, Amanda Shehab undertook work placements with British Aerospace and the Ford Motor Company.

Shehab has accumulated more than 24 years’ experience in the cable manufacturing industry, following her employment with BICC Cables as a Manufacturing Systems Engineer, and then later with General Cable and Pirelli.

Amanda Shehab has been a director of Cimteq Ltd. since 2007. The Wrexham, Wales-based company provides software products and services to the cable manufacturing industry that increase manufacturing efficiency, improve quality, decrease lead times and reduce costs.

A tutor in software engineering for the Open University, Amanda Shehab is also a Chartered Engineer (CEng) and a member of the IET.

The International Wire and Machinery Association—the world’s largest and most influential corporate membership association for the wire, cable and wire product industries—has more than 300 member companies in 50 countries worldwide.

IWMA member companies benefit from a wealth of experience in new technology, education and growth through a unique range of benefits, services and events. As a not-for-profit-making trade association, the IWMA is ideally placed at the head of a vast multinational industry.

In addition to a range of benefits to becoming a member, the IWMA publishes Wire & Cable News twice a year—allowing companies the opportunity to promote their business free of charge in a publication that is read worldwide and distributed freely at industry events and exhibitions. www.iwma.org

NIMSCO is Now Exclusive Distributor

OMAS Srl, which is headquartered in Airuno, Italy, has

At Anchor Abrasives we specialize in the design and manufacture of resin, epoxy and oxychloride bonded nut inserted discs and cylinders...plus centerless and rollwheels.

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www.anchorabrasives.com
announced the recent appointment of NIMSCO LLC (Nichols International Machinery Systems Co.), Davenport, IA, USA, as its exclusive distributor for the USA market. OMAS is well known around the world for its innovative vertical multi-slide wire and strip forming machines including the new Series BMX “Modular System”.

Beyond this, OMAS offers the latest technology in CNC feed and form wire bending machines with the Series CEB lines, which cover a wide range of wire diameters from 0.5 to 18 mm (0.0195” to 0.720”). The new CEB 200 MICR0 will be exhibited at the upcoming Interwire 2015.

Additionally, all of the OMAS Srl machines can be supplied to manufacturers incorporating welding modules. This is in addition to the full range of machines offered by OMAS Srl for the high-speed automated production of “welded rings” from wire or strip stock.

The main exhibit categories at wire South America 2015 will include the following:
- Wire manufacturing and finishing machinery
- Process technology tools
- Auxiliary process technology materials
- Special wires and cables
- Measuring and control technology
- Test engineering

Brazil’s boom in the construction, automotive and consumer electronics industries has led to a marked increase in the demand for wire and cable products—wire South America 2015 will provide an ideal platform for international companies to access this growing market.

At the first staging of wire South America in 2013, some 173 exhibitors from 26 different countries showcased their latest wire products manufacturing and processing equipment and technologies for the sector. Together with the concurrently held TUBOTECH industry trade fair, wire South America attracted approximately 15,000 trade visitors.

The contacts at NIMSCO LLC are Jerry Ashdown or Jerry Jacques. www.nimsco.com

Second Staging of wire South America Announced

After the successful premiere in 2013, Messe Düsseldorf and its partner Grupo Cipa Fieras & Congressos will organize the second staging of wire South America, International Wire and Cable Trade Fair, from October 6 to 8, 2015, at the Imigrantes Exhibition Centre in Sao Paulo, Brazil.

The wire South America industry trade show event will be supported by the International Wire & Machinery Association (IWMA), the Wire and Cable Industry Suppliers Association® (WCISA®) and the Italian Wire Machinery Manufacturers Association (ACIMAF).

Dates Set for wire 2016 & Tube 2016 Industry Trade Events

The next concurrent staging of wire 2016 and Tube 2016 will take place from April 4 to 8, 2016, at the Messe Düsseldorf Fairgrounds located in Düsseldorf, Germany.

At these wire and tube industry events, more than 2500 exhibitors will showcase the most up-to-date technologies from the wire, cable, tube and pipe processing industries.

At wire 2016, an expected 1300...
exhibitors from 50 countries will present their latest innovations in the following categories: wire manufacturing and finishing machinery; process technology tools and auxiliary process technology materials; special wires and cables; measuring and control technology; and test engineering.

wire 2016 will again feature the North American Pavilion, organized by Messe Düsseldorf North America (MDNA), Chicago, IL, USA, together with the Wire and Cable Industry Suppliers Association® (WCISA®) of Akron, OH, USA, as the sponsor.

Over 1200 exhibitors from 47 countries at Tube 2016 will give a broad overview of developments in the fields of raw materials, tubes and accessories, tube manufacturing machinery, rebuild and reconditioned machinery, process technology tools and auxiliaries as well as measuring, control and testing technology, pipeline and OTG technology, profiles and machinery. The special “Plastic Tube Forum” exhibition will also be part of Tube 2016 again.

At Tube 2016, USA and Canadian companies will also have the opportunity to exhibit within a North American Pavilion, organized by MDNA with the Fabricators & Manufacturers Association, International (FMA) and the Society of Manufacturing Engineers (SME) as co-sponsors.

At the last staging of the wire and Tube show events in 2014, more than 2583 international exhibitors presented their products, equipment and innovations to some 72,000 trade visitors from 104 countries. The wire 2014 exhibitors occupied approximately 639,680 ft² of space, which represented a 2% increase compared with the wire 2012 show visitor figures.

www.wire.de / www.mdna.com

Ambrell Sells Induction Heating System for Wire

Ambrell, Scottsville, NY, USA, and a leading manufacturer of induction heating systems, recently sold an EKOHEAT 60 kW/30 kHz induction heating equipment system for a wire heating application. The client obtaining this system needed to heat various sizes of copper wire to 325°C (617°F) at a rate of 10 mpm (32.8 fpm).

The client took advantage of Ambrell’s complimentary applications laboratory service. The laboratory engineers recommended the appropriate EKOHEAT induction heating system for the temperature and time requirements. Due to the coating curing process, the client wanted a larger inside diameter to provide ample clearance. The EKOHEAT induction heating system provides the client...
with a versatile method of heating an array of copper wires of various diameters within the specifications as a part of the coating curing process. www.ambrell.com

SWD Inc. Celebrating 35th Anniversary
SWD Inc., Addison, IL, USA, opened in March 1980, with three employees in a 9000 ft² facility and began black oxidizing, cleaning and pickling operations with used equipment. In late 1980, SWD began passivating stainless steel and in 1981 purchased Fastener Sorting Corporation. In 1995, SWD relocated to its current facility where the company occupied roughly 50,000 ft², allowing expansion into zinc phosphate coatings.

On March 18, 1998, SWD Inc. achieved ISO 9002, QS 9000 and ISO 14001 quality and environmental management systems certification. SWD is the first company in the USA to achieve these international registrations simultaneously, being the first metal finisher in the USA to receive ISO 14001 certification. In December of 1998, SWD became a charter member of the IEPA ISO 14001/EMS.

Along with ISO 14001 certification, SWD is the only job shop metal finisher in the midwest USA with a USEPA 33/50 plan accreditation as well as recipient of the National Performance Review “Hammer Award” for environmental excellence from the U.S. Government. In 1999, SWD became a charter member of the USEPA ISO 14001/EMS.

The company began to process parts with Doerken materials in 2004, using one of the first pieces of specialized dip-spin equipment that could tilt and tumble to help eliminate recess fill. SWD has continued to expand its dip-spin operation. In 2012, SWD completed an addition to its building and in 2013 added a second dip-spin line.

Today, the company has 150 employees and runs three shifts per day in a 155,000 ft² facility. It is still family owned and operated with Dick Delawder as CEO, Rick Delawder as President, Tim Delawder as Vice-President of Operations and Matt Delawder as Vice-President of Sales & Marketing. www.swdinc.com

MacDermid Approves ZinKlad Applicator
MacDermid, Waterbury, CT, USA, is pleased to announce that Tawas Plating Company in Tawas City, MI, USA, is now an approved applicator for MacDermid’s ZinKlad 96 process.

ZinKlad processes offer high-performance hexavalent chromium-free coatings with a proven consistent quality and a global network of over 75 approved applicators. ZinKlad coatings are compliant with ELV and RoHS legislations and offer predictable torque-tension characteristics. www.macdermid.com
The large wire coiling experts.

When it comes to large wire coilers no one has more models and experience than Simco. Simco offers six models from 8.00mm/.312”-25.0mm/.984”.

Contact the large wire experts for more information.
The Variator Factor — Why Referenced Dimensions?

One of the more critical functions of Engineering is to assign tolerances for any given geometric design. Another most important function for a Spring Designer is to explain to customers why certain dimensions need to be left as referenced. In today’s quality-conscious manufacturing, an approximate value tends to bring cold shivers even the most experienced Engineer. But, the reason is based on not just the variation in manufacturing, but variation in the material itself.

Let’s not forget that spring makers have typically only one bill of material. They take a coil of spring steel and elastically form millions of identical parts. The variations encountered can be machine drift, temperature extremes at the forming arbor and other production-related issues. But just like stack-up tolerances, additional variations add to the mix of the total differences in a spring rate, compared to what was calculated.

Spring steel is that technically ideal mix between the worlds of elasticity and plasticity. It must be a low enough tensile to form and stay put, but high enough to rebound when load is applied. This balancing act is predicated on the notion that the material will act exactly as designed. But this is not always the case. So what are the properties of the wire that cause this variation?

Spring rate/slope/gradient is the very function of any spring design. The spring’s ability to produce a force at a given deflection, and return to its installed length, is the very function of the device.

Rate is calculated with the following formula.

\[
\text{Rate} = \frac{G \text{ (torsional modulus)} \times d^4 \text{ (round material size)}}{8 \times Na \text{ (active coils)} \times D^3 \text{ (mean diameter)}}
\]

The modulus of a given material is considered a constant, but certainly is not. The moduli of smaller materials is often higher than larger sizes. The same is true for material size. All material is purchased to a given specification. In the world of springs, that is typically ASTM. ASTM specs will call out a tolerance for any particular material diameter. And even though that tolerance may be small, the material variation is raised to the 4th power and has considerable affect on the spring rate.

This means the material properties are not controlled and are the reason springs vary on rate from lot to lot of material. If a spring maker is allowed to vary coils for rate adjustment, this allows quick set-up changes. Once the rate is adjusted, the spring maker can then easily adjust the free length to center loads. When this “reference” scenario happens, it’s a win-win for all involved.

Material properties

Forming properties

Spring Fundamentals...

Coil Compression for Rate

Since coils and rate are inversely proportional, a very simple formula can tell a springmaker how to vary the active coils, based on a first sample run. The following formula uses the number of coils and rate of the sample, compared to the desired rate. The result gives the spring maker the proper coils needed to compensate for material variation.

\[
\text{Needed coils} = \frac{\text{Sample rate} \times \text{Sample coils}}{\text{Needed rate}}
\]
The Strength of Steel

Annealing of Steel – Part 6
“Low-Temperature” Stress-Relief Annealing

In the last column, we considered basic stress-relief annealing, noting that residual stress arises any time there is nonuniform plastic flow or working. That is, once such working is finished, the workpiece is left with remaining stresses. These remaining stresses are called residual stresses and their presence, particularly where tension is involved, can promote fracture and distortion, in conjunction with loading that would otherwise be within the design limit for the formed component. Beyond this, nonuniform plastic flow and resultant residual stress can be produced by varying degrees of thermal expansion and contraction, and nonuniform transformation from austenite to martensite can also lead to residual stresses.

Thus, we noted that it is often considered necessary or desirable to remove residual stresses by a thermal process called stress-relief annealing. The basic idea is that the temperature be raised to a level wherein the undesirable stresses may relax to much lower levels within a reasonably short time. In the case of carbon steels, practical stress-relief annealing may be achievable with a sub-critical anneal of say, one hour’s duration at 550°C.

Now beneficial property modifications can be brought about in steels for certain applications with the use of thermal treatments at temperatures much below the standard stress relief range. Such heat treatments maximize strength and minimize stress relaxation in cold drawn wire and in fasteners, cables, reinforcing wires and other products that bear high sustained stresses. Unfortunately, such thermal treatments have been referred to as “low-temperature” stress relieving. Actually, it is difficult to believe that the amount of dislocation motion and creep fundamental to basic stress relieving can occur at these lower temperatures in the associated times. Instead, this property change almost certainly results from the rapid static strain aging that occurs with such heat treatments. Strain aging in steel involves the repositioning of carbon and nitrogen atoms that are actually in solution in ferrite. Such activity can occur rather rapidly, with substantial aging occurring in 10 weeks at room temperature and in four minutes at 150°C.

The increase in yield strength associated with strain aging is often manifested in an upper yield point, and generally speaking, strain aging increases strength and reduces stress relaxation, while diminishing ductility. An interesting presentation of representative low-temperature stress-relief data can be found in the *Ferrous Wire Handbook* (R. M. Shemen-ski, Ed.), available from the *Wire Association International*, and these data have been summarized below, for a range of low-temperature stress-relief temperatures. Clearly there are some attractive property enhancements to be had, particularly if ductility (as well as impact resistance) is not a consideration in service performance.

<table>
<thead>
<tr>
<th>Temperature</th>
<th>20°C</th>
<th>150°C</th>
<th>250°C</th>
<th>350°C</th>
<th>450°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wire, 0.005% proof stress</td>
<td>950 MPa</td>
<td>1450</td>
<td>1700</td>
<td>1900</td>
<td>2150</td>
</tr>
<tr>
<td>Wire, tensile strength</td>
<td>1750 MPa</td>
<td>1900</td>
<td>2000</td>
<td>2100</td>
<td>2350</td>
</tr>
<tr>
<td>Wire, torsional ductility</td>
<td>32 twists</td>
<td>14</td>
<td>15</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>Spring, stress relaxation</td>
<td>23%</td>
<td>15</td>
<td>9</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Spring, 10⁴ cycle fatigue</td>
<td>650 MPa</td>
<td>690</td>
<td>740</td>
<td>760</td>
<td>780</td>
</tr>
</tbody>
</table>

Whether a misnomer or not, low-temperature stress-relief annealing is common practice in the manufacture of a wide variety of carbon steel products. If you are a producer and are not using such treatments, you may wish to investigate.

Let me leave you with a word of caution, however. Do not assume property improvements without careful confirmation (if you don’t have resources for such careful confirmation, you “can’t afford to play the game”).

In particular, don’t depend on casual and qualitative customer appraisals for such confirmation.

Now, if you are that customer, find out what you can about your supplier’s possible use of low-temperature stress-relief annealing. There may be a win/win opportunity out there. Good luck!!!!

The *WireDrawing 101* short course, presented and developed by Roger N. Wright, LLC., and *Wire & Cable Technology International* magazine, is the comprehensive two-day course that teaches the fundamentals of wire drawing to manufacturers of ferrous and nonferrous wire. *WireDrawing 101* features a unique handbook, with practical process design and trouble-shooting exercises suitable for work-a-day formats and continuing study. *WireDrawing 102™* will be offered in the future. www.wiretech.com / www.rnwinc.com
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Down to the Wire: Time to Protect Our IP

Technology has revolutionized the manufacturing sector, enabling impressive achievements, but also posing one of its greatest threats if not properly managed. Computers, automation, use of data and sophisticated software have increased the quality of our products, improved production speeds and efficiency and enabled manufacturers to generate a tremendous amount data and intellectual property (IP). This IP drives manufacturing innovation and gives us the competitive edge we rely on to succeed in today’s information-driven, global marketplace.

But we have a big problem. Our IP is under attack. While technological advances have enabled innovation and gains in productivity, these advances have also made firms more vulnerable to outside attacks. Competitors looking to gain an unfair advantage are stealing our valuable information and data. Theft is happening at a rate faster than ever before and is costing the economy as much as US$300 billion every year.

For me and my company, this problem became all too real back in 2011. I found out that our competitors in China and India were stealing and using our IP—product designs and website images—to manufacture cheap knock-offs and ship low-cost goods to ports around the world including into my home port of Baltimore, USA.

Thieves From Many Sources

Sound familiar? Today, far too many American manufacturers are victims of IP theft. Threats come from various sources including cybercriminals and competitors—many of whom are state sponsored. These criminals are deploying new and sophisticated tactics to gain access to our “secret sauce”.

Manufacturing is now the most targeted sector by cybercriminals—one in four attacks hit manufacturing—and is one of the top three contenders for the industry hit hardest by industrial espionage. These threats can be mitigated by taking steps to proactively minimize vulnerabilities within a company:

1. Assess and take inventory of your IP portfolio.
   Know what you have and where you store it.
2. Use nondisclosure agreements (NDA).
   Not just some of the time, but all of the time.
3. Educate your employees on the basics of IP and cybersecurity.
4. Ramp-up IT systems security. Make the investment, it’s worth it.
5. Plan for the worst and know your options.

However, despite best practices, no company is 100% immune. Effective laws and efficient enforcement are necessary to further prevent crime and stop it when it occurs.

Despite best practices, no company is completely immune from theft of intellectual property and trade secrets.

Patent Litigation, Trade Secrets & Data Privacy

Right now, Congress is engaged in a colorful debate over the patent system. Abusive patent litigation has a big impact on manufacturers who hold more patents than all other industries combined. Reforms could go a long way to discourage future abuse, but the key is making sure that they don’t harm our ability to innovate.
Lawmakers are looking at the trade secret enforcement system. Trade secrets are becoming an increasingly important form of IP for manufacturers. In fact for many, trade secrets are their primary form of IP due to the escalating costs and standards for patentability. Currently, trade secrets are protected under state law and federal criminal law. Recent proposals would give trade secret owners the ability to go to federal civil court to enforce their rights (a right already afforded to patent, trademark and copyright owners).

