The international magazine for the tube & pipe industries

TUBE & PIPE Technology

管道技術

JULY 2015

VOL 28 NO 4 US$33

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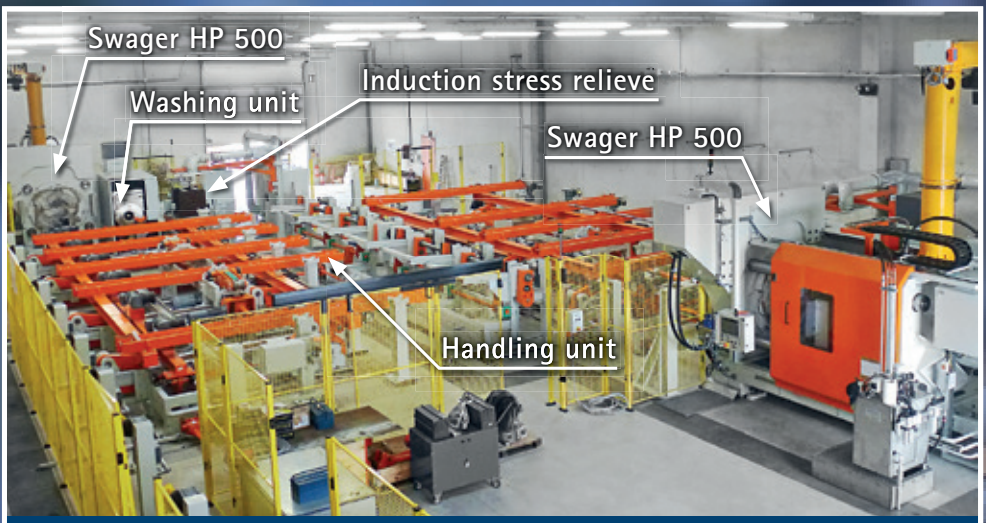

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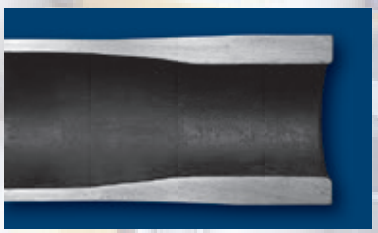
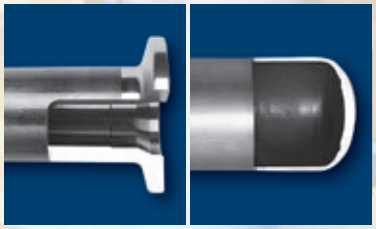


UPSETTING



FLOW FORMING

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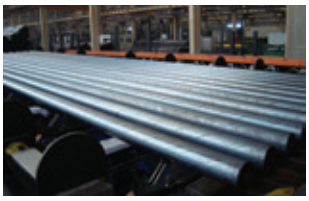

The July Issue

Rory McBride – Editor

Welcome to the latest issue of Tube & Pipe Technology magazine. This issue we have a feature on straightening technology & equipment and take a look at the Tube South-East Asia show in Bangkok, Thailand, which is taking place in September. I will be attending Tube South-East Asia for the first time so I hope to see you there. Thailand's economy has not been helped by the recent slowdown in growth in China but it is still predicted to see a healthy growth in GDP this year, which is encouraging to hear.

We also have two technical articles, on the benefits of induction heat treatment for tube and bar material from SMS Elotherm, and flexible enclosure welding from Huntingdon Fusion Techniques.

Next issue we have features on bending machinery & tools, advances in measuring & marking technology, and cutting, sawing & profiling. The issue will be distributed at FABTECH 2015 in Chicago, USA, TUBOTECH in São Paulo, Brazil, and EMO in Milan, Italy.

The editorial deadline is 10 July and the deadline for advertising is 14 July. You can contact me at rory@intras.co.uk and I will be happy to help with any enquiries about features, stories and technical articles.

Enjoy the magazine.

On the cover . . .