Ultimately, this would make it easier and faster for trade secret owners to go after thieves before secrets are disclosed and their value is lost forever.

There has also been a much-needed push to update the current digital privacy law. Our current law—the Electronic Communications Privacy Act—was enacted in 1986, well before the advent of email, the Internet and cloud computing. Back then, we didn’t even have cell phones. This dialogue surrounding an important and complex set of issues is one that warrants our
Learn the Facts

The Problem: Unfair Competition Resulting from IP Theft Harms Jobs, Innovation and Economic Growth

Foreign companies in nations with high piracy rates steal intellectual property (IP) in order to gain an unfair competitive advantage over companies in the USA. IP theft is not isolated to a few high-tech industries or sectors, and varies widely in both types and method. Further, IP theft not only results in direct harm to the IP owner, but also in downstream harm to the broader economy and jobs.

Types of IP theft impacting technology-intensive USA firms include piracy, counterfeiting and trade secret theft.

Piracy: USA companies suffer piracy by competitors of their copyrighted works such as designs and product images as well as technology firms’ software and IT.

Counterfeiting: USA companies include valuable trademarks in their brand names and logos, and their brands and products are imitated in emerging markets.

Trade Secret Theft: USA firms suffer from theft of trade secrets, business data and manufacturing processes.

Information technology theft is another way for competitors to compete unfairly. Companies in nations with high piracy rates are competing unfairly against USA businesses by stealing information technology (IT). Rampant IT theft in emerging markets gives those companies yet another opportunity to cut costs, negatively impacting both the IT industry as creators and the manufacturing industry as users of the IT. By reducing IT theft, we can create IT jobs and save manufacturing jobs, improving America’s innovation economy.

The problem of IT theft is significant—the commercial value of pirated software reached a record high of US$63.4 billion in 2011. The top ten business software pirating countries in 2011 were all emerging markets with piracy rates over 50%.

Manufacturing is indispensable to America’s innovative drive and economic prosperity. But the USA manufacturing sector, accounting for 11.9 million jobs or about 11% of private sector employment, has been hit especially hard by foreign competition.

Between 2002 and 2012, USA manufacturing employment decreased by 22% or 3.3 million. One cause of this decrease is the prevalence of IP theft and unfair competition tactics overseas.

According to a recent report from the National Association of Manufacturers and NAJI on how IT theft has impacted the USA manufacturing industry, IT theft has had a significant cost to the USA economy over a 10 year period. It further estimates how the USA economy could benefit from a 2.5% reduction in global IT theft per year for four years.

IT plays a key role in modern manufacturing, helping to drive USA innovation. “Everything in the factories of the future will be run by smarter software,” said Paul Markel- lio in The Economist. In 2012, USA manufacturers spent US$34.1 billion on software, a 29% increase in the past five years. From idea generation to implementation to shipping, IT is used in each stage of production. Advances in technology and software continue to fuel innovation and increase manufacturing efficiency.

Gene Sperling, the former Director of the White House National Economic Council, says, “More than any other industry, manufacturing firms account for a disproportionate share of innovative activity in the USA—70% of private sector R&D and over 90% of patents issued.”

NAJI supports solutions that address IP theft issues facing USA manufacturers and technology companies. NAJI is a nonpartisan coalition of concerned businesses and industry experts fighting unfair competition resulting from the use of stolen intellectual property—whether it be from piracy, counterfeiting or trade secret theft.

By addressing the unfair advantage that results when foreign and other manufacturers steal IP, NAJI hopes to increase awareness and ensure a level playing field for companies in the USA.

NAJI can address both the IP holder’s direct harm and the downstream economic harm—competitive disadvantage faced by USA manufacturers as a result of IT theft by foreign competitors—through these solutions: Enforcement, Education, Cybersecurity and Certification. Contact NAJI, report IP theft and join online for free by visiting www.NAJI.org.

About the Author:

Drew Greenblatt is President of Marlin Steel Wire Products and Chairman of the National Alliance for Jobs and Innovation (NAJI), a coalition of over 400 manufacturers and businesses working together to stop IP theft and end unfair competition. NAJI is free to join. Learn more at www.naji.org.
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CNC Coiler Increases Spring Manufacturing Capacity

by:
Ron Hubbard
General Manager
Newcomb Spring of Texas
2831 Satsuma Drive
Dallas, TX 75229 USA
www.newcombspring.com

Newcomb Spring Corp., Decatur, GA, USA, has purchased a US$750,000 CNC spring coiler that can manufacture a wide range of compression, extension and torsion springs. The spring coiling machine’s automated features enable Newcomb to coil precision springs using wire diameters up to 0.625” with increased speed and productivity. This new equipment is installed at Newcomb Spring of Texas.

Newcomb Spring takes pride in our modern operations, utilizing highly efficient machinery and state-of-the-art manufacturing technologies. We purchased this high-end spring coiler for its advanced capabilities, which allows us to provide strict compliance to specifications, reduce lead times and substantially increase the production of large springs.

Rapid Parts Production
The coiler forms springs using wire up to 0.625” (15.875 mm) in diameter, rapidly producing parts that traditionally required manual handling. The system’s automated features eliminate the need for labor-intensive hand tooling and many secondary processes, providing faster turnaround times and less waste material.

The CNC machine can coil a wide range of wire sizes from 0.312” to 0.625”. Here the machine is shown producing a 0.343” wire to be used in office furniture.

The new CNC spring coiler measures 8.86’ high and 7.22’ wide and represents a US$750,000 investment for Newcomb Spring.

With the CNC coiler’s automated features, Newcomb Spring can rapidly coil precision springs using wire diameters up to 0.625”.

Advanced capabilities allow company to provide strict compliance to specifications, reduce lead times and substantially increase the production of large springs.

The CNC machine can coil a wide range of wire sizes from 0.312” to 0.625”. Here the machine is shown producing a 0.343” wire to be used in office furniture.
order specifications.

With its advanced reporting capabilities, the CNC spring coiler can also record and save job specifications, making set up for future production runs even more efficient.

This is an impressive investment for Newcomb Spring. This advanced CNC coiler is fast—both in set up and coiling time—and its robust capabilities make it easy-to-use, even when performing very precise adjustments while the machinery operates. We are excited to incorporate this unique, advanced equipment into our spring production processes.

**Broad Spring-Making Range**

Newcomb Spring Corp. is a worldwide supplier of compression springs, extension springs, torsion springs, wire forms, stampings, rings, hooks and battery contact springs.

The company’s spring and wire formed products are utilized in a wide variety of industries including aerospace, agricultural, automotive, computer, medical, military and telecommunications.

www.newcombspring.com

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**Company Profile:**

*Newcomb Spring Corporation* was founded more than 100 years ago. The company helped to found what is now the *Spring Manufacturers Institute (SMI)* and the *New England Spring and Metal Stamping Association*. Newcomb Spring Corporation has become one of North America’s largest spring companies, and is proud to have multiple generations of the same families working at the company.

www.newcombspring.com

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The CNC machine’s fast set up and coiling times significantly increases the production of large springs.

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763-780-2131
Members of the international wire and cable manufacturing industry are preparing for the 34th staging of the biennial Interwire and the Wire Association International’s (WAI’s) 85th Annual Convention at the Georgia World Congress Center (GWCC) in Atlanta, GA, USA. The Interwire exhibition runs from April 28 to 30, 2015, and WAI’s Annual Convention and its 2nd Global Continuous Casting Forum for copper and aluminum run April 27 to 30, 2015.

Interwire 2013 drew participants from 50 countries. This year’s events are poised to deliver equally impressive results. The sold-out exhibit hall comprises 400 companies, and WAI has the support of dozens of sponsors across all of its programs.

Interwire is held biennially and is the largest trade show of its kind in the Americas for the wire and cable manufacturing industry. Initiated in 1981, Interwire offers an anticipated and timely meeting point for suppliers, manufacturers, buyers, researchers and industry luminaries from around the globe. It is a forum for global industry experts to share insights on the latest trends and developments in wire and cable including those related to fiber optic, electrical, fastener, ferrous and nonferrous disciplines.

Educational Highlights

Several conference segments are new, offering visitors the chance to learn innovative wire and cable manufacturing methods and investigate new technology.

The new Manufacturing Management workshop is designed to provide Operations Managers with practical leadership tools. The popular Production Solutions demonstrations cover wire breaks, lubricants and issues arising from wire cleaning houses. The Global Continuous Casting Forum runs concurrently with WAI’s Annual Convention, requires separate registration and also includes time for visitors to see the exhibits.

Keynote Speaker

Mike Abrashoff, former Naval Commander of the USS Benfold, and author of the New York Times bestseller, “It’s Your Ship”, will share lessons from, “The Leadership Roadmap”, in his keynote address. His system of management techniques helped him overcome the challenge of low morale and high turnover—concepts that apply to many organizations facing the same problems today. The keynote address, open to all full conference registrants and Global Continuous Casting Forum participants, is sponsored by Gem Gravure Co. Inc.

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Details about Interwire 2015, the convention and the Global Continuous Casting Forum are available at the websites:

www.wirenet.org
www.interwire15.com
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Exhibits

The following is a sampling of wire forming industry firms that will exhibit at Interwire 2015. Descriptions have been provided by the exhibitors or obtained from public sources.

AIM Inc.
Booth 1014  USA
AIM offers 2D and 3D CNC wire bending solutions with models ranging from 2.5 to 25 mm. Our automated work cell solutions take wire from straight and cut or coil and will form, weld and systematically arrange the finished parts. During the past few years, AIM has developed new benders and accessories that we will unveil at Interwire. No further details can be provided at this time, but stop by our booth 1014 to witness these innovations firsthand. AIM will exhibit robotic integrations with its patented hybrid forming solution, the AFM-3D13Sd, capable of unmatched versatility, fast output and low cost maintenance.

All Wire Forming Machinery, Inc.
Booth 770  USA
Serving the wire and strip forming industry for over 20 years, we offer a complete line of new equipment for the wire industry with 2D and 3D CNC wire benders, CNC spring coilers, CNC wire formers, power payoff dereelers, custom built machines, automation systems, rebuilt and refurbished multi-slides and new Diacro benders and cutters.

Anbao (Qinhuangdao) Wire & Mesh Co. Ltd.
Booth 753  China
Anbao (Qinhuangdao) Wire & Mesh Co., Ltd. is the main manufacturer and exporter of steel wire and wire product in China. We are specialized in export of various kinds of wire and wire mesh products, we offer high-quality steel wire; electro galvanized wire; hot-dipped wire; stainless steel wire; woven wire mesh; welded wire mesh; hexagonal wire mesh; knitted wire mesh; demister; folding wire container; wire mesh belt and other wire-related products.

B & Z Galvanized Wire Industry
Booth 1807  USA
Electro-galvanized wire, black annealed wire, redrawn wire and copper-coated wire.

Bekaert Corporation
Booth 2113  USA
Whatever industry you’re active in, no matter what your application is, we can offer you a customized wire solution by combining various basic materials, coatings, shapes and added value services. Bekaert has more than 130 years of experience in drawing steel wires and applying wire coatings for a wide range of applications and industries. By working closely together with our customers, we continue to extend our capabilities by constantly seeking new applications, solutions and opportunities. From shaped or round, to bright or Bezinal®, we can create any steel wire no matter the shape, composition or mechanical properties. At Interwire 2015, we’ll showcase our wide range of capabilities as well as some examples of our innovative wire solutions. These include two new coated spring wires: Bezinal® XC, a coated wire with a better coilability for high-end, critical springs and Bezinal XP, another coated wire with a reliable and superior corrosion resistance that doesn’t need additional post-coating. Visit Bekaert Corporation to learn more about our capabilities. While you’re visiting, you’ll also have a chance to enter a contest to win a Yeti cooler.

Bergandi Machinery Co.
Booth 701  USA
Bergandi Machinery Co. is a manufacturer of chain link, razor ribbon, barbed wire and PVC-coated wire production equipment.

Beta Steel
Booth 2017  USA
Beta Steel is a full-service logistics steel supply group with distributing, warehousing and manufacturing capabilities. We process bar, rod and wire for the cold heading, cold forming and industrial wire industries. Beta Steel specializes in stocking programs, just-in-time shipping and quick turnaround delivery response on short lead time requirements. We use global sourcing of steel rod and wire to bring quality, value, and continuous improvement to its product line.

BLM Group USA Corporation
Booth 224  USA
The E-Flex Wire Bender is an automatic single-head, all-electric CNC wire bending machine that can perform wire bending operations from the simplest to the most complex. The unit comes with 3D visual graphic programming. Continued...
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Tel: +27 82 771 6633
Dubai, UAE

www.cliffeng.com
Brookfield Wire Company, Inc.  
Booth 549  
USA  
Brookfield Wire is a leading supplier of cold drawn stainless steel, nickel and nickel alloy wire. Brookfield Wire’s stainless steel and nickel alloy products are manufactured to the highest industry standards in a broad range of chemistries, sizes, tempers and finishes. In addition to the standard products, Brookfield Wire can produce special products meeting rigid individual customer requirements. The plant, located on a 40-acre site in Brookfield, MA, USA, was founded in 1947, and contains approximately 70,000 ft\(^2\) of manufacturing area.

Central Wire Industries Ltd.  
Booth 1818  
Canada/USA  
Central Wire Industries, founded in 1955 and headquartered in Perth, Ontario, Canada, manufactures and distributes stainless steel, nickel alloy and copper and brass wire products throughout the world. The company, which maintains eight manufacturing facilities - six in the USA and two in Canada - has 360 employees. Central Wire provides products to many major industries including aerospace, petrochemical, food-processing, medical, automotive and marine.

Chemetall Inc.  
Booth 400  
USA  
Chemetall has been developing, manufacturing, and supplying state-of-the art specialty chemical products since 1909. The ISO 9001:2008 certified company offers a wide spectrum of products and systems to meet the needs of many industries and applications including wire industry. Chemetall’s integrated products, chemical management systems, process equipment (dispensing, controlling, and monitoring) and service programs facilitate many wire processing needs.

Clifford Welding Systems  
Booth 1723  
South Africa/USA  
Clifford Welding Systems is excited to announce the opening of our new dedicated Sales office in the USA. The office will handle the North and South American market, and Interwire 2015 is the perfect time and place to tell our customers about the exciting changes coming this year. Clifford is known worldwide as a leader in reinforcing mesh welders, offcoil fencing welders, fine mesh welders, grating welders and high speed wire straightening machines. At Interwire we will have knowledgeable staff on-hand to answer your questions and help you find the best equipment configuration to fit your budget. We look forward to meeting you.

Cometo  
Booth 1932  
Italy  
Cometo snc—Lesmo Machinery America, the North American business of Italy’s Cometo s.n.c., offers a comprehensive selection of wire handling and feeding devices for supplying coiled wire, rod and shaped materials to an extensive range of machinery including wire forming and wire bending machinery. Feeding is an essential operation that requires its own unique needs. Cometo has broadened its feeder unit range offering different feeders as a simple add-on/replacement accessory onto various manufacturing/processing machinery or as a complete feed, straighten measure and cut system. In addition to manufacturing quality parts and machinery, Cometo also offers complete lines for the feeding, straightening and cutting of various wires and profiles. MTF Series: Cometo has the engineering expertise to create a new product from concept to multi-unit production or adapt its long-standing designs to fit your specific needs. New to the Cometo range is machinery for the cutting and marking of welding wire and also based on the same design, and on display, a system for straightening and cutting of wire with different profiles (round, square, triangular, rectangular and more). With its modular structure, the machine can be assembled according to the wire to be fed and straightened. Feeders are suitable for a wide range of materials including copper alloys, aluminum alloys, stainless steel and carbon steel. This machine design is very versatile and allows one to change the positioning of its components within minutes: also allows for additional type wire straighteners according to the application. The machine can also be equipped with a modular collector tray for the collection of the cut material sections. The cut lengths are controlled by an encoder and fitted with electronic, hydraulic or pneumatic cutting units.

DEM Costruzioni Speciali Srl  
Booth 1824  
Italy  
DEM Wire Rolling Technology is your reliable supplier of competitive technology for cold rolling. The company manufactures: PROFILE and FLAT Wire Rolling lines; COLD ROLLING LINES for the production of Wire in Coils and Bars, for concrete reinforcing; ROLLING CASSETTES for wire rolling and rope compacting; MICRO-CASSETTES to replace traditional dies; FLUX CORED WIRE (welding wire) lines; and
**VISIT US AT INTERWIRE 2015 BOOTH 564**

**CUTTING EDGE CAMLESS SPRING FORMERS & BENDERS**

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<td>CMM 12-236R</td>
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<td>CMM 12-450R</td>
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<td>CMM 12-600R</td>
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<td>CMM 12-680R</td>
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**VINSTON US CORP.**
5659 W. Howard Street
Niles, IL 60714
Phone (847) 972-1098
E-mail: info@vinstonus.com
Website: www.vinstonus.com
Auxiliary solutions (bar chamfering, tying units, handling equipment, coilers). DEM has seen a constant and solid growth in the last 10 years. After doubling the workshop in 2014, this year will be remembered for the opening of its new offices. Visit DEM’s booth 1824 to know more.

Die Quip Corp.
Booth 1003
USA
Die Quip Corp. will be featuring several of its innovative cutters for wire, cable and chain solutions to eliminate manual, hazardous and abrasive operations. Our cutting line includes Knipex pliers and hand tools, Krenn triangle blade bolt cutters, air powered, battery, electro-hydraulic and full hydraulic cutters.

Battery powered DCC16 from Die Quip.

ERA Wire Inc.
Booth 354
USA
Wire straightening and cutting services for all alloys (ferrous and nonferrous, round, flat or shaped), torsion straightening, used or rebuilt wire straighten-and-cut equipment, replacement parts and tooling, on-site technical assistance.

Eurobend GmbH
Booth 1058
Germany
Eurobend has been involved for more than two decades in the manufacturing of advanced technology machinery. Our spectacular growth has been the result of high standard achievements in the areas of design, production and trade of our products. More specifically, Eurobend produces fully automated electronically controlled machines for straightening, cutting and bending of all types of steel wire (smooth, deformed, recessed or re-bar), mesh welding machines and mattress making machines. Competitive prices, along with significant after-sales service are major assets. Exports comprise 98% of the company’s turnover and contribute to its dynamic growth. This success is due to the combination of quality and flexibility the machines ensure, compared to those existing in its market segment. Our commitment to reliable and technically advanced machinery is reflected in the quality of every piece of equipment that leaves our factory. Our reputation is based on customer satisfaction and we will continue to meet and exceed the demands of our customers and industries. The development of new products and technical expertise is a continuous process and part of Eurobend’s long-term strategy and consequently have assisted in establishing Eurobend as a leading brand name in the international arena.

Eurolls SpA
Booth 858
Italy
For the wire industry, Eurolls SpA was the first company to convert the traditional die process in wire drawing, to wire rolling, by means of the company’s unique quality microcassettes. Eurolls was the first to produce Micro, modular, traditional and custom made cassettes. The entire manufacturing process and know-how was developed in house, and Eurolls SpA was the first company to introduce this technology to the wire industry world. The possibility of rolling more sophisticated materials is always a new Eurolls SpA challenge, and with the cooperation of the company’s customer base, Eurolls continues to develop new alternatives to traditional wire drawing. Nowadays, Eurolls SpA and the Eurolls Machinery Division can provide customers with wet and dry drawing/rolling lines, straightening and cutting lines, lattice girder machines, electrode machines and many other products to service your wire manufacturing needs. See Vitari listing for details on the newest member of Eurolls.

EVG Inc.
Booth 150
USA/Austria
The group of companies EVG - AVI - MARIENHÜTTE, covers the entire range of welded mesh and reinforcing steel: EVG and FILZMOSER as producers of complete production lines; steel and rolling mill MARIENHÜTTE as producer of reinforcing steel; AVI and BSTG as producers of reinforcing mesh and reinforcing steel coils; H&S Zauntechnik as supplier of industrial and fencing mesh as well as complete fencing systems. Through its work within the group of
**The E-Flex Wire Bender** is an automatic single-head, all-electric CNC wire bending machine that can perform wire bending operations from the simplest to the most complex. The E-Flex is equipped with two clockwise and counterclockwise bending turrets and is ideal for three-dimensional bending and flexible to handle both low and high volume production. The unit allows for multiple bends on the same part within the same cycle. One of the most prominent features is that the E-Flex automatically and safely corrects the program by searching for prior bends that could interfere with the bending sequence. The unit comes with 3D visual graphic programming (VGP3D) for operator ease and visual monitoring.

See us in Booth 224 at Interwire
companies, EVG is familiar with, and knows from its own experience, the challenges a producer of mesh and wire products is faced with.

Fastener Engineers and Lewis Machine
Booth 2056 USA
See Rockford Manufacturing Group Inc. (RMG).

Fenn
Booth 1955 USA
Fenn has been a leader in providing quality metal forming machinery to the manufacturing industry for more than 100 years. Fenn’s experts take the time to design and manufacture the right machine to fit the customer’s specifications and production requirements. The equipment product lines available from Fenn include wire flattening and shaping lines, rolling mills, turks heads, drawbenches, swagers and Torin spring coilers, in addition to other ancillary products and services. Whether you’ve been in business as long as Fenn, or whether you’re just getting started, stop by Fenn’s booth to learn more about how Fenn can help increase productivity for your business.

IDEAL Welding Systems
Booth 1024 USA
Since 1923, the name IDEAL stands for innovation and progress in the production of welding machines and automation for most diverse applications; e.g. wire products, gratings, wire joining, conductors, cables, automotive, sheet metal products, coil joining and band saws. Apart from standard machines, tailor-made machine solutions according to the customer’s requirements will be designed and manufactured. In 1995, the American subsidiary IDEAL Welding Systems L.P. in Rockford, IL, USA, was founded in order to be able to supply the North American, Canadian and Mexican markets quickly and efficiently. A team of highly experienced sales and service personal are employed to more effectively support our customers and equipment. IDEAL is well known in the market for the development and manufacture of mesh welding machines for various types of industrial mesh and fences. The features and design of these machines are made to assure high flexibility and short set-up times. High performance, burr-free and reduced weld sparking, quick change-over appliances and utmost flexibility offer the customer a considerable reduction of welding cost and down times. New and user-friendly graphical interfaces enables a process reliability, even with nonskilled operators. With a wide range of different mesh welding solutions, IDEAL is covering lots of possibilities; starting from manual operated machines for display and shop fitting products, up to fully automated and high-speed manufacturing lines for fencing, deck-mesh, cable tray and many other products. Flexibility and supreme quality of the final product are IDEAL’s long-time standards. With the highest level of engineering and the project planning from the first thought up to the final solution, IDEAL is providing a complete support service, to satisfy the needs of the customers. At the Interwire 2015 wire and cable trade show, IDEAL Welding Systems is taking a pride in exhibiting its ultra-fast changeover mesh welding machine for producing all types of mesh, e.g. supermarket, wire displays and white-goods. Owing to a fast change-over process and simple set-up, production of small batches can be manufactured economically. As automation is important for producers, the IDEAL Welding Systems’ GAM 116 mesh welding machine will be exhibited at the show with line and cross wire magazines, which are fully programmable. The machine is designed for high production, but with easy maintenance in mind. It has proved popular with customers for over 10 years.

Isabellenhütte
Booth 1800 Germany
Isabellenhütte, which is located in Dillenburg, Germany, specializes in the production of alloys for internationally standardized thermocouples (also mineral insulated) as well as extension and compensating leads for producing thermocouples, quick cups, connectors and plugs. We also produce resistance wire for heating elements and precision resistors. Solid, stranded and flat wires, strips, foils and rods are also available. Isotek is our North American subsidiary and stocks many items at its warehouse in Swansea, MA, USA. Precision alloys from Isabellenhütte are used in multiple industries including the automotive and aerospace industry, petrochemical, process engineering and railway technology as well as in control, temperature measurement and regulation.

Mark Ferreira, Dr. Steffen Burk,
Anthony Carriero, Jens Roger Peters

Interwire 2015 PREVIEW
It’s Coming.
A new North American tradeshow for the
Engineered Spring and Precision Metal Components Industries

New Solutions Formed Here.
For the Engineered Spring and Precision Metal Components Industries.

Presented by
metalengineeringexpo.org
enhancing our entire steel product line, developing new wire industries, King Steel has a reputation for growing and with the King Steel Five Principles of Excellence: It’s these the right time for our customers. Our promise to you begins keep steel bars, wire rod and steel wire in the right place at locations strategically placed throughout the country to variety of qualities, grades and shapes. We have warehouse hot rolled wire rod and cold drawn steel wire in a wide and cold finished carbon, alloy and stainless steel bar and hot rolled wire rod and cold drawn steel wire in a wide variety of qualities, grades and shapes. We have warehouse locations strategically placed throughout the country to keep steel bars, wire rod and steel wire in the right place at the right time for our customers. Our promise to you begins with the King Steel Five Principles of Excellence: It’s these Five Principles by which we do business, day in, day out. With years of experience in the steel bar, wire rod and steel wire industries, King Steel has a reputation for growing and adding value to its customer and supplier relationships. Since our founding, King Steel has been constantly improving by enhancing our entire steel product line, developing new value-added processes, and building outstanding programs. We offer several value-added processes to supply the best and most economical steel for your particular needs. We own and operate four cold saws in our Holly, MI, USA, facility to service any precision steel cutting requirement. King Steel also owns a MacBee bull block located strategically in Warren, MI, USA, to service large-diameter SBQ and CHQ steel wire needs. Our steel bars, wire rod and steel wire products are used in a wide variety of industries such as automotive, commercial construction, heavy truck, agriculture, medical, road construction, mining, erosion control, energy and many others.

Lake Michigan Metals, Inc. Booth 2015 USA
Lake Michigan Metals Inc. is committed to providing top quality stainless steel wire with just-in-time delivery. Lake Michigan Metals, Inc. services wire formers, spring makers and cold headers located throughout the USA. The company carries both domestic and imported stainless steel. Lake Michigan Metals also carries DFARS Compliant Material, and we deal only with ISO-certified mills. We specialize in electro-polish quality (EPQ) forming wire and cold heading wire for the fastener industry.

Leggett & Platt Wire Group Booth 440 USA
Leggett & Platt is a leading USA producer of drawn steel wire. Leggett & Platt has unequaled expertise and experience in every aspect of wire production to include shaped and specialty wire products. Our wire mills produce virtually all the wire consumed by our other domestic businesses and supply a diverse group of external customers. Significantly, most of the steel rod used to produce our wire is manufactured in our own rod mill. Additionally, we manufacture a variety of formed or fabricated, wire-based products used across a broad range of markets.

Lesmo Machinery America, Inc. Booth 1932 USA
Lesmo Machinery America Inc will display a selection of wire handling equipment and systems from world leader manufacturers: Cometo snc-wire straightening, guiding and feeding equipment. On display will be full range of products including Cometo’s new modular structure feeder for straightening and cutting of various wire and profiles. Tramev snc-wire and cable cutters/shears, rod straightener’s and flat bar cutters. A range of rod shears and straightener’s will be displayed together with a portable hydraulic scissor shear for up to 85 mm cable diameter.

Madison Steel, Inc. Booth 360 USA
Madison Steel, Inc. is a global supplier of steel wire and related products servicing a variety of industries, and headquartered in Atlanta, GA, USA. Working in conjunction with more than 30 manufacturers both domestically and abroad, Madison Steel, Inc. provides customers with access to some of the most consistent, proven wire mills and wire products in the world. Madison Steel gives you direct mill access, without the hassle. By specializing in volume purchases direct from the manufacturer to the customer, we can ensure competitive prices.
Messe Düsseldorf North America (MDNA)
Booth 1001  USA/Germany
Messe Düsseldorf North America (MDNA) will participate in Interwire 2015 in order to promote its worldwide program of international wire and cable trade fairs including wire Düsseldorf 2016 (to be held from April 4 to 8, 2016 in Düsseldorf, Germany), wire Southeast ASIA 2015 (to be staged from September 16 to 18, 2015 in Bangkok, Thailand), wire Russia 2015 (to take place in Moscow from May 12 to 15, 2015) and wire South America 2015 (scheduled for October 6 to 8, 2015 in Sao Paulo, Brazil). At Interwire booth 1001, exhibitor, visitor, hotel and travel information for wire Düsseldorf 2016, wire Southeast Asia 2015, wire Russia 2015 and wire South America 2015 will be available.

Metal Resource Solutions, Inc.
Booth 358  USA
Metal Resource Solutions is a stocking distributor of stainless steel, brass, copper and nickel alloys for the cold heading and wire forming industries. We stock common sizes and alloys and procure hard-to-find items, including DFARS-compliant material.

Mid-South Wire
Booth 1354  USA
Mid-South Wire is an industry leading manufacturer of carbon steel wire with locations in the heart of Nashville, TN, USA, (headquarters) and Scott City, MO, USA. Founded in 1967, this family-owned company began with a single “side-winder” machine and today boasts more than 30 state of the art drawing machines capable of producing wire from 0.067” through 0.625” in diameter. We specialize in industrial quality, plating quality, cold heading quality, galvanized and shaped wire. We are an ISO 9001-certified company committed to producing the highest quality wire products in the industry.

NUMALLIANCE
Booth 732  France/USA
The leading manufacturer of wire, tube, flat-stock and spring CNC equipment as well as secondary operations. NUMALLIANCE has pioneered the world of CNC wire bending machines for the past three decades. For standard equipment or for custom equipment lines of production with secondary operation such as coining, piercing, chamfering, welding and threading.

OMAS Srl
Booth 301  Italy
OMAS Srl of Airuno, Italy, has announced the recent appointment of NIMSCO LLC (Nichols International Machinery Systems Co.), Davenport, IA, USA, as its exclusive distributor for the USA market. OMAS is well known around the world for its innovative vertical multi-slide wire and strip forming machines including the new Series BMX “Modular System”.

Continued...
Beyond this, OMAS offers the latest technology in CNC feed and form wire bending machines with the Series CEB lines, which cover a wide range of wire diameters from 0.5 to 18 mm (0.0195” to 0.720”). The new CEB 200 MICRO will be exhibited at Interwire 2015. All of the OMAS machines can also be supplied with welding modules, this, in addition to the full range of machines offered by OMAS for the high speed automated production of “welded rings” from wire or strip stock. Contacts at NIMSCO are Jerry Ashdown or Jerry Jacques.

OMAS machines offered by NIMSCO LLC (Nichols International Machinery Systems Co.) in the USA market.

OMCG North America Inc./OMCG Srl
Booth 1050 USA/Italy
OMCG’s mission is continuous development and innovation to anticipate the future needs of wire forming industry. With more than 50 years in the wire, tube and strip forming, OMCG “Office Meccaniche Costruzioni Generali” (Mechanical Manufacturing General Construction) introduced the first feed and form machine completely computer controlled in the industry in 1987 and since then has grown to become a world-leading machine manufacturer for the wire transformation industry with machines installed in more than 35 countries. We’re now offering a full range of single-head and double-head CNC benders covering wire diameters range from 1.5 to 18 mm. The machines can be configured to work with all types of steel as well as other materials (aluminum, brass, etc.); some of the models may be also set-up for tube or strip. All families show a variety of features including multiple bending radii, and OMCG’s user-friendly interface Easy Programming 3, with 3D simulation, collision check, real time programming, full remote service through internet connection, etc. Standard CNC Feed and Form Machines: different models available covering a range from 2 to 12.7 mm, including single-head and double-head machines. Proprietary Front Feed CNC Feed and Form Machines: Minimalist 6 and C51F feature a OMCG’s proprietary front feeding system that provides unmatched control over wire twisting and tilting with unmatched speed and bending quality. Special Eccentric Bending Head CNC Feed and Form Machines: C31E series feature an eccentric bending head that provide additional bending capability for more flexibility and improved performances within an extended wire range from 3 to 18 mm. PGU multislide series: different models available covering a range from 2 to 8 mm with a part length up to 1400 mm. Options like NC feeder, multiple wires feed, and special tooling are available. TRG forming and blanking series: different models, with wire and strip capability and a variety of blanking and forming options.

Anticipating industry trends, OMCG delivered a number of integrated work cells for specific products: Wiper Arms, Muffler Hangers (wire and tube), Hose Clamps, Swing Stoppers and Gutter Holders. A full range of accessories is also available: decoilers, wire straighteners, NC feeders, chamfering units, end forming units, threading units, welding units, notching units, coining and blanking units and more.

Pave CNC Wire Forming Systems Ltd
Booth 1321 UK
Manufacturer and innovator of computer-controlled bending machinery for the international wire/tube and heating element forming industries. Our state-of-the-art, user-friendly and highly competitive single and twin-head wire forming centers are being used by an international list of clients to manufacture a wide variety of products in a highly diverse range of industries.

Phifer Incorporated
Booth 450 USA
With more than 60 years of wire drawing experience, Phifer Incorporated, an international leader in the manufacture of aluminum round wire for a wide variety of applications, will display its vast range of American-made products. Phifer Incorporated has some of the most diverse capabilities in the industry, producing custom wire from numerous alloys in diameters ranging from 0.11 to 11.1 mm for a wide variety of applications. Applications include weaving wire, industrial knitting, tea bag staples, semiconductor bonding, medical devices, stranded power cables, and lightning protection cables. Newer products include copper clad aluminum,
low-carbon steel and bronze wire 0.127 to 0.50 mm (0.005" to 0.020"). Manufacturing and corporate offices are located in Tuscaloosa, AL, USA, and warehousing/sales offices operate out of California and Italy.

Plasmait GmbH/Howar Equipment Inc.
Booth 1320 Austria/Canada
Plasmait GmbH will present a range of new heat and surface treatment machines engineered for ferrous and nonferrous wire, strand or rope. For example, the PlasmaANNEALER has been designed for the high-speed annealing of stainless steel, CCA, CCS, nickel alloy wires and other materials. For example, fine stainless steel wires can be annealed in-line with drawing or rolling. Annealers cover a range of sizes, from diameter 0.1 to 7 mm. Applications/Materials: stainless steel, nickel alloys; resistance/heating alloys; medical wires, tubes, strips, ropes strands; fine wire for filters, mesh, knitting; aerospace, electronics, oil and gas applications; copper, copper alloys, CCA, CCA, superconductor; plating, coating, enamelling and taping; precious metals and jewellery and decorative; titanium, tungsten, tantalum, molybdenum; and welding wires.

Igor Rogelj, Willy Hauer

Promostar Srl
Booth 452 Italy
Promostar Srl is capable of supplying complete turnkey plants, complete equipment lines, machines and accessories for the production of concrete reinforcing wire (through the stretching process or through the cold rolling process) and thin steel wire (wire drawing process) for different industrial applications.

Raajratna Stainless Wire Inc.
Booth 453 India/USA
Raajratna Metal Industries Limited is an ISO 9001:2008 accredited stainless steel wire manufacturer, and it is a reliable source of stainless steel wires, bars, welding wire, spring wires and cold heading wires.

Rockford Manufacturing Group Inc. (RMG)
Booth 2056 USA
RMG is home of the innovative single offset Arbor and patented clutchless RMG straighten and cut machines, the 100 year old Lewis Machine Works and the comprehensive catalogue of Fastener Engineers wire and rod equipment. We produce the most efficient, reliable and cost effective production inline wire drawing machinery available to support the very foundations of manufacturing: the fastener industries, the wire products industries, the construction industries and the steel wire and rod industries.