AUSTRIAN machinery specialist Linsinger has produced its popular tube cut-off machine-series Multi-Cut for many years.

Managers responsible for service and maintenance in tube mills often find that machines need to be repaired and improved more than suppliers sometimes claim when they originally purchased the machine.

This is something Linsinger specifically works to avoid. "We plugged in the Linsinger Multi-Cut and it has been running from the first minute," said the manager responsible for the maintenance department of the German Tube Specialist Mannesmann Line Pipe MLP in Hamm. The Linsinger tube cut-off machine was first installed in 2004 and has worked continuously since then without a problem.

The construction and installation of the cut-off machine into an existing pipe production line was a smooth process with the help of Linsinger and its technicians. The 50-ton machine has shown its pedigree from the beginning. With low tool costs and optimised saw blade life the MultiCut MC 4-610 cuts the burr-free inner and outer edges of longitudinal welded tubes in an exceptionally fast time.

Schwarze-Robitec establishes USA subsidiary

TUBE bending machine manufacturer Schwarze-Robitec has opened its own subsidiary in North America.

Since 1 April 2015, Schwarze-Robitec America Inc has been implementing the entire sales and service for the tube cold bending machines made in Germany.

Customers from the USA, Canada and Mexico will benefit from on-site advice and shorter delivery times for spare parts.

Schwarze-Robitec America handles the complete sales and service activities for the German-made tube bending machines

Schwarze-Robitec, founded in 1903, develops and manufactures tube bending machines for the automobile, shipbuilding and offshore industry, power plant construction and the chemical industry, as well as special bending solutions for other branches of industry. To improve the service for the rising number of customers from North America and Mexico, Schwarze-Robitec opened its US subsidiary in Michigan. General manager (CTO) Chris Dorgan, who has decades of experience in service for Schwarze-Robitec machines, looked forward to his new duties: "Our tube bending machines are tailor-made quality products.

Users therefore have the right to expect high market and customer orientation from the manufacturer. My team of experts and I are looking forward to expanding advice and sales here, on site, and providing excellent service."

Schwarze-Robitec America Inc sells tube cold bending machines ranging from 1/8" to 16", as well as bending tools and application-specific machine equipment. The team of experts also implements spare parts procurement, machine maintenance and inspections, and advises users with regard to modifications, major overhauls of existing machines and optimisation of bending processes.

In addition to tube bending machines and bending tools, the Schwarze-Robitec product range includes tube perforating machines, measuring stations and solutions in the area of special machinery construction.

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Schwarze-Robitec America Inc – USA
Fax: +1 231 598 9097
Email: us-sales@schwarze-robitec.com
Website: www.schwarze-robitec.com

High performance testing

MAGNETIC Analysis Corporation (MAC) will feature the new Minimac 55 eddy current tester at this year's Tube Southeast Asia show in Bangkok, Thailand, in September. The company will be co-exhibiting with its Thai representative, Siam Charn Co, Ltd.

The Minimac 55 brings high-performance eddy current testing to a range of applications. It is the first eddy current tester to offer the robust capabilities of MAC's top-of-the-line Multimac®, in a powerful, compact design.

The instrument is suitable for dedicated, continuous production line testing where simple setup, without the need for constant operator adjustment, is desirable. Once the optimum settings have been established, a lockout mode feature can be set to prevent unauthorised changes. Defects and conditions that can be readily detected by the Minimac 55 include finding short surface and some subsurface defects such as laps, slivers and cracks in tube, bar, wire and parts, and locating weld line faults, including short ID or OD defects. The Minimac 55 can also check continuity and locate welds in single- and multi-conductor insulated wire and cable and, using the MID model, detect magnetic inclusions such as iron filings in copper material. The Minimac 55 features MAC's Multimac performance in a single-instrument, with software controls for all functions.

The test results are displayed in full-colour polar and linear mode showing real-time, true waveform signals for easy review on a separate on-site monitor or at remote locations. The Track screen depicts the test product's length, with data on line speed, end suppression, flaw tracking, piece count and alarm routing.