Schlatter North America
Booth 1334 USA
Schlatter North America will display the new ++ to the North American market at this year’s Interwire show. During the week, Schlatter plans to have live demonstrations approximately every 30 minutes. Our service technicians will explain the new features of the machine and how they can save you time and money. New features that will help
reduce changeover times include display for the line wire feed positions, measurement system for positioning of the line wire feeds and single welding groups. The new MG950 system is a mesh welding machine developed by Schlatter Industries AG, which is designed primarily for the production of industrial mesh. The aim was to broaden the product portfolio with a welding machine that is flexible in relation to various mesh geometries, achieves high production speeds and exhibits the highest quality right from the first mesh. More and more additional functions, for example plug-in connectors for the connection of meshes, are integrated into the welded mesh during the production of wire meshes. As a result, the manufacture of such meshes also becomes increasingly complex and there are growing demands on accuracy. The graduation tolerances of the functional wires in particular are very demanding. The newly developed industrial mesh welding machine MG950 provides line wire feeds for these purposes, which are rigid and quickly adjustable. Lot sizes continue to shrink and manufacturers of wire products can no longer afford to generate waste. This occurs during the production of the first few meshes—caused only by the need to optimize the settings. The measuring system of the new MG950 remedies this situation. When using the measuring system, the line wire can be precisely positioned according to the mesh that been programmed. It is therefore possible to produce the desired quality right form the first mesh, by using the built-in welding assistant. As a result, productivity is significantly higher for small lot sizes when using the newly developed welding machine compared to traditional mesh welding machines. For recurring products, a new computer system is available for the line wire feeds. This new computer system provides its users the advantage that only those line wire magazines that are in a different position must be removed in case of similar products.

Schnell SpA
Booth 2152 Italy
Schnell is a leading industrial group worldwide in the field of automatic machines and software for rebar processing.

Sivaco Wire Group
Booth 258 Canada
At the forefront of wire production in North America, Sivaco designs, manufactures and delivers the highest quality wire products for a wide range of applications. Our reputation for innovation was bolstered recently with the introduction of the 9000 Series high-carbon product lines designed as an alternative to oil-tempered wire.

Sjogren Industries Inc.
Booth 715 USA
Sjogren Industries, Inc. has been providing high-quality machinery, tooling and accessories to the wire and cable industry for more than 75 years. Our product line includes wire straighteners, wedge grips, wire guides and magnetic brakes and clutches to be used in a variety of ferrous and nonferrous applications.

Taubensee Steel & Wire Company
Booth 749 USA
Taubensee Steel & Wire began providing value-added services and selling steel products as a family-owned and operated business in 1946. We’ve grown to become a national manufacturer of quality steel bar and wire products primarily serving the east and midwest USA, with a vision to expand on our great tradition of best-in-class service and innovation.

Tramev
Booth 1932 Italy
Tramev Srl is a world renowned producer of portable hand held cutting tools for Shearing, Cutting-Off, Bending and Straightening of Wire, Cable, Rod, Bar, Strip, Strand, Metal Banding, Bolts and Nuts. On display will be various tooling including electro-hydraulic shears, battery rod cutters and rod straighteners. A hydraulic scissor shear will be displayed showing the cutting of cable. Tramev’s cable division has provided some of the largest manufacturers of power cables in the world, shearing cable up to diameters of up to 170 mm. The wire division tooling can cut, bend and straighten steel rod up to 50 mm in diameter.

Ultimate Automation, Ltd.
Booth 458 UK
Ultimat “leaders in the field of wire forming and welding machines” have been designing and manufacturing innovative CNC wire forming and welding machines, used for the manufacture of a wide range of wire products from POP displays to automotive components, since 1991. In 2015 we will be displaying the latest version of their ULTIMAT UMW-100,
2D Wire Forming and Welding Machine, which incorporates faster drives and control systems. The UMW can be combined with the UCW-100 model, to create an integrated forming and welding cell, for the production of shelving products with the frames being produced on the UMW-100 and then transferred into the UCW-100 where the frame support/brace wire is fed direct from coil, and welded into the frame.

Ultimat has a machine to suit everyone’s requirement for the manufacture of POP displays, lampshades, supermarket shelving and automotive components, etc.

Martin Smith, John Manning

United Wire Company, Inc.
Booth 252 USA
United Wire Company is a third-generation family business that specializes in manufacturing flat, square and shaped wire in copper bases, carbon steels, nickel bases and stainless steels.

Vinston US Corp.
Booth 564 USA
Vinston US Corp. is the distribution and support center for all Vinston products for North America. American owned and operated, we offer customers technical support, hands on training and demonstrations. The Vinston product line is designed and integrated by top engineers educated in the USA. Our camless wire formers and benders machines are highly competitive in terms of quality, user friendliness, reliability, efficiency and cost. The Vinston brand is also rapidly expanding its customer base throughout southeast Asia, Europe and South America.

Vitari
Booth 858 Italy
The new line of Vitari straightening machines has been engineered to meet the growing needs of improving plant efficiency. Logistics and material flow have been key factors in
Vitari’s decision to engineer left-handed straighteners that enable mirrored machine setups. For decades, straightening machines have been produced in the conventional right-handed version obliging plant layouts to look very much like school classrooms. At last, Vitari’s dynamic engineering team has unfolded its unique left and right-handed straightening machines offering an unprepared industry what it has long been waiting for. This innovative solution offering enhanced plant flexibility and efficiency has met with enthusiasm from all sides of the industry who appreciate the advantages summarized as follows. The left and right-handed machines, positioned face-to-face, enable the operator to tool-up both machines without needing walk around 3 to 6 or 12 m long benches to access the straightener. As the bars fall into the collecting bench, the forklift truck or overhead crane can collect two bar bundles from the same corridor. The utilization of the forklift trucks, a hazard in most plants, can now be reduced as access to the straighteners is cut by 50%. With limited plant space or complex existing plant lay-outs the left-handed model offers greater flexibility in identifying suitable floor space. And as much as face-to-face solutions are favored, there are unquestionable advantages for side-by-side set-ups with the unique left-handed straighteners. Vitari is now part of Eurolls SpA.

W3 Ultrasonics LLC USA

W3 Ultrasonics LLC has developed SurRound™ technology for all cleaning, but especially in continuous production environments. Cleaning springs and other continuously produced, individual parts and components can be difficult in batch form. Collecting and transporting totes or bins increases WIP and floor space. SurRound cleaning technology puts the cleaning at your production point. It encompasses your parts with ultrasonic cavitation energy for faster, more thorough cleaning. SurRund cleaning technology permits W3 Ultrasonics to tackle more production applications with more innovative equipment and processes. While W3 concentrates on ultrasonic energy as the primary scrubbing action, we do employ many different methods depending on your specific application. Visit W3 Ultrasonics LLC for demonstrations or to receive further information on SurRound technology, equipment offerings and ultrasonics in general.

WAFIOS Machinery Corporation

At Interwire 2015, WAFIOS Machinery Corporation will exhibit the fast, flexible and efficient B 3 - CNC coiling and bending machine that has been engineered for the production of 3D wire parts (in a 0.079" to 0.157" working range). The B 3 - CNC coiling and bending machine will be exhibited at the show producing a broad range of complex bent wire forms while at the same time demonstrating the following benefits of the B series of CNC ciling and bending machines: Reduced machine concept cuts costs per unit; high flexibility and safety due to reliable and tested tool concept; simple operation due to the WAFIOS programming system WPS 3; minimization of tooling times due to latest iQ functions (available as an option); and simple handling of wire, from feed unit up to bending head.

Wire Forming Technology International

Wire Forming Technology International is a quarterly magazine publication covering the manufacture of springs, wire formed parts, wire mesh and rebar products and the materials, tooling, machinery and control systems for making those parts.

Tom Hutchinson, Mike McNulty

WITELS-ALBERT GmbH

Product line offered by WITELS-ALBERT USA Ltd. and WITELS-ALBERT GmbH and to be exhibited at Interwire 2015 includes the following: Conventional straightening units, Semi-automatic straightening units, Automatic straightening units, Straightening rolls, Guiding units, Guide rolls, Systems
for wire diagnosis, Feeding units, Incomplete straightening machines, Length meters, Cable strippers, Preforming heads. WITELS ALBERT USA will be presenting both new and field-proven solutions from its range of STRAIGHTENER, ROLL, GUIDE, FEED and PRE-FORMER products. The company will turn the spotlight onto engineering solutions for straightening applications and the feeding of process materials. Visitors to the WITELS-ALBERT USA Ltd. stand at Interwire 2015 will have the opportunity to see the company’s new products in action and to find out how good these new products really are. The Interwire 2015 show will also provide visitors with the opportunity to learn more about the latest clever ideas from the world of wire, tube, rope and cable production as well as to familiarize themselves with the company’s services and what the WITELS-ALBERT USA Ltd. website has to offer. New products available from WITELS-ALBERT USA Ltd. include Straightening units of the PR NT series, Feeding unit NAK 60 Z, Feeding unit NAH v160 and the Stripping system RE 5.

WITELS-ALBERT Feeding unit NAK 60 Z with centric material clamping.

ANBAO

Galvanized Barbed Wire

Wire Materials: Galvanized steel wire, PVC coated iron wire in blue, green, yellow and other colors

General Use: Barbed wire mainly serves in protecting of grass boundary, railway, highway, etc.

ANBAO QINHUANGDAO INTERNATIONAL CORP.
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How 3D Wire Forming is Changing the Game

by: Cody Masson, Sales
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www.wallbank.com

Three-dimensional technology allows fast and easy bending of wires at any desired angle. The customer gets exactly what is needed regardless of complexity, with no hassle, extra cost or extra waiting time.

3D (three-dimensional) wire forming is a thing of beauty. It is revolutionizing the way manufacturers can create wires and it’s changing the game in a positive way. The 3D technology allows manufacturers to bend wires at any desired angle by feeding it through machinery, quickly and easily. As a customer, you’ll get exactly what you need, with no hassle, extra cost or extra waiting time—regardless of how unique and complicated your needs are.

Complex Design? No Problem!

With 3D wire forming, no custom design is too complex or difficult. The machinery used in the process can handle just about any wire design you set it to. You’ll never have to settle for a wire that isn’t quite right for your needs again, and you’ll never have to adapt your products to fit wire form manufacturing requirements. But not only can it create intricate designs, it does so with complete accuracy and precision, which is exactly what you should be looking for when it comes to manufacturing wire forms. With 2D technology, you’re limited in what you can create—but this isn’t so with 3D wire forming. Your imagination is your only barrier.

Multiple Operations? No Need!

Unfortunately, when you go with 2D technology, the more complex your design is, the more difficult it will be to create. You may need multiple welding operations and a lot of wire parts to create the component you need. You might need additional heading, piercing, bending, chamfering and punching operations—and these entire steps make what could be a simple process more complicated. Because 3D technology can quickly do the job of many operations at once, the need for multiple operations to create one wire form is eliminated, and this also eliminates opportunities for errors during the manufacturing process.

Cost & Time Savings? Yes, Please!

With all of these additional welding operations being needed in 2D wire forming, naturally you’re going to have to pay more. It costs money to run those machines and supervise the work being done at every phase of the process. It also takes more time to go through so many extra steps, just to come to the same result that 3D wire forming gets you in one simple operation. And while you’re waiting on your wire forms to be created through a multitude of steps, your company’s own productivity will inevitably also decrease, which can cost you more cash in labor expenses.

Take Advantage of Technology

3D wire forming is changing the game. However, not every manufacturer specializes in 3D wire forms, so if you’re interested in taking advantage of this new technology for your manufacturing needs, make sure you perform your necessary research and find one that offers 3D services. With three-dimensional wire forming, you get accuracy and precision, even with the most complicated design, all while eliminating the need for multiple welding operations and while saving money, too. With 3D technology, you get exactly what you need. You don’t have to settle for anything less. What’s not to love?

5 Reasons Why There Are Limited Suppliers of Complex Wire Forms

Wire forms are used in a variety of industries and applications. Their shapes can be either simple or complex, but the difference between the two is the ease of finding a manufacturer that can meet your needs. Virtually all manufacturers are able to create simple wire forms, but not many are up to the task of making complex shapes.

Unfortunately, this means that there are limited suppliers of complex wire forms, and it can be tricky for purchasing managers to find one that can make complex wire form designs come to life. Here are five reasons why your manufacturer options are limited.

1. Design Expertise. Designing complex wire forms isn’t as simple as plugging in some numbers into a
formula. Many additional factors need to be considered and configurations need to be exact. Designing complex wire shapes takes skill, expertise and experience. And many suppliers don’t have the expertise needed to ensure accuracy. Without engineers on staff to take charge of the operation, you risk manufacturing a design that ultimately won’t work for your application. Many suppliers won’t take the chance of this happening, so they simply do not offer complex wire forming services.

2. **3D Capabilities.** Suppliers with 3D capabilities are just about the only ones that offer complex wire forming services these days. 3D technology has revolutionized the way wires can be formed. The process is quick, efficient, accurate and best of all cost effective. The possibilities are virtually endless—no project is too complicated or difficult when you work with a manufacturer with 3D machinery. Unfortunately, not every supplier will have this new state-of-the-art technology, which is why many will only offer you simple wire forming services.

3. **Additional Operations.** Without 3D technology, complex wire forming means using many different types of machinery to get the exact shapes and angles correct. If a supplier doesn’t have the right machinery on hand, properly manufacturing the wire forms isn’t possible.

4. **Limited Precision.** Because the design of complex wire forms is more difficult and complicated to get right, there is a lot more room for error. Any slight variation in the specifications can ruin the entire project at the design stage. And with additional operations, comes additional chances for mistakes to occur as well. So many extra steps mean that the precision and accuracy of both the designing stage and the manufacturing stage can be in jeopardy. Most suppliers don’t want to risk the high probability of error and simply do not take on complex wire forming projects as a result.

5. **Additional Cost and Time.** Without 3D wire forming machinery, creating complex wire shapes can be costly and time consuming. All of the additional operations that need to be performed to do the task take effort, which leads to higher manufacturing costs that some suppliers cannot bear. Without 3D capabilities, complex wire forming isn’t feasible for many suppliers.

**Go With the Pros**

Without 3D technology, there is a lot of room for error during the complicated design stage and the additional operations needed for complex wire forms. It’s also more time consuming and expensive due to the extra work that needs to be put into the process. These issues are often too much for suppliers to bear so they choose not to take on wire form projects with too much complexity. If you’re looking to create complex wire shapes, your best bet is to work with a manufacturer that can offer you 3D wire forming technology.

**3 Reasons Why Creating 3D Wire Forms are an Advantage**

While searching for a wire form manufacturer, it might be daunting to find the best supplier for your company’s particular needs. Though all suppliers are similar, they all have their own unique strengths and capabilities. In order to find a manufacturer that can create the precise wire forms that fit your business’ needs, you should search for one that specializes in creating 3D wire forms.

With 3D technology, the machinery feeds the wire until the material is bent at the desired angle. Here are three reasons why using 3D wire form technology is an advantage for your bottom line.

1. **Reduces the Need for Additional Operations.** For a complex application, your manufacturer may need multiple 2D wires to create exactly what you need. This means additional welding operations to combine all the numerous wire parts and secondary bending operations to meet your precise specifications. With 2D, your simple wire form has become a complicated undertaking. With 3D technology however, the operation is quick and simple—and most importantly, accurate. It can create the most complex wire shapes for your business needs with the precision and accuracy that you can rely on for guaranteed quality.

2. **Reduces Costs and Time.** All the additional welding and bending operations that are needed with 2D wire form manufacturing will inevitably cost you more money. What’s more, waiting for all these different processes to occur takes time, which means that your productivity will decrease while waiting on
How 3D Wire Forming is Changing the Game …continued

your parts to be shipped. You need your wire form manufacturing to be quick and efficient, which is exactly what you get with 3D technology. You will save yourself the potentially devastating waste of time and money when you find a manufacturer that uses the latest wire form technology.

3. Allows for Unique Designs. When you use a manufacturer that produces high-quality 3D wire forms, you’ll be able to design your equipment with little worry that the supplier won’t be able to make a wire form that works within the application. This means you get exactly what you need to fit the equipment you have—you don’t have to settle for subpar designs or applications. Regardless of how complex your wire shape is, 3D wire form machinery can get the job done to your specifications so you can breathe easy and move on to other business responsibilities.

Wire Form Manufacturing: Do’s and Don’ts

There are many manufacturers in the industry that produce wire forms, and it might be daunting to find the best one for your needs. To ensure that you are getting the best quality and service, you need to choose a professional, quality manufacturer to make your product. Here are some qualities to look for in a good manufacturer—know what to look for and what to avoid in your search.

Prototyping Capabilities. Wire form parts are often complex, so it’s important to know that the product you are getting is exactly what you had in mind. A good manufacturer can easily produce prototypes so you know that the components will fit properly into your space requirements. Prototypes can also be changed in minutes to allow you to save time and avoid errors in your design.

High-Quality Materials. When a manufacturer tries to save costs by skimping on high-quality materials, the customer is the one who ultimately loses. Successful manufacturers build wire forms that last and will function properly by using the best quality materials.

No Size/Shape Limit for Custom Orders. Customers looking for a manufacturer for custom wire forms do not want to be limited by sizes and shapes of wire. Whether customers are looking for round, flattened round or rectangular wire of any size, they should be able to request whatever they want and get it without a hassle.

Good Customer Service. Customers appreciate great service and judge the manufacturer on its service. Reliable customer service is key to a long-lasting business relationship. Successful manufacturers work with the clients in choosing the right materials for their wire forms, helping with the design and prototype processes, anticipating changing needs and answering any questions.

On-Time Shipments. Part of excellent customer service is making sure that the customer has his wire forms when he needs them. Successful manufacturers know how important it is to get the product to the customer on time.