Magnetic Analysis Corp – USA
Email: info@mac-ndt.com
Website: www.mac-ndt.com

Minimac 55 eddy current tester

New VP appointed for Tri Tool Services

ROBERT Korey has been appointed vice-president of field services at Tri Tool. He will oversee Tri Tool Services, Tri Tool Power Services, welding operations, OEM Shop Services and OEM Training.

Mr Korey will direct company-wide service operations from Tri Tool's expanded 15,000ft^2 Gulf Coast Service Center in Texas, USA, located just outside Houston.

His new management responsibilities will encompass Tri Tool's national network of service facilities including the service machining and training centre at the corporate headquarters in California, and strategically located regional support facilities in Texas, Ohio and Georgia.

With more than 20 years of industry experience in the power gen, petro-chemical, and oil and gas industries, Mr Korey is qualified to lead Tri Tool's service network with an extensive background in managing large P&L, mobile workforce, safety compliance, and project execution operations. He also has specialised experience in commercial planning, proposal development, cost modelling, trade associations, senior sales and a large contingent of craft projects.

Mr Korey has also led teams in large OEMs, publicly-held organisations, private third-party service companies, and new venture capital teams. Throughout his career he has held many titles including director of field services, vice-president of sales, senior director and business unit manager.

Mr Korey is a graduate of Kennesaw State University in Georgia, USA, where he majored in communications with a minor in business. He resides in Katy, Texas, with his wife and three children. In his spare time he enjoys time with his family, walking his golden retriever, going to church and travelling.

Tri Tool – USA
Website: www.tritool.com

Diary of Tube Events

2015

16-18 September
Tube SE Asia *(Bangkok, Thailand)*
International Exhibition
www.tube-southeastasia.com

5-10 October
EMO *(Milan, Italy)*
International Exhibition
www.emo-milano.com

6-8 October
Tubotech *(São Paulo, Brazil)*
International Exhibition
www.tubotech-online.com

9-12 November
Fabtech *(Chicago, USA)*
International Exhibition
www.fabtechexpo.com

17-19 November
Stainless Steel World *(Maastrict, Netherlands)*
International Exhibition
www.stainless-steel-world.net

17-20 November
TOLexpo *(Paris, France)*
International Exhibition
www.tolexpo.com

2016

23-27 February
METAV *(Düsseldorf, Germany)*
International Exhibition
www.metav.com

22-24 March
Fabtech Canada *(Toronto, Canada)*
International Exhibition
www.fabtechcanada.com

4-8 April
Tube Düsseldorf *(Germany)*
International Exhibition
www.tube.de

Kusakabe supplies two pipe mills

KUSAKABE Electric & Machinery has supplied and commissioned two pipe mills in Taiwan for CHS Steel in conjunction with several other suppliers. This new installation is for a state-of-the-art operation and will make it the most advanced in Taiwan.

The 4" tubing line manufactures tubes from 60.3 to 114.3mm up to 10.5mm thick, and steel grades with tensile yield strengths up to 750MPa. The line starts with the uncoiler and shear welder, vertical looper (strip accumulator) all the way through to the hydrostatic pressure testing, UTS, coating and packing in a continuous process.

The tubing line itself incorporates Kusakabe's vertical looper (strip accumulator), flying strip shear and sub-based stands with independent drive to each shaft for quick changeover and improved drive.

One squeeze stand is provided in a four-roll configuration, with internal and external weld bead removal and swarf chopping.

After the weld seam annealing and cooling stage a rotary sizing mill sizes the tube to the customer's requirements before it is cut to length by a three-bladed rotary cut off.

The 13" casing line manufactures tubes from 114.3 to 355.6mm up to 16mm thick, and steel grades with tensile yield strengths up to 750MPa. The line starts with the uncoiler and shear welder, horizontal strip accumulator all the way through to the hydrostatic pressure testing, UTS, coating and packing in a continuous process.