Don’t trust your wire form manufacturing to a company that can’t provide the high quality products and services that you need. Find a manufacturer that excels in customer service and invests in technology and high-quality materials for your wire forms.

A Farmer’s Guide to Buying From the Right Wire Forming Manufacturer

Farming machinery is heavy-duty and meant to withstand extreme temperatures and environmental conditions. Naturally, the components that are used to manufacture farming equipment must be of high quality in order to ensure reliability, durability and resilience. This is why it’s so important to buy from the right wire forming manufacturer. Get sub-par products from a sub-par manufacturer you can bet that your equipment will inevitably suffer. So, here is your farmer’s guide to buying from the right wire form manufacturer firm. Look for the qualities below and ensure quality, accuracy and quick service.

3D Wire Forming. A wire form manufacturer with 3D technology can save you time and money. Without it, multiple 2D wires are needed for complex applications, which means additional secondary operations will be required to create the wire form you purchase for your machinery. 3D technology makes complicated designs accurate, quick and simple to produce. You’ll have the precision and accuracy that you need in order to ensure quality.

High-Quality Products. The wire forming manufacturer you choose to buy from should create high-quality products. This is the only way you can secure customer satisfaction on your end. Look at the materials they use to create wire forms for farmers—are they cheap and flimsy or are they strong, thick and durable? Next, understand how much experience and expertise the manufacturer has. Does he specialize in farming equipment? Does he know which materials and sizes are best for heavy-duty machinery?

Sophisticated Machinery. Outdated, old equipment can’t guarantee accuracy and precision. A wire forming manufacturer that uses the latest manufacturing equipment and technology used to make products today will be your best bet. Also, a wire forming manufacturer that has specialized tools to accommodate wire needs such as tensile or spring-back requirements, can ensure that you don’t have to settle for a product that doesn’t suit your needs precisely.

Quick Turnaround. High-quality wire forms are important, but buying from a wire forming manufacturer that can also give you assurance of quick turnaround times and fast delivery can also increase your productivity by not having to wait for your wire forms, save you time and improve your own customer service. Your customers will be happy that you’re able to provide equipment quicker than expected with no delays. And your company will stand out from your competition.

Strive for Quality. You need a wire forming manufacturer that can deliver quality. Choose to buy from a supplier that uses superior materials and has the expertise, technology, equipment and fast turnaround times needed to get your project done right, on budget and on time. www.wallbank.com

Go 3D & Get the Benefits

You are sure to benefit from the creation of 3D wire forms. You will reduce the need for additional welding and secondary bending operations, which will save you from the wasted time and money needed for 2D wire form manufacturing. Most importantly, your company will get the unique wire form designs it needs to have equipment that functions efficiently and profitably. 2D technology in wire form manufacturing is a thing of the past. In order to stay ahead of the competition and grow in the future, go with 3D technology for your wire form manufacturing needs and reap the benefits. www.wallbank.com

Company Profile:

Wallbank is ISO/TS registered and provides bolts, springs and wire forms to automotive, agricultural and industrial companies. We produce high-quality custom bolts and springs, have flexible production runs and can operate on short lead times. www.wallbank.com

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A&D TRADING LLC

- CNC Spring Coiling Machinery: .004 - 1.00 Wire Ranges
- CNC Spring Forming Machinery, cam driven and camless models: .006 - .312 Wire Ranges
- CNC 2D and 3D Bending Machinery: up to .480 Low Carbon Wires
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- UniBend Wire bending equipment
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At A&D, we offer the best pricing, warranties, training and service in the business.

Call us today and let us work with you to fill your machinery needs.
Straightening & Cutting Roundup

Suppliers have responded to our call for the state-of-the-art in straightening and cutting equipment and technology.

New Roller Straightening & Deflection Rolls for Wire Dry Drawing Applications

Bob Flower of Witels Albert USA, Ltd., Oxford, MD, USA, says, “As a part of wire production, the drawing process plays an indispensable role. In each drawing machine, straightening units and systems are essential components.

“Witels Albert USA, the world’s leading supplier of straighteners and guides for endless materials, has recently developed new roller straightening and deflection rolls for wire dry drawing applications. The design process for straighteners and deflection rolls of the DR series was influenced by several boundary conditions like ever-higher wire speeds, the need for an easy operation and minimized maintenance cost in the long run.

“The accompanying photo shows a straightening system for dry drawing machines as one result of the design process with details like specific sealed and coated rolls, optimized roll diameters for an elastic and elasto-plastic process material deformation, radial and axial adjustable straightening rolls and a deflection roll which can be aligned accurately considering the specific wire path from the lower to the upper capstan.

“Easy accessible elements like the quick opening/quick closing ex-center parts or greasing points are very welcome. On request, the straightening systems can be prepared for carrying a process material diameter gauge.

Witels Albert believes that the straightening systems of the DR series beat the common practice in the industry to use the drawing die for wire straightening. Experiences say clearly that the die-based method has disadvantages both for the workpiece and for the tool. The primary disadvantages for the workpiece or process material are nonuniform distribution of tension and variations in material structure across the diameter. This results in a level of finished product quality that makes handling difficult in downstream processes, causing repeated problems. It has for example, a negative impact on the dimensional accuracy of finished products (springs, bent parts, etc.).”

www.witels-albert-usa.com

Wire Straighten, Cut & Chamfer Machines

Yair Wiesenfeld of Videx Machine Engineering Ltd., Yahud, Israel, says, “The Videx VC-MS models work from wire coil and are the ideal solution for small production batches and frequent changeover of wire diameters and lengths.

“The machines are equipped with a patented ‘servo’ cut-off, using mechanical drive and using neither clutches nor hydraulics. The machines are therefore quieter and more reliable, requiring less maintenance.

VC-35-MS wire straighten, cut and chamfer machine.

“The straightener reciprocates during cut-off (same principle as Flying Shear) and never twists on the wire in one place. This feature is especially critical for a better durability when running hi-tensile wire.

“For very short parts, the cut-off cam is cutting the wire continuously, at steady intervals, according to the wire feed rate. For longer parts, the cut is performed by the servo drive through a flag. The wire feed rate is determined by a speed controller.

“The Run-Off guide is made out of stainless steel. It requires no adjustment when changing wire diameters within the machine range.

“The gate of the run-off guide is pneumatically operated. It is quiet and smooth, and is well supporting the wire during cut-off, to assure a square cut face.

“The positive stop is mounted on a carriage that rides along the run-off guide, so there is no need to dismantle any parts during set up. A fine adjustment length mechanism assures an accurate cut length.

“The machines are optionally offered with an integral chamfer cutting station that accepts the cut-to-length
Straightening & Cutting

parts and chamfers them from a magazine with no operator intervention.

“The chamfer cutting rate is determined by the time required to cut the chamfer. Cutting is done using carbide insert tools and expected production is up to 90 ppm when not using a positive stop in the chamfer station and up to 50 ppm when using a positive stop (used only when the chamfer size is critical).”

www.videx.co.il

Machines for Straightening & Cutting and Machines for Cutting & Marking TIG Sticks

Allan Brown of Lesmo Machinery America, Inc., Concord, Ontario, Canada, says, “Adding to the Cometo manufacturing program, these machines are suitable for the straightening and cutting of material with diameters 0.1 to 10 mm, and can accommodate standard round, square, hexagonal and triangular wire profiles (other profiles can be accommodated as well as customized profiles). Suitable for all material types including steel, copper, aluminum, various alloys and more, the materials are processed without damage to the material surface. Assembled on a sturdy electro-welded frame, these MTF machines are designed using a selection of roller straighteners (various types and sizes); three different types of feeder units (AL12 and AL6 modelw with three models in each group); and two different designs of cutting units (ECM05 electronic type / TAG 10 pneumatic type).

“Besides optimizing the manufacturing parameters and decreasing delivery times, these systems allow Cometo to offer machines that enable its customers to position the straightener in a random position, before or after the feeder unit, and also be able to replace or interchange it in a very short time frame (minutes) depending on the wire dimension and profile to be produced. Cometo has also developed its own

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customized powered payoff (SVO) to accommodate the said straighten and cut machines. These payoffs are suitable for the unwinding of coils up to a maximum diameter of 10 mm—they can also be adapted to other applications and integrated into machinery already in operation. The height from the ground to the coil base is 500 or 750 mm. The payoff base has a 1100 mm diameter platform and reaches a speed of 90 rpm. Maximum load is 1000 kg.

“Also available from Cometo are machines for cutting and marking of TIG welding rod. They process aluminum, bronze, stainless steel and carbon steel with diameters 1.2, 1.6, 2.0, 2.4, 3.2, 4.0 and 5.0 mm and hard stamp one end or both ends of the welding rods with fixed lengths up to 1000 mm.

“The units are completely customized with accessories designed for different kinds of wire. The pre-determined cutting length is set by means of an external touch screen connected to an encoder. The machine’s maximum production rate is approximately 90 to 100 ppm.

“The pressure of the feed rollers as well as the encoder roller can be adjusted by means of pneumatic pressure devices. The feed rollers are made of steel, and are profiled according to wire dimensions. Feed rollers coated with plastic/polymer materials can also be used, pending type of material to be processed.

Hand-Held Tooling for Straightening & Cutting

Allan Brown of Lesmo Machinery America, Inc., Concord, Ontario, Canada, says, “The TRAMEV line of cutting tools, available in North America through Lesmo Machinery America, Inc., offers a full range of portable tooling for shearing, cutting, straightening and bending of rebar, metal wire, cable, rod, bar and chain. This range of equipment allows fast and effective solutions to the problems related to cable, rebar, rod and bar processing operations. The tools provide quick and efficient cuts with maximum operator safety.

“TRAMEV cutting tools are designed to ensure the success of your wire handling and other rod and bar processing applications. Power options for TRAMEV shears/cutters include battery operated, electrically powered or electro-hydraulically powered options. Electrical and motor-driven power packs and hydraulic reservoirs are available for all TRAMEV portable hydraulic-operated cutting tool heads. Also offered are combustion engines that can be adapted to drive the unit instead of the electric motor in instances of field work in remote or isolated working conditions. These portable hand-held tools for solid materials can cut, bend and straighten wire, rod and rebar up to 50 mm in diameter, even for the most demanding applications.

“Models offer fixed tooling heads or a motor body with interchangeable cutting heads. Units are available in 110 V or 230 V, with other electrical options available upon request.

“Tool body has electro-hydraulic motor. Users can attach a selection of interchangeable heads including rope and strand cutters, rod benders and straighteners, flat bar and strip cutters and nut and bolt cutters.”

www.lesmoamerica.com

Rotor Straightening & Cutting Machine Processes up to 50 mm Low-Carbon Coil

Stefan Kavvadas of EUROBEND, Athens, Greece, says, “Among our wire processing equipment, a complete range of high-speed programmable and flexible single-line and multi-line straightening and cutting machines (type MELC) is offered, able to cover every production demand. Our latest addition on the single line, the MELC MONOLINE Series of Rotor Straightening and Cutting machine, is the MELC 50. The
only machine in the world that can process up to 50 mm low-carbon coiled material or up to 36 mm high tensile and stainless steel material (smooth, ribbed, deformed or re-bar).

“All conventional straightening and cutting machines operate using two different principles: Two-plane roller configuration at 90° to each other and conventional rotor straightening with dies.

“Both systems have advantages and disadvantages. The EUROBEND method is based on the rotor straightening system. But instead of dies, hyperbolically profiled steel rollers are used. These rollers execute the two fundamental operations of straightening and feeding, simultaneously. This is achieved by positioning the rollers at an angle to the wire axis and rotating around it, thereby at the same time accomplishing feeding and straightening.

“The unique ‘ROTOR’ straightening principle invented by EUROBEND nearly 20 years ago and adopted currently by almost all machine manufacturers in our industry sector, gives the lead once again to EUROBEND to present a one-of-its-kind machine that offers unmatched straightening results.

“Our straightening method ensures better straightening quality and consistency, which is something that cannot be found in the competition, since continuous
wear of the dies, or the conventional rollers, cannot be avoided.

“Machine downtime is minimized, since continuous adjustment of the straightening mechanism is not needed.

“EUROBEND provides the best straightening machines, as our customers admit.”

www.eurobend.com

Simple, Yet Complete Material Feeding Solution

Hannah Taylor, of Sales Administration at AIM Inc., Addison, IL, USA, says, “The AFM 1Dx line of machines is a simple, but ‘complete’ solution for your material feeding requirements. The programmability and quick set up of the AFM 1Dx machine line increases productivity. Consisting of a payoff unit, dual-plane straightener with a robust feeder, a separate encoder measuring device for added accuracy and a cutter, the AFM 1Dx machine line provides the answer to your straight-and-cut needs.

“Additionally, AIM Inc. offers 2D and 3D CNC wire bending solutions with machine models ranging from 2.5 to 25 mm. The company’s automated work cell solutions take wire from straight and cut or coil and will then form, weld and systematically arrange the finished parts.”

www.aimmachines.com

Comprehensive Line of Rotary Straighten and Cut Machines

Kirk Prosser, VP of Sales and Marketing for Rockford Manufacturing Group Inc. (RMG), Fastener Engineers and Lewis Machine, South Beloit, IL, USA, says, “RMG offers the most comprehensive line of rotary straighten and cut machines available in the industry.

“The RMG line offers five models rated for 0.250” to 0.500” (6.4 to 12.7 mm) maximum capacity. Each model utilizes the innovative, easy-to-adjust single offset—variable pitch—three die arbor, with our patented ‘Clutchless Cutter’ for improved performance and less maintenance. The RMGs are ideally suited for quick changeovers from one wire diameter to another and our ‘Micro Fine’ length control allows for accurate cut length adjustments in 0.001” increments while the machine is running.

“Our Lewis Machine straighten and cut line has been the backbone of the wire products industry for over 100 years. Since 1911, Lewis Machines have been built to provide many years of reliable service. RMG has continued this tradition with innovative improvements such as our patented ‘Clutchless’ cutters, digital arbor and feed speed meters and pneumatic feed roll pressure, while maintaining the same long-serving, robust, proven design. Our new Lewis Machines offer superior ease and repeatability of setups, less maintenance and years of dependable service.

“RMG continues to advance the Lewis Machine line and this is evident in the recently redesigned Lewis 3SV8 platform. This new machine has a maximum capacity of 9.5 mm (0.375”) at 625 N/mm² (90 ksi). The 3SV8 now offers a smaller footprint. The Lewis Model 1SHVF was introduced in 2009 and the response from customers has been very positive, reporting an increase of over 25% in throughput compared to their older 1SHV machines. The 1SHVF is ideally suited for small diameter applications from 0.045” to 0.135” (1.3 to 3.4 mm) wire. By utilizing the latest in Variable Frequency Drive technology our customers now have fully independent control over the arbor, feed and cutting speeds to maximize throughput and quality on both of these machines.

“We know it is critical to improve production up-time and throughput and RMG has advanced these objectives by working with our customers to provide the total solution for their wire processing needs. Inadequate payoff remains as one of the biggest problems
Straightening & Cutting Roundup

with the straightening and cutting of wire. A poor payoff can greatly reduce the production rate and wire quality of any straighten and cut machine. RMG offers several high-speed payoffs for use in front of our Lewis and RMG equipment which can increase throughput by up to 20% while improving overall length tolerance.

“Our demonstration area is equipped with our machines for in-line wire drawing, mechanical descaling and wire payoff including several Lewis and RMG straighten and cut machines. Please contact us with your requirements and RMG will demonstrate and document what our machines can do for your specific application.” www.rmgfelm.com

Bars as Fast as Coils with Combined Cold Rolling Lines

Nicola Morsut of DEM Costruzioni Speciali Srl, Pavia di Undine (UD), Italy, says, “The coiling process has always achieved higher production speeds than for bars. DEM Wire Rolling Technology has now made this gap narrower, increasing the efficiency of the so-called combined line, namely a rolling line equipped with a coiler as well as with a straightening and cutting extension. High-speed, no longer an exclusivity for spooled materials, is therefore good news as lines are now used to their full extent, no matter what the final product is.

“The latest generation of DEM High-Speed for Ribbed Bars technology can finish 3.4 to 16 mm diameter ribbed wire in lengths ranging from 0.9 to 14 m, running at speeds up to 12 mps, then collected in bundles. “Such superior performance is granted by an in-house developed automation package coupled to precision engineering, which altogether are covered by a DEM patent. The system consists of a continuously rotating shear, bar deviator, braking device and double channel discharging system. All this meeting the unbeatable straightness results and cutting precision that stand out as DEM’s trademark all over the world.

“Notwithstanding the ramp-up in speed, wear of consumables remains unaltered, thanks to advances in materials.

“DEM straightening and cutting-to-length sections can also be installed on existing cold drawing/rolling lines for the production of coils, as additional extensions to allow the production of bars.” www.demgroup.com

Automatic Straightening and Cutting Machines for Smooth and Ribbed Wires

Gerry Roman of Delisi Srl, San Severo (FG), Italy, says, “Delisi Srl manufactures and sells, since 1955, automatic straightening and cutting machines for smooth and ribbed wires from 1 to 22 mm diameter.

“Our last model is the H22M for wires ranging from 10 to 22 mm, suitable for smooth wires and with the addition of special devices, for really short pieces. The H22M can also work ribbed wire (up to 20) and it has the rapid change of diameter. Feed speed is from 20 to 120 mpm. This model has the mechanical cut and two couples of feeding rolls. The spinner is supplied with a straightening unit of pre-regulated jaws for each diameter of wire to be worked. It is enough to install the correct straightening unit suitable to the wire to work and the spinner will be ready to work without waste of time and material.

“Feeding rolls must never be changed, because the right groove for the wire diameter to work can be chosen by a hand wheel.

“The pressure of the rolls is pneumatically regulated to avoid that the rolls will ruin the wire.

“On request, Delisi machines can be equipped with an electronic programmer and picker for the rod collection bed at three lines of pneumatically tiltable arms. This device makes it possible to program different lengths and number of pieces, which will be collected separately in one of the three lines of tiltably arms, without stopping the machine and giving the operator the possibility to empty the lower line of tilting arms.

“The most important characteristics of Delisi machines are fast set up, rapid change of diameter and high-speed operation.” www.delisisrl.com Returned ...
Straightener & Cutt-Off for Production of Straightened Rods from Round Wire

Information from **WAFIOS Machinery Corporation**, Branford, CT, USA, says, “The R Series and RE Series of straightening and cutting-off machines have been engineered for the production of straightened rods from round wire.

“Benefits of the high-value basic equipment RE Series machines include reliable technology, feed speeds up to 160 mpm and simple and language-neutral operator guidance. Some of the tools of the R 31/R, 33/R, 41/R, 43/R and 45 machines can be used with the RE Series systems. Also, service instructions provide improved working conditions.”  
[www.wafios.us](http://www.wafios.us)

Stationary Wire Straighteners & Straightener Flipper

Information from **OMCG Srl**, Olginate (LC), Italy, and **North America OMCG Inc.**, Bensenville, IL, USA, says, “OMCG stationary wire straighteners have been designed and engineered to provide the best performance with all materials, even at the highest feeding speeds. All six available models are equipped with quick-opening devices and rollers in hardened steel.

OMCG Flipper allows mounting of two or three wire straighteners.

High-Speed Wire Straighteners

Information from **Simplex-Rapid Srl**, S. Giuliano Milanese (MI), Italy, says, “Simplex-Rapid offers the SECEM line of straightening machines for extra thin wires and tubes from 0.1 to 1.0 mm; straightening machines with hyperbolic rolls/hydraulic cut-off for steel and nonferrous metal wires from 0.8 to 16 mm; high-speed straightening machines with bushes for wires from 1.4 to 6 mm (speed > 100 mpm); straightening machines with hyperbolic rolls and S.C. milling cutting for capillary tubes or with flying shear cut-off for metal tubes from 3 to 8 mm; and straightening machines with hyperbolic rolls and orbital cut-off for metal tubes from 5 to 12 mm.

“The SECEM RTB 6-TI high-speed wire straightener with bushes incorporates a special straightening flyer with tools manufactured from different materials in order to optimize surface quality. The flyer rotation is up to 15,000 rpm. Sophisticated control of all machine functions is provided through the RTB 6-TI wire straightening machine’s PLC. The high-speed cutting unit operates at up to 300 cuts per minute. Also, the RTB 6-TI comes with a sound-proof enclosure.”  
[www.simplexrapid.it](http://www.simplexrapid.it)

Vertical & Horizontal-Axis Wire Straighteners

Information from **Maguire Machinery, Inc.**, Brigantine, NJ, USA, says, “In addition to spring coiling, wire forming, ring making and wave spring machinery, Maguire Machinery offers wire straighteners. These wire straightening units use multiple sets of rollers to straighten wire in the vertical or horizontal axes. Precise and reliable wire straightening are benefits of these high-quality systems.”  
[www.MaguireMachinery.com](http://www.MaguireMachinery.com)

Unique Solution in Wire Straightening: Left-Handed Straighteners That Enable Mirrored Machine Setups

Information from **Eurolls SpA**, which is located Attimis (UD), Italy, says, “In January of 2015, Eurolls SpA successfully completed the acquisition of Vitari.”
“Vitari is a company that offers a worldwide-recognized brand of wire straighteners and other wire processing machines.

“And a new line of Vitari straightening machines has now been engineered to meet the growing requirements of improving wire plant manufacturing efficiency.

“Logistics and material flow have been key factors in Vitari’s decision to engineer left-handed straighteners that enable mirrored machine setups. For decades, straightening machines have been produced in the conventional right-handed version obliging plant layouts to look very much like school classrooms.

“Now at last, Vitari’s dynamic engineering team has developed and offers the industry its unique left-handed and right-handed straightening machines offering an unprepared industry what it has long been waiting for.

“This innovative solution offering enhanced plant flexibility and efficiency has met with enthusiasm from all sides of the industry who appreciate the advantages summarized below:

- The left and right-handed machines, positioned face-to-face, enable the operator to tool-up both machines without needing to walk around 3 to 6 or 12 m long benches to access the straightener.

- As the bars fall into the collecting bench, the forklift truck or overhead crane can collect two bar bundles from the same corridor. The use of the forklift trucks, a hazard in most plants, can now be reduced as access to the straighteners is cut by 50%.

- With limited plant space or complex existing plant layouts, the left-handed model offers greater flexibility in identifying suitable floor space.

- As much as face-to-face solutions are favored, there are unquestionable advantages for side-by-side set-ups with the unique left-handed straighteners.

“To learn more about the new line of Vitari straightening machines, visit the Eurolls SpA website.”

www.eurolls.com
Inaugural Event for the Engineered Spring & Precision Metal Components Industries

by:
Gary D. McCoy
Managing Editor
Springs Magazine
www.smihq.org
www.metalengineeringexpo.org

It’s time to make your travel plans for the inaugural Spring Manufacturers Institute (SMI) Metal Engineering eXpo to be held October 19 to 22, 2015 at the Charlotte Convention Center in Charlotte, NC, USA. Not only is attendee registration now available, you can also begin making your hotel reservations. All the details are available at www.metalengineeringexpo.org.

Registration officially opens on April 20, 2015, for the premier trade show and educational event for the engineered spring and precision metal components industries.

The Westin Charlotte Hotel is conveniently located right next door to the Charlotte Convention Center, and will serve as the headquarters hotel for the SMI Metal Engineering eXpo. Other discounted hotel options are available in close proximity to the Charlotte Convention Center.

The three-hour reception will feature an appearance by NASCAR legend, Michael Waltrip. Waltrip has been a NASCAR driver for over 30 years, a co-owner of Michael Waltrip Racing, a racing commentator and published author. He is the younger brother of three-time NASCAR champion and racing commentator Darrell Waltrip.

Waltrip is a two-time winner of the Daytona 500, having won the race in 2001 and 2003. He is also a pre-race analyst for NASCAR on FOX. He is the interim driver in the #55 Toyota Camry, part-time in the NASCAR Sprint Cup Series, and the GT2 Ferrari for AF Corse in the FIA World Endurance Championship. He also competed in 24 Hours of Le Mans in 2011.

If you love NASCAR, the opening reception will be a great opportunity for you to meet one of the legends of the sport and to visit the place where the sport’s past, present and future come together.

NASCAR Country

Through the sponsorship of Industrial Steel & Wire, the SMI is pleased to announce that a reception will be held on Wednesday, October 21, 2015, at the NASCAR Hall of Fame, which is adjacent to the Charlotte Convention Center.

Exhibitor Base Grows

Nearly 70% of the booth space for the SMI Metal Engineering eXpo has now been sold (see sidebar for a current list of exhibitors). The event is expected to attract more than 2500 conference attendees and 150
exhibiting companies to the Charlotte Convention Center.

“The SMI trade show is the perfect venue for exhibitors to put their brand in front of the key decision makers who will be in attendance at the eXpo,” said SMI President Hap Porter. “We know that a larger percentage of metal engineering attendees authorize buying decisions for their company. These decision makers who attend SMI Metal Engineering eXpo are there to learn, share the latest development in technologies, foster new professional relationships and meet current and potential business partners.”

**Strong Educational Program**

SMI leaders have been working hard to put together educational sessions to help increase the knowledge of springmakers on technical and management issues. A committee headed by Gene Huber Jr. of Winamac Coil Spring and Simon Fleury of Liberty Spring is helping plan the technical symposia.

“With an array of educational sessions already planned for our technical symposium and a strong group of charter sponsors, the planning for our show is right on schedule,” said Dan Sceli, President and CEO of Peterson Spring, who is serving as Chairman of the SMI trade show committee. The committee is comprised of SMI member springmakers, associate member suppliers, honorary members and SMI staff.

“The SMI trade show committee’s goal was to create a meeting where both attendees and exhibitors can learn from some of the industry’s best leaders,” explained Sceli of the education component to the show. “Our technical symposia have been designed to address common issues, so both attendees and exhibitors can learn and network side by side. The technical symposia are not scheduled during tradeshow hours so both attendees and exhibitors can attend the educational sessions.”

The committee has worked hard to plan the following six tracks for Wednesday, October 21 and Thursday, October 22. The scheduled presentations under that general track topic are listed below. Visit the Metal Engineering eXpo website for more details on each session, including scheduled speakers.

**Business Environment Track**

- **Steel Industry Overview – Wednesday & Thursday**

  Join us for an overview of what’s happening in the global steel industry and market. We’ll discuss what to expect in the future and the probable impact on SMI members.

- **Economic Update – Wednesday & Thursday**

  What’s next for the global and North American economies? Join us as Tim Quinlan, Chief Economist

**Growing Exhibitor List**

The list of exhibitors for the SMI Metal Engineering eXpo is growing. Those who have registered (as of March 2015) are listed below. To view the most current list of exhibitors and an interactive map of the trade show floor, visit: www.metalengineeringexpo.com

- A.I. Technology Inc.
- Alex Industries, Inc.
- All Wire Forming Machinery, Inc.
- Alloy Wire International
- Amstek Metal
- Anchor Abrasives Co.
- Bekaert Corporation
- Bennett Mahler / NIMSCO
- Central Wire Industries, Ltd.
- Dell Marking Systems, Inc.
- Fenix, LLC
- Fenn LLC
- Forming Systems Inc.
- Gibbs Wire
- Industrial Steel & Wire
- Interwire Products
- IST / NIMSCO
- JN Machinery Corp.
- Jowitt & Rodgers Co.
- Keyence Corporation of America
- Moyer Companies
- Mount Joy Wire Corporation
- Precision Steel Warehouse
- Pyromaitre, Inc.
- Raajratna Stainless Wire (USA) Inc.
- Radcliff Wire, Inc.
- RK Trading Company
- Rolled Metal Products, Inc.
- Shinko Machine Tool Co., Ltd.
- Simplex Rapid / NIMSCO
- SIVACO Wire Group
- Spectral Systems
- Sumiden Wire Products
- Suzuki Garphyttan
- Tong Lu SanLi Furnace Co., Ltd.
- United Wire Co., Inc.
- Vinston US Corp.
- WAFIOS Machinery Corp.
- Zapp Precision Strip, Inc.
for Wells Fargo Bank shares his thoughts on what’s coming down the pike.

Business Practices Track

• The State of HS&E (Health, Safety and Environment) – Wednesday

  This session will be an update on the current state of HS&E with Laura Rhodes, SMI’s new regulatory compliance consultant. She will provide an overview of the services available through SMI.

• Career Technical Education – What are the Options? – Wednesday

  We all need to develop more and better skilled employees. A panel of executives from four spring companies based in different regions will discuss options and alternatives for achieving this important objective.

• How to Improve Employee Wellness – Thursday

  This presentation will focus on performance-based wellness for small business. Learn what you can do to help reduce your company’s health care costs.

Culture/Leadership/Motivation Track

• How to Hire the Best – Wednesday

  Selecting the best job applicant isn’t always easy. In this session, learn best practices in hiring and leave with a better understanding of how to screen applicants to make sure you end up with the person who is the best possible match for the job—and for your company.

• Become a Better Leader – Thursday

  Want to learn how to maximize your leadership potential? This session will help you develop your skills, perform better and improve your customer service strategy. Leave this session with practical tips you can put into practice right away—or use to coach your team members.

Manufacturing Track

• Advanced Manufacturing and How to Have It All: Quality, Cost and Performance – Wednesday and Thursday

  Manufacturing expert Paul Menig says it is possible to have quality, cost and performance without having to make a trade-off. This session delves into examples of advanced manufacturing techniques used in other industries and related metal forming industries. Menig will review these examples to identify opportunities for improvement in our own industry. Learn integrated and automated solutions for the complex process of “Order-entry-to-cash-from-a-satisfied-customer” that your people can support.

• Machine Set-Up: Coil & Grind – Thursday

  This session will identify best setup practices for both coiling and grinding machines—then provide tips and ideas on how to automate either or both of these operations with one another. The critical characteristics of coiling setups will be scrutinized, teaching attendees how to optimize each step to facilitate a defect-free and efficient grinding process. The session will help identify potential efficiencies that can be achieved in the grinding process as well as talk about options for automatic feeds and other automation. Panelists are Carl Atwater, President A.I. Technology, Inc. and Martin Dorn of Dorn Mfg.

• Stamping and Fourslide Technology: Repeatability and Reliability…It’s All in the Setup – Thursday

  This presentation will cover best practices in setup for repeatability, speed and accuracy for slide forming machines. The session will also include an open forum section for those interested with questions and or ideas. Presented by Keats Mfg. with cooperation of PMA forums.

Materials & Testing Track

• An Update on the Stainless Steel Market – Wednesday

  More medical devices are made from stainless steel than all other materials combined. Device designers select stainless for its ideal balance of strength, corrosion resistance, mechanical properties and cost. Applications include guide wires, catheters, staples, endoscopic devices, tools and a variety of coiled products. Join us for a discussion of the various grades and tempers for medical coil winding applications. You will leave this session with an understanding of the material characteristics that result from the various melting methodologies including distribution and the resulting fatigue endurance limits.

• A Coatings Update – Wednesday

  Here’s your chance to get up-to-date on coatings. The session will detail the differences between various paint coatings—including a comparison of the strengths and weakness of each. Presented by PPG Industries, the session will also outline proper application and processing.

• Metrology: Load Vector Analysis – Thursday

  This session will explore the latest trends in load testing capabilities including load vector analysis. Presented by SAS Technologies, the session will discuss the benefits of utilizing these capabilities for your company and your customers.

Technology Track

• Additive Manufacturing (Rapid Prototyping), Today
and in The Future – Wednesday and Thursday

This session will explore the present and future of additive manufacturing (rapid prototyping)—including current materials and applications.
• Software Integration to Manufacturing – Wednesday and Thursday

Hear Richard Dignall present his findings on integrating computers or CNC equipment with ERP systems. The discussion will include advantages, challenges and feasibility.
• The Benefits of the SMI Residual Stress Project – Wednesday

Join us for a presentation of the preliminary findings of an SMI-sponsored project to identify a more cost-effective means for companies to use basic metallurgical tools to verify that parts have been properly stress relieved. The data for this study will be measured in micro hardness and confirmed with X-ray diffraction technology. This study will help to establish new guidelines governing the temperature and time required for adequate stress relief. Presented by Dan Sebastian, SMI’s technical advisor, with assistance from ASW, Gibbs, PAC, Liberty Spring, Associated Spring, Precision Coil Spring and MW Industries.
• The Effects of Shot Peening – Thursday

Learn the results of a study on the effects of shot peening on highly stressed, low-fatigue-cycle springs. Findings will be presented as fatigue life studies and as correlations to X-ray diffraction results on study samples. This study will become the basis for a future SN curve to more accurately predict fatigue for high-tensile chrome silicon springs with life expectancies of less than 10^6 cycles.

As the SMI Metal Engineering eXpo draws closer, be sure to visit the show website seen below for the latest information on attendee registration, hotel registration, exhibitors and the technical symposia. www.metalengineeringexpo.org

Testimonials on the SMI Metal Engineering eXpo

“SMI Metal Engineering eXpo is an exciting opportunity to expand our reach in the growing North American metalworking market. The timing is great because we see a resurgence in work coming back to North America. We are excited to be a part of this new event.”
— William J. Torres, CEO/President, Gibbs Metals

“As a manufacturer of highly engineered, tight-tolerance springs as well as wire forms and stampings, we are confident that this show format is a do-not-miss event for our team. The combination of the technical symposia and the vast array of industry suppliers will benefit our engineers and could possibly improve our products and processes. We will be attending SMI Metal Engineering eXpo.”
— Bert Goering, President, Precision Coil Spring

“With a focus covering all of North America, the SMI Metal Engineering eXpo is the perfect show for us to introduce our new products and allow customers to see all we have to offer. We are also excited for the additional opportunities to interact with technicians and operators, outside of our booth, in the technical sessions and networking parties held in the hall.”
— Daniel F. Pierre III, President, JN Machinery

“As a diversified manufacturer of springs, wire forms, metal stampings and assemblies at multiple locations, we are excited about the new SMI Metal Engineering eXpo. This is an exciting development for the industry bringing together a host of suppliers with solutions that will enhance our job as manufacturers. Plus, the technical sessions being developed will help elevate the education of our workforce and the entire industry.”
— Hap Porter, President and COO, SEI MetalTek President, Spring Manufacturers Institute

“Betts Company is committed to life-long learning, which we believe has been key to our success as a six generation, 146-year-old family business. The SMI Metal Engineering eXpo is a great opportunity to afford our Team Leaders the opportunity to see and learn about the latest technology available for the spring and stamping industries. Bringing together leading suppliers to our industry under one roof for personal connection is a welcome and integral opportunity to drive the future growth and prosperity of our business.”
— Mike Betts, President, Betts Company
While there are many types and styles of forming and bending machines, the fundamentals are basically the same for any type of machine, but innovations are what make each piece of equipment and processing line unique. At the basic level, wire, rod or tube is fed into a machine from a coil, spool or in a cut length. The material is then bent once or more in one or more planes (two or three dimensional) and then it is cut if it is fed from a coil or spool. In addition to standard products, designers often come up with new things that can be made from wire and metallic tubing. This means that the machinery, controls, programming and operators have a major task to keep up with human imagination and the perpetual search for lower costs from increased speeds, shorter setup and changeover times and larger production ranges.