The pipe mill itself incorporates Kusakabe's latest universal forming, followed by three cassette fin passes and a five-roll squeeze stand, and internal and external weld bead removal and swarf chopping. After the weld seam annealing and cooling stage, a rotary sizing mill sizes the tube

to the customer's requirements before it is cut to length by a two-bladed milling cut off.

The strip accumulators provide CHS with continuous operation while the flying strip shear reduces changeover times and strip wastage when roll changes are required.

The configuration of the forming sections allows for rapid change over and easy adjustments while individual drive motors on each shaft provide equal distribution of the driving force through all the forming rolls.

The squeeze stands provide for the ideal strip presentation for HF welding with maximum rigidity, which provides a stable welding environment.

The rotary sizing mills are a patented process for sizing tube and pipe. The RSM has several advantages over traditional sizing methods.

The outside diameter (OD) variation is considerably less; weld seam location can be accurately controlled; the average OD can be adjusted very accurately by a single point adjustment; the tooling can infinitely cover a range of diameters typically around 15mm; tooling wear is reduced and does not affect the performance of the process; and there are no tooling marks on the pipe and the surface finish is improved. Tooling changes are also simple and fast.

The two-bladed rotary cut off is a chipless process, which is fast and the operating costs low. In this application the OD surface is chamfered and the ID weld bead swarf is cut at the same time.

The two-bladed milling cut off on the casing line provides a square cut end, which minimises any additional machining operations that may be required. The pipe is cut with tungsten carbide-tipped saw blades.

Kusakabe Electric & Machinery Co, Ltd – Japan
Email: sales@kusakabe.com
Website: www.kusakabe.com

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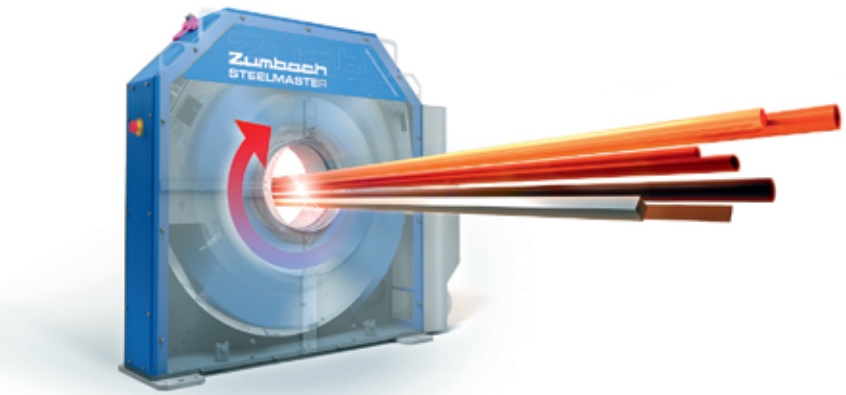

Zumbach

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ZUMBACH Electronics

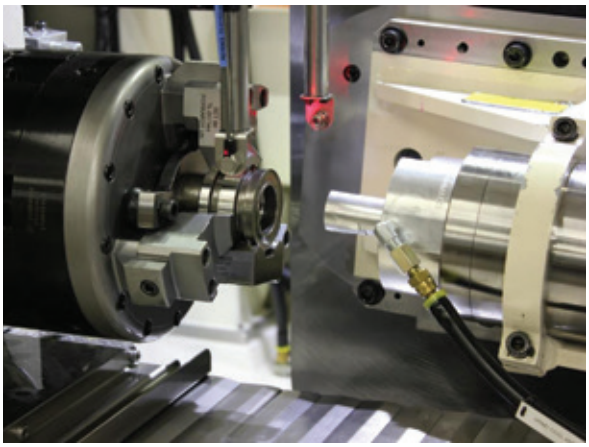
sales@zumbach.ch I www.zumbach.com

Drake recognised with Nexteer supplier award

DRAKE Manufacturing Services Co, a precision CNC manufacturing systems builder, was recognised during an awards presentation at the Nexteer Indirect Supplier Conference in Saginaw, Michigan, USA.

The award was presented to Drake for its part in the successful launch of Nexteer Automotive's K2XX product line for General Motors. A series of Drake GS:TI internal thread grinders were installed at Nexteer's Saginaw facility as dedicated work cells to thread grind EPS ball nuts for this steering programme.

Drake GS:TI internal thread grinder for conventional EPS ball nuts



Ball nut grinding on Drake GS:TI internal thread grinder

Drake has developed an entire range of machines, software, grinding and milling processes for manufacturers of hydraulic and electric steering components (ball screws, ball nuts, steering racks and worms). The company offers a variety of internal and external grinders as well as rack and thread milling machines to produce each major component in modern steering systems.

Drake has also developed special grinding processes for licensees of its proprietary internal return ball nut technology.

The patented Drake Internal Return Ball Nut, in use in EPS systems currently, is available for license.

Each Drake machine is delivered with Part Smart™ programs. The company provides all software required to make good parts from day one. The operator needs only to input part-specific variables into the control to run parts. No customer programming is required and the customer can change from one part to another in minutes.

Drake Manufacturing Services Co, LLC – USA
Fax: +1 330 847 6323
Email: info@drakemfg.com
Website: www.drakemfg.com

Asahi/America welcomes new sales team member

ASAHI/AMERICA, Inc has announced the addition of George Tenhagen to its sales team.

Mr Tenhagen, who will represent the company in Florida, Georgia and Alabama, USA, graduated from the University of South Florida with a bachelor's of science in environmental engineering.

For the past 15 years he has been area manager of facilities engineering at a theme park in Tampa, Florida. He has been an active member of Aquatic Animal Life Support Operators (AALSO), serving as an executive board member for 12 years including two terms as president and treasurer. He is also a licensed professional engineer in the state of Florida.

Asahi/America specialises in providing solutions for fluid handling systems, individualised to meet customers' needs. The company manufactures corrosion-resistant thermoplastic fluid handling products, including valves, actuators, pipe and fittings. It also maintains an extensive custom fabrication department, and provides on-site consultation, supervision and training where required.