Depending on the application—from simple rings, hoops or frames to complex three-dimensional (3D) parts, star patterns or precise spirals—there are many effective and versatile machines out there to help you do the job of forming and bending wire or tube into useful and profitable products.

The material to be processed can be round, flat or shaped and secondary operations including buttwelding, threading, piercing, punching, chamfering, swaging, etc., are often combined with the bending and forming operations.

All machines use some type of feeding mechanism, which in some cases is patented. The bending of the wire or rod is done by slides or bending heads. The machines make use of one or more bending heads or slides, and some can bend two products at the same time. Some
Spotlight On Testing

Dimensional requirements are met, and they provide pretty variable as the range of finished products is these even provide automatic feedback control to the coiler to identify various spring attributes. Some of line, stand-alone products that function manually and surface quality. These devices are usually off-machine developments and techniques is an important part of being good at quality control.

Companies that perform at high levels are usually able to tell how good wire is before it is used. Wire prior to forming is also of value so that you can state—needs to be conducted and documented to insure proper product quality and performance.

There are dozens of suppliers of forming and bending machines, and they are located in America, Europe and Asia, but you can categorize or separate the machines into six basic categories:

Hand Operated: Simple, hand-operated devices for basic bending requirements. Pre-cut wire is used as the feed material.

Table Top: The operator sits at this bender that is ideal for short runs of parts, prototype production and new part development. These machines have been the focus of much improvement in the areas of drives and controls, and can now produce complex parts. Pre-cut wire is the feed material.

2D Table: Entry-level bending machine fitted with a tilting table to accommodate long parts. These versatile machines are often equipped with welding heads for production of welded frames and rings. Materials are fed directly from coils, and cutting takes place in the machine.

3D Arm: Robot-like bending arm and corresponding attachments provide the ability to produce complex, three-dimensional parts. Capabilities of the machine increase with the number of axes and attachments. Secondary operations are often incorporated. Good for short and medium production runs. Feed materials are fed directly from coils, and cutting takes place in the machine.

Horizontal Twin Head: Cut material is fed from a magazine or directly from coil into the bending zone of the machine. Simultaneous bending of both ends of the workpiece. Good for symmetrical parts.

Multiple Slide/Multiple Head: Production of parts by means of sequential and dedicated tooling that is arranged for vertical or axial tool movement. Usually reserved for medium and long runs and complex parts.

Continued...
Spotlight On Testing

Secondary operations are easily integrated. Number of axes and operations is high as is machine capability. The type of machine that you will require depends on the application.

- How complex is the part?
- How many will be made in a batch?
- How many different parts will be made on the machine?
- How precise does the part need to be?

Answers to these questions will help guide you to the type of machine that is best suited for you.

Innovation & Improvement

Over the years, improvements have been made in wire and tube forming and bending systems, mostly from the drive, control and software programming standpoints. Common themes in recent years were complex forming, higher speeds, increased power, automation and lower priced models. Other developments include the following:

- Machines with up to 30 bending positions (axes).
- Real-time simulation and rendering.
- Reduced energy consumption.
- Higher output combined with lower prices.
- Desktop benders.
- Automatic work cell configuration.
- Wire and tube forming on the same machine.
- Built-in QC devices to find optimum bend speeds.
- Multiple line forming.
- In-line diagnosis systems.
- Color touch-screens for setup and operation.
- 3D imaging/simulation of parts at setup.
- Graphics animation for program/data verification.
- Positive and negative bends simultaneously.
- Fast tool changes—measured in milliseconds.
- Increased bending rate-thousands of degrees/second.
- Heavy use of servo-drives.
- Increased number of bending axes.
- Modular construction.
- Smaller footprint equipment.
- Capacity to produce larger components.
- Multi-functional and combined operations.

Reference:

WFTI 2013 Spotlight Article on Wire Forming & Tube Bending.
pretty variable as the range of finished products is coiler to identify various spring attributes. Some of control systems that work in-line with manufacturing line, stand-alone products that function manually relaxation, number of coils, geometry, inside and diameter, free length, fatigue life, pitch, torque, testing equipment and procedures. Keeping abreast of and they conduct regular evaluations and upgrades of tell how good wire is before it is used. wire prior to forming is also of value so that you can insure proper product quality and performance. rebar products—both in finished and semi-finished Testing of springs, wire formed parts, wire mesh and by Michael McNulty, Editor Contact: Tom Maxwell Jr., President Bethel Park, PA 15102 USA Die Quip Corporation Fax: +1 412 835 6474 5360 Enterprise Blvd. Tel: +1 412 833 1662 Web Site: www.formingsystemsinc.com Internet: www.formingsystemsinc.com Cinetic Landis Grinding Corp. E-mail: info@formingsystemsinc.com E-mail: info@MaguireMachinery.com E-mail: rkinfo@sbcglobal.net Forming Systems, Inc. Tel: +1 800 325 0256 Fax: +1 269 679 3557 Contact: Rob Meyers Contact: Tim Weber Tel: +39 0432 975752 +1 877-727-FORM (3676) RK Trading Company 235 Bond Street Elk Grove Village, IL 60007 USA Contact: Rob Meyers Tel: +1 847 640 9771 Fax: +1 847 640 9793 E-Mail: rktrading@sbcglobal.net Web Site: www.rktradingusa.com VI N STON US 5659 W. Howard St. Niles IL 60714 USA Contact: Billy Z. Lin Tel: +1-847-972-1098 Fax: +1-847-972-1098 Web Site: www.vinstonus.com Email: info@vinstonus.com Cutting Edge Camless Formers & Benders Ultimate Automation Limited Unit 16, Laweon Hunt Industrial Park Broadbridge Heath, West Sussex RH12 3JR, UK Tel: +44 (0) 1403 754136 Fax: +44 (0) 1403 754558 Web Site: www.ultimat.com Email: sales@ultimat.com
Plasma: A Versatile Heat & Surface Treatment Process

Plasma proves itself in a range of continuous applications from mainstream stainless steel annealing, carbon steel hardening to precision alloy wire cleaning and heat treating.

The past two years have been an exciting and productive time for the Plasmait team. The company sold a range of plasma heat and surface treatment machines in the ferrous and nonferrous markets. Plasma is proving its performance in an increasingly wide range of materials, from mainstream copper alloy and aluminum wire to specialist medical tubes and ropes, jewelry strands, aerospace materials, electronics and semiconductor wire and strip.

New Machinery for Producing Fine, Medium & Large-Diameter Cross-Sections

Most significant is Plasmait’s success in the stainless steel and nickel alloy wire and tube markets, where new machinery has been deployed for the production of fine, medium and large-diameter, cross-section materials. Deployments included annealing of various forms, i.e., wire, tube, strip, strand and ropes. For example, Plasmait’s most recent annealer for large and intermediate stainless steel wire boasts a single line output of 130 kg/h (250 lb/h).

Stainless steel wires from 1 to 6 mm can now be produced scratch-free and pile-free at high speed. Superior surface and homogenous recrystallization with small grain improves subsequent drawing and reduces the number of wire breaks on the drawing machine.

New Fine-Wire Annealing Line

Equally important, was the introduction of the new fine-wire annealing line allowing recrystallization annealing at up to 25 mps (1500 mpm) on a range of fine stainless steel and nickel alloy wires. It is now possible to anneal fine stainless wires in-line with the drawing machine.

The annealer gives the operator the ability to target mechanical properties with a great degree of accuracy while ensuring superior surface quality. Annealing fine wire at up to 20 times the speed of traditional strand furnaces means fewer take-ups and payoffs and hence lower cost of total capital investment.

The PlasmaANNEALER can cold start production in a few minutes and can be stopped immediately. This avoids long heating-up and cooling-down times and associated energy costs that are symptomatic for a conventional tube furnace.

Initially, Plasmait supplied machinery to specific markets with demanding quality requirements such as medical, jewelry, aerospace or solar ribbon materials. With the introduction of high-output annealers for stainless steel and nickel alloys, Plasmait became com-
petitive also in the mainstream stainless steel markets in the fine, small and large-diameter ranges. A single line of a high-output plasma annealer can replace five to 20 annealing lines of a conventional annealing furnace. This means a considerably lower investment in transport and winding equipment, which often bear the brunt of the cost of annealing equipment. The savings are even more pronounced when a plasma annealer runs in-line with a drawing machine.

**Taped Copper Conductors**

The first plasma annealer for taped copper conductors has been in operation for more than a decade. The latest one was installed this year. Conductors used in taping lines have traditionally been annealed in bell furnaces, which can cause uneven recrystallization and surface quality issues like sticking of flat products.

The shortcomings of the batch annealing process can be avoided if continuous plasma annealing and cleaning is used in front of the taping line. Round or rectangular conductors can be plasma annealed and cleaned in-line with a conventional taping line. Plasma annealed conductors feature better accuracy in mechanical properties and above all, better surface finish, which results in superior tape adhesion. Plasma annealers for taping lines come in three alternative sizes depending on required output and can cover a wide cross-section range up to 0.18 in² (120 mm²).

**Plating & Drawing Applications**

Plasma heat and surface treatment can be effectively deployed for plating applications. Plasma-treated copper or aluminum wires can be hot-dip coated or electroplated without the need for chemical cleaning or fluxing. For example, PV ribbon can be annealed to a super-soft state and tinned without the need for chemicals.

**Plasma Heat Treatment Features & Benefits**

Plasma annealing is conducted in a controlled inert atmosphere in low vacuum. Plasma discharge is the strongest in the cavities between the individual wires, which facilitates effective degreasing also inside the stranded construction.

Rapid heating and reduced time of recrystallization can be used effectively to produce fine grain size and accurate yield strength, values in a wide range of applications. For example super-soft annealing is possible on copper with yield strength values below 40 MPa if necessary. A high level of softness is for example required by many solar ribbon producers, who try to meet ever more demanding material specifications.

The plasma annealer can cold start production in a few minutes and can be stopped immediately. Long maintenance intervals allow for high utilization of the associated in-line processes such as drawing, rolling, coating or taping. Plasma annealers are usually designed in a horizontal configuration for easy material handling and string-in. Yet, vertically configured lines can be offered to save production space.

Manufacturers of precision wires, strips and tubes consisting of exotic alloys, high-temperature materials or noble materials recognize the advantages of accurate plasma heat treatment as well as superior surface finish. The rapid and accurate power input makes it possible for plasma to meet heat treatment requirements involved in a wide range of materials and applications.

For example, plasma heat treatment is suitable for applications where temperatures as high as 1400°C or more are required.

In a plasma heat treatment machine, it is possible to make use of a range of inert gases or mixtures of such gases. Hydrogen, nitrogen and forming gas are the most commonly utilized gases. Additionally, helium and/or argon are utilized in specific applications such as titanium or nitinol.

The choice of the gas that is used is extremely important as it impacts the surface finish of the processed material.

Plasma heat and surface treatment proves to be a versatile process that is applicable in many industries. It has therefore found its place in industries such as medical, watch making, aerospace, electronics, automotive, oil and gas and jewelry.

Plasmait GmbH, which is located in Lebring, Austria, invites wire manufacturers to take the opportunity to explore the use of plasma heat treating and surface treatment on their materials by booking a trial at Plasmait in Lebring.

[www.plasmait.com](http://www.plasmait.com)
Focus On Business Opportunities in Russia

According to wire Russia 2015 organizer, Messe Düsseldorf North America (MDNA), Chicago, IL, USA, the North American arm of Messe Düsseldorf GmbH of Düsseldorf, Germany, the general economic conditions are improving for the Moscow, Russia-based wire and Metallurgy-Litmash, and Tube Russia and Aluminium/Non-Ferrous industry trade fairs.

According to MDNA, despite the extremely tough economic climate experienced in recent years, the wire, wire forming and spring manufacturing industry sectors are viewing the future with relative optimism. This optimism is thanks to an ongoing increase in investment in Russia.

At wire Russia 2015, over 250 exhibitors from more than 27 nations are expected to participate, presenting their latest technologies for the wire, wire forming and spring manufacturing industries to trade visitors from the Russian Federation.

Many sectors rely on products from the wire and wire-processing industry, essential as they are for transmitting electrical energy and mechanical forces. In order to meet increased product requirements, machinery and plant are needed that can adapt to a whole range of specifications, while continuing to offer the same high degree of production quality with a minimum consumption of resources. As a result, the current modernization requirement of the country’s overall economy is enormous.

Against this background, the cutting edge technologies provided by international companies are full of business expansion opportunities within the wire, wire forming and spring making industries.

Take Advantage of These Opportunities

Taking place May 12 to 15, 2015, at the ZAO Expo Center Krasnaya Presnya in Moscow, Russia, wire Russia 2015 will provide access to the business opportunities that continue to expand in the wire, wire forming and spring making industries in Russia.

The products and technologies to be found on the show floor at wire Russia will include standard and special wires and rods, wire manufacturing and finishing machinery, wire forming machines, spring coiling and forming machines, materials, process technology tools, auxiliary process technology materials, measuring and control technology, test engineering and specialist technologies.

The organizers of wire Russia 2015 are Messe Düsseldorf GmbH, OOO Messe Düsseldorf Moscow and the VNIIKP-All-Russian Scientific Research and Development Cable Institute. wire Russia 2015 show supporters include:

- IWCEA (International Wire & Cable Exhibitors Association)
- IWMA (International Wire & Machinery Association)
- ICIMAF (Italian Wire Machinery Manufacturers Association)
- WCISA® (Wire and Cable Industry Suppliers Association®)
- WCIC (Wire and Cable Industry Council)

wire Russia 2013 Exhibitors & Visitors

Held every two years, the wire Russia 2013 trade show event hosted some 250 exhibitors from 27 countries, with official group participation from Austria, China, France, Germany, Italy and the USA.

The wire Russia 2013 event also welcomed more than 10,850 visitors from Russia and 50 other countries. Of these visitors to wire Russia 2013, approximately 60% were involved in purchasing decisions.

Some 69% of exhibitors at wire Russia 2013 experienced conclusion of sales at the event. And 88% of 2013 exhibitors are exhibiting at wire Russia 2015.

To learn more about the wire Russia 2015 show, visit www.mdna.com / www.wire-russia.com
USA & Russia Duel
the “Cold Rolling War”
with DEM Machines

The new battle for global domination in the 21st century is playing in the field of economic lead. Far away from the struggle of the 1880s, the new challenge between the East and the West is to dominate the steel market as a basis of growth of the national industry.

In recent years, both the USA and Russia have undertaken equipment investments with the aim of overtaking each other’s technological levels. The fight for technical leadership is pushing the strategic partners of the primary players to constantly search for upgraded solutions.

In this global scenario, DEM Wire Rolling Technology offered by DEM Costruzioni Speciali Srl, Pavia di Undine (UD), Italy, has shown to be a reliable and innovative ally both for North American and Russian companies in the cold rolling of metal wire.

This is the reason why the two main events for the wire industry in Russia and in the USA will greet DEM Wire Rolling Technology representatives.

Interwire 2015 in Atlanta, GA, USA, in April 2015, was the first of the main exhibitions for DEM this year. wire Russia 2015 in Moscow, Russia, follows closely in May 2015. The booth number for DEM at wire Russia 2015 is FOD48, where the DEM team can be met.

At wire Russia, 2015, DEM Wire Rolling Technology will display the latest in cold rolling technology. The company is the leading brand for wire forming and rebar production, in bars or coils, by cold rolling.

The new battle for global supremacy passes through DEM cold rolling blocks!

www.demgroup.com

DEM Wire Rolling Technology cold rolling equipment.
Long-Standing Expertise in Welding Machines and in Welding Machine Automation

Since 1923, the name IDEAL has stood for innovation and progress in the production of welding machines and systems. The company has also provided automation for most diverse applications—for example, wire products, gratings, wire joining, conductors, cables, automotive, sheet metal products, coil joining and band saws.

Apart from the company's standard welding machines, tailor-made welding machine solutions according to the customer’s requirements can be designed and manufactured by IDEAL-Werke, C. + E. Jungeblodt GmbH + Co. KG, headquartered in Lippstadt, Germany.

At wire Russia 2015, IDEAL-Werke, C. + E. Jungeblodt GmbH + Co. KG will present reliable, state-of-the-art welding solutions for wire products, gratings, wire joining, conductors, cables and automotive applications.

The company will also be exhibiting its butt welders for wire and stranded conductors.

The sales team and technical consultants of IDEAL-Werke, C. + E. Jungeblodt GmbH + Co. KG will be on-hand to meet with customers and to discuss their requirements for welding equipment as well as to inform them about the latest technology available from IDEAL.

Visit IDEAL-Werke, C. + E. Jungeblodt GmbH + Co. KG at wire Russia 2015 in booth FOD40.

Or to learn more about the welding equipment and automation technology available from IDEAL, visit the company’s website listed below.

Okuno Machine Co.
Because...
One of the most respected names in spring making and wire forming.
With over 45 years supplying the industry and over 300 innovative patents.

Wire and Strip Forming
- High speed wire forming to 8.0+mm (~.3218)
- Super high speed forming
- Wire or strip
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Wave Springs and Wave Washers
- Wave Springs and Wave Washers to 200mm (~9") diameter
- Patented Okuno forming process
- Wave springs
- Single and multi-turn wave washers

Flat and Round Wire Rings
- Round, flat and shaped wire rings 300mm² (~0.5") wire to 480mm (~19.0") ring diameter
- Round - Flat and Shaped wire
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- High Precision
- Variety of end cut shapes
- Very high production rates

CNC Coiling
- CNC Coiling to 25+mm (~1.0") diameter wire
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Atmosphere Furnace & Auxiliary Equipment Technology & Training

Ipsen Inc. has successfully installed more than 50 atmosphere furnaces, tempers and auxiliary equipment throughout North America, demonstrating its ability to provide advanced solutions with top-of-the-line atmosphere products.

These installations covered a diverse range of atmosphere furnaces including single and double-chamber sealed quench, vertical retort, pusher and box furnaces. Whether a new installation or an expansion of an existing line, these installations were designed for use in a range of applications and industries including automotive, aerospace, commercial and energy.

With one of the largest installed bases of atmosphere furnaces in the USA—several thousand since being founded in 1948—Ipsen continues to deliver atmosphere equipment solutions that meet a range of customer needs. For Ipsen, a key part of innovating is listening to the specific needs and challenges of its customers and then providing ideal solutions that meet those needs.

Ipsen Inc. has successfully installed more than 50 atmosphere furnaces, tempers and auxiliary equipment throughout North America, demonstrating its ability to provide advanced solutions with top-of-the-line atmosphere products.

Fulfilling the heat treatment needs of automotive, aerospace, commercial and energy sectors.

Three Different Models for Aerospace Applications

Recently, three separate companies purchased different Ipsen furnace models, all of which will be used to fulfill the diverse needs of the aerospace industry. Ipsen shipped two of the heat-treating vacuum furnaces to Texas in the USA, and the third furnace was shipped to the United Arab Emirates (UAE). While all of these furnaces will be used to process parts for the aerospace industry, they all varied in size and model as well as the type of parts they will produce:

- The Horizontal TurboTreater® furnace with 6-bar gas quenching will be used to process fasteners. This specific furnace features a 36" x 36" x 48" (914 x 914 x 1219 mm) all-metal hot zone with a 3000-lb (1361 kg) load capacity. It operates at temperatures of 1000°F to 2400°F (538°C to 1316°C) with ±5°F (±3°C) temperature uniformity.

- The Horizontal MetalMaster® furnace with 2-bar gas quenching will be used to process engine parts. This specific furnace features a 24" x 24" x 40" (610 x 610 x 1016 mm) all-metal hot zone with a 1500-lb (680 kg) load capacity. It operates at temperatures of 1000°F to 2200°F (538°C to 1204°C) with ±10°F (±5°C) temperature uniformity.

- The TITAN® H4 with 2-bar quench pressure will be used to process parts for gas turbines. This furnace features a 24" x 28" x 48" (610 x 710 x 1220 mm) all-metal hot zone with a 2000-lb (900 kg) load capacity.
Atmosphere Furnace Training
Ipsen recently held its first Ipsen U class of 2015, allowing attendees to start the year with a broad overview of furnace equipment, processes, maintenance and more. Ipsen’s three-day course provides attendees with a hands-on approach to learning while receiving qualified tips and knowledge directly from the experts.

Participants in the February 2015 Ipsen U course came from across the country including Colorado, Illinois, Michigan, Pennsylvania and Texas. Reflecting on the class, attendees found that it offered a comprehensive overview of the general construction and mechanics of the furnace as well as an in-depth look at the furnace’s hot zone and areas to focus on for preventive maintenance.

Throughout the course, attendees were able to learn about an extensive range of topics—from an introduction to vacuum furnaces and heat treating to furnace subsystems, maintenance and more. They were able to view the different furnace components firsthand while learning how they affect other parts of the furnace and/or specific processes. They were also able to take part in one-on-one discussions with Ipsen experts and participate in a leak detection demonstration. An Ipsen facility tour was also included.

Overall, Ipsen U allows participants to build and refresh their knowledge of heat treating equipment and processes through applied learning. Learn more and register for an upcoming 2015 Ipsen U course—April 7 to 9, June 2 to 4, August 4 to 6 or October 6 to 8, at IpsenUSA.com/IpsenU.

Company Profile:
Ipsen designs and manufactures industrial vacuum furnaces, atmosphere furnaces and supervisory control systems for a wide variety of thermal processing markets including aerospace, commercial heat treating, medical, energy and automotive. www.ipsenusa.com

Hot Zones, Upgrades & Retrofits
The Engineered Components Group of Ipsen Inc. provides hot zone designs to boost furnace performance, retrofits to enhance system performance, complete furnace rebuilding capabilities and electrical and software technology for optimized furnace system control.

Hot Zones
As the largest hot zone manufacturer, Ipsen provides a high-velocity, one-piece plenum design to help maximize performance. When the time comes to replace or retrofit your vacuum furnace hot zone, it only makes sense to call on Ipsen. Our Aftermarket Specialists can offer a hot zone package to precisely fit your application.

Retrofits
Enhancing your furnace’s performance is an easy task when Ipsen’s experienced Retrofit Specialists work with you to determine your exact needs and deliver the right solution quickly. Upgrades, retrofits and rebuild packages provide precise carbon sensing for greater control, better surface appearance, faster cycle times and much more.

Furnace Rebuilds
Whether you are trying to keep a valuable investment from becoming obsolete, or simply want to increase productivity, Ipsen offers furnace rebuilds on all makes and models. Your furnace will provide improved performance, while you enjoy the security of an Ipsen-standard, one-year warranty on all parts we replace.

Electrical & Software
Reaching and maintaining proper control and functionality of your furnace equipment is paramount to achieving success in thermal processing operations. The Engineers at Ipsen Inc. can help you adjust, modify and upgrade your equipment and controls in order to achieve peak performance with your furnace as well as minimize downtime.

To learn more about the product, capabilities and services available from Ipsen Inc., visit: www.ipsenusa.com
Application of Fretting Fatigue Life Prediction of Steel Wires

by:
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and Guohui Zhang
School of Mechanical
and Automotive Engineering
South China University of Technology
Guangzhou, China 510640
www.scut.edu.cn

Wire ropes combine two very useful properties: high axial strength and flexibility in bending. Due to these properties, wire ropes are widely used in cranes, mine hoisting and lifts. So it is vital to take into account the fatigue life prediction of steel wires with tension loading and bending loading. The application of fatigue life prediction of steel wires subjected to tension loading or bending loading is discussed in this article.

Fatigue Life Prediction Based on the Linear Theory of Elastic Fracture Mechanics

The fretting fatigue life under cyclic loading consists of two phases, the crack initiation stage followed by a crack growth period until failure. But the fatigue life of wires is mainly governed by rate of subcritical crack propagation assuming the fretted scar on the wire surface is the initial pre-crack. Results of the fatigue crack growth tests usually show a linear relation between logarithms of the crack growth rate, \( \frac{dl}{dN} \), and the stress intensity factor range, \( \Delta K \). This can be expressed by the well-known Paris equation as follows:

\[
\frac{dl}{dN} = C_0 (\Delta K)^m
\]

where \( C_0 \) and the exponent \( m \) are material constants experimentally obtained. Here, \( l \) is the crack depth and \( N \) is the fatigue cycles.

The crack growth threshold is included by the following so-called Priddle equation:

\[
\frac{dl}{dN} = C_0 (\Delta K)^m \frac{1}{(1-R)(K_c - K_{\text{th}})}
\]

where \( \Delta K_{\text{th}} \) is crack growth threshold, \( \Delta K_{\text{th}} = A(1-R)^\beta \), and the exponent \( \beta \) are both material constants.

It is suggested in the literature that such equations are useful in view of prediction algorithms, but this argument is not really appropriate. However, a useful indication can be drawn from Equation 1 if the stress intensity factor \( K \) indicating the severity of the stress distribution is discussed below.

Integrating Equation 1, the crack propagation life of steel wires is given by

\[
N = \int \frac{dN}{C_0 (\Delta K)^m}
\]

where \( D \) is wire diameter, \( l_0 \) is initial fretting wear depth and \( l \) is the crack depth at fracture failure, which is equal to \( D/2 \).

According to linear elastic fracture mechanics (LEFM), the stress intensity factor at the crack tip can be expressed as:

\[
K = Y(\gamma) \sigma \sqrt{\pi l}
\]

where \( Y(\gamma) \) is the associated nondimensional geometry factor, \( \gamma \) is the crack depth to diameter ratio, i.e., \( l/D \) and \( \sigma \) is the tensile stress. The stress intensity factor range is

\[
\Delta K = K_{\text{max}} - K_{\text{min}} = Y(\gamma) \sigma_{\text{max}} \sqrt{\pi l} - Y(\gamma) \sigma_{\text{min}} \sqrt{\pi l} = Y(\gamma) \Delta \sigma \sqrt{\pi l}
\]

Nondimensional Geometry Factor for Steel Wire

Examination of broken wires retrieved from suspension bridges under tension/bending indicates that the front of surface cracks undergoes a shape change. The crack tends to assume a semicircular front very early in crack growth. As the crack extends, its front tends to flatten and assumes a straight shape, when the crack depth to diameter ratio, \( \gamma \) nears 0.5, given in Figure 1.

So care must be used in defining crack shape geometry and subsequently, appropriate stress intensity factor solution for the different stages of the crack growth.

The crack propagation life of steel wires has been given relative to linear elastic fracture mechanics. And the stress intensity factor indicating severity of the stress distribution subjected to tension loading or bending loading has been discussed. Case study and results have been shown to be reasonable.
Nondimensional Geometry Factor for Steel Wire Subjected to Tension Loading

For a semicircular surface crack front under tension, the polynomial equation for the nondimensional geometry factor is expressed as follows:

\[ Y(\gamma) = 0.7037 - 1.0589\gamma^2 + 5.8771\gamma^2 \]  
(7)

For a straight crack under tension, the polynomial fit for the nondimensional geometry factor is given by:

\[ Y(\gamma) = 0.8149 + 2.8225\gamma - 22.885\gamma^2 + 159.75\gamma^3 - 334.05\gamma^4 + 263.28\gamma^5 \]  
(8)

Through the polynomial fit for the transition between the semicircular crack front and the straight crack front, the proposed one-regime model for crack growth in tension is given by the following polynomial:

\[ Y(\gamma) = 0.7282 - 2.1425\gamma + 18.0821\gamma^2 - 49.385\gamma^3 + 66.114\gamma^4 \]  
(9)

Nondimensional Geometry Factor for Steel Wire Subjected to Bending Loading

The polynomial for the nondimensional geometry factor that fits the crack growth behavior for a semicircular crack subject to bending is given by:

\[ Y(\gamma) = 0.6257 - 0.5856\gamma + 2.0824\gamma^2 \]  
(10)

The polynomial for the nondimensional geometry factor that fits the crack growth behavior for a straight crack subject to bending is described as follows:

\[ Y(\gamma) = 0.7653 + 0.2564\gamma - 3.3610\gamma^2 + 8.2264\gamma^3 \]  
(11)

The polynomial for the nondimensional geometry factor that fits the transition between the semicircular crack front to the straight crack front is given by:

\[ Y(\gamma) = 0.6218 - 0.4014\gamma + 0.1127\gamma^2 + 4.9954\gamma^3 \]  
(12)

Case Study & Results

Based on object-oriented programming technique, a program for fretting fatigue life prediction of steel wires is developed by VC++. And the main developed interface is shown in Figure 2. With the model parameter detailed in Table 1, the value of fretting fatigue life prediction of steel wires subjected to tension is 49052. Compared with the value of the experiment was 44000, the tolerance between the predictive value and the experimental value is 10.3%.

![Fig. 2 — Main interface of the fretting fatigue life prediction of steel wires with GUI.](image)

### Table 1. Parameter of the Model

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Conclusions

In this article, fatigue life prediction of steel wires based on the linear theory of elastic fracture mechanics has been presented. And the stress intensity factor associated with the nondimensional geometry factor for steel wires subjected to tension loading or bending loading has been given, respectively. The predictive result is reasonable. And the application provides a practical tool for the forecast of crack propagation life of steel wires. [www.scut.edu.cn](http://www.scut.edu.cn)

Acknowledgement:

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References:


Author Profiles:

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**Guohui Zhang** is lecturer of School of Mechanical and Automotive Engineering at South China University of Technology, P.R.China. He received his BS, MS and PhD degrees in Mechanical Engineering at the Huazhong University of Science and Technology, in 1983, 1999 and 2005, respectively. His main research interests include software developing and manufacturing information in engineering. Email: zhanggh@scut.edu.cn
Belt Conveyor Oven

550°F-rated electric system

The No. 820 is a 550°F electric belt conveyor oven, currently in use for heat treating mattress springs at a customer’s facility. Workloads travel atop an 84” wide, 1” x 1” high-carbon steel flat wire conveyor belt with 1/2-HP motor drive, variable from 2.9 to 8 fpm, through a 6’ long open belt loading zone; 20’ long, insulated heat zone with recirculated airflow; and finally, a 6’ long open unloading zone.

A rating of 360 kW power is installed in Incoloy-sheathed tubular heating elements. A 24,500 CFM, 20-HP recirculating blower provides vertical downward airflow onto the workload.

The No. 820 features rugged construction, with an all-welded aluminized steel exterior, Type 430 stainless steel interior, 4” insulated walls and heavy-duty structural steel channel base.

Safety equipment on this large conveyor oven includes a digital indicating temperature controller, manual reset excess temperature controller with separate heating element control contactors, recirculating blower airflow safety switch and an exhaust hood over each end equipped with a 12” diameter tubeaxial fan driven by a 3/4-HP motor.

The No. 820 550°F electric belt conveyor oven unit was entirely designed, engineered, built and fully tested by the manufacturer. The Grieve Corporation, Round Lake, IL, USA

www.grieve.com

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Free-Cutting Brass Wire & Rod, Copper Alloy Wire, EDM Wire & Copper Anode

Yuang Hsian Metal Industrial Corp., which is located in Chang Hua, Taiwan R.O.C., is one of the largest copper alloy wire and rod manufacturing companies in Taiwan.

Offered by the company are free-cutting brass wire and rod, copper alloy wire, EDM wire and copper anode products.

Also available from Yuang Hsian Metal Industrial Corp. are the reduced-lead and the nonlead products, which are especially in demand for the RoHS-certified products being manufactured in Europe and Japan.

Products for various industrial applications are offered by Yuang Hsian Metal Industrial Corp. The company’s website presents in detail the entire line of products offered by the company.

www.yhm.com.tw
Oven-Part Collector Combination

HSI recently introduced the newest models of the PCF series of combination parts collector and oven for automated stress relieving of small components. By combining part collection and stress relieving, the PCF series oven is offered as an ideal solution for automated production or lot control situations.

With a maximum temperature capability of 500°C (930°F), a wide variety of materials can be processed in the PCF series combination parts collector and oven.

Features of the new PCF series systems include DSM digital speed meter for displaying time in heat, a PLC control for direct connection to a production machine, parts bin timing by either count or quantity and SS belt and bins as well as casters for mobile operations.

The PCF series of combination parts collector and oven is the latest addition to the complete line of HSI high-performance ovens including HCF mesh belt conveyor ovens (over 30 sizes), HSF link belt conveyor ovens, HB box ovens and HC high-temperature box ovens. Forming Systems Inc., Schoolcraft, MI, USA.

www.formingsystemsinc.com

Round & Profile Wire in Many Different Materials

Wintwire enjoys a heritage of over 160 years continuous wire production from its site in Sheffield, UK. Manufacturing wire to each individual customer’s own requirements has and always will be the firm’s key objective. As a result, Wintwire has vast knowledge and capability to produce wire in many different forms from mild, carbon alloy and stainless steel, through to nonferrous metals.

Wintwire produces speciality wires in round and profiles to diverse markets throughout the world putting quality and service as our top priorities. One of its key markets is retaining rings, Wintwire has recently invested in an additional power rolling machine to add to its existing eight wire rolling mills. To accompany this new power roller, Wintwire has purchased a new Fenn combination-type Turks head built with extreme accuracy to enable sections to be made to close tolerances. www.wintwire.co.uk
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Vist us at Interwire 2015 in Atlanta, booth 235

Serving Manufacturers of Springs, Wire Formed Parts, Wire Mesh and Rebar Products

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Firms, organizations & events listed in Wire Forming Events (p. 4), as exhibitors in the Interwire Preview (p. 30-45) or as exhibitors in the SME Metal Engineering eXpo article (p. 59), as exhibitors in the wire Russia Preview (p. 69-70) and as advertisers in the Spotlight Ads (p. 62-63) are not indexed here.

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Global Technologies for Wire Forming and Spring Making

HTC Spring Coilers
CNC Spring Coilers
• Axes 2-4-7-9
• 0.2mm - 12mm
• Rotating Cutoff
• Hi Speed Production
CNC Spring Formers
• 2-4-8-16 Axes
• 0.2mm - 6mm
• Rotating Wire
• Speed & Precision
HTC equals precision, speed, and performance for spring making or wire forming.

HSI Accessories
“Complete the Process”
For spring making and wire forming
• Conveyor ovens
• Box ovens
• Spiral ovens
• Payoff reels
• Part collectors
• Part washers
• Spring length gaging
• Spring testing

HSI Oven w/ Air Filtration System
NEW
CQI9 Wireless Temperature Recording

TBE Multibend
TBE introduces the MULTIBEND series of machines for quality production of complex wireforms from mild and spring tempered materials
• New AB control systems
• Touchscreen interface
• Axes - up to 14
• Twin head design
• High speed servos
• Minimal tooling
• Component rotation
• Component transfers
• Automate secondary ops
• Fast setup times

JK Programmable Tabletop Benders
For forming and bending wire, tube, and strip materials
• Program RH or LH bends in sequence
• Continuous coiling
• Memorize up to 30 bends
• Run 9 bends in sequence
• Variable bend speed
• Quick change tooling
• Adjustable home position
• Teach mode

Vision Measurement
Featuring
• Complex geometries
• Auto-part recognition
• Multiple part inspection
• Programmed via CAD files
• Real time, online, offline
• E1/E2 parallelism and perpendicularity
• Pitch trace and compression spring mapping

Spring Testing
Measurement & Analysis
Testers: .0001N - 100,000N
• Compression
• Extension
• Torsion
• Fatigue
• Real time data reporting
• Integrated vision E1/E2
• Squareness under load
• XY inplane load capability

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