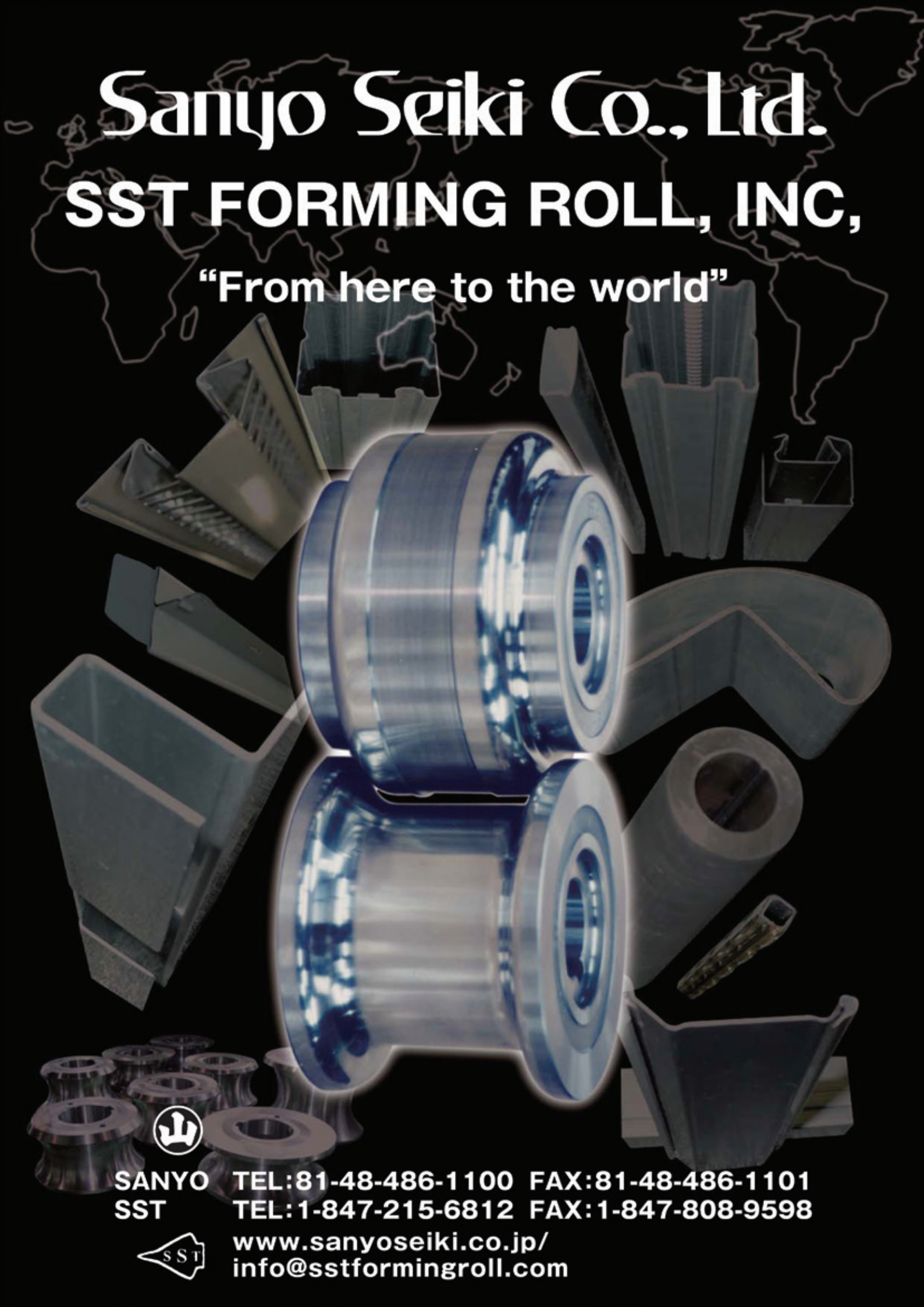
George Tenhagen

Asahi/America, Inc – USA
Email: asahi@asahi-america.com
Website: www.asahi-america.com

Sanyo Seiki Co., Ltd.

SST FORMING ROLL, INC,

"From here to the world"



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www.sanyoseiki.co.jp/
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Large pipe lines ready for delivery

THE pre-assembly of two spiral pipe mills, for which Schuler received orders last year, has been completed.

Tuberías Procarsa, a Mexico-based manufacturer of steel pipes, is due to accept delivery of the first line. The various components will then gradually leave the production halls. In the case of the line for Group Five Pipe Saudi Ltd, acceptance is planned for September.

In Mexico, Schuler will assemble the line. The production launch is scheduled for spring 2016. Tuberías Procarsa will use the offline spiral pipe line to produce large pipes with diameters of between 508 and 2,235mm (20" to 88"), in lengths of 12 to 24.4m. When assembled, they will serve as pipelines for oil and gas. The pipes are made from high-grade steel (up to X100) with thicknesses of up to 25.4mm, which is wound onto coils. This is formed into a spiral tube and submerged-arc-welded to a spiral-welded pipe.

Pre-assembly of the two spiral pipe mills has been completed Photo credit: Schuler

The coil preparation stand ensures short changeover times, a high degree of safety, and an exact 90° cut at the beginning of the coil. Crane transfers are no longer necessary.

At the forming station, all relevant steps are automated: the settings are not made manually, but entered directly via the easy-to-use control panel, and then implemented with the aid of servo motors.

The outer or inner diameter calibration system ensures consistently reproducible product quality.

The line for Group Five Pipe Saudi Ltd is largely identical. With a total length of 450m, the two pipe plants also include various devices to test the large pipes in accordance with the API standard. This entails the use of ultrasonic, X-ray, and hydrotester stands.

Schuler offers cutting edge presses, automation, dies, process know-how and services for the metal forming industry and lightweight vehicle construction.

Clients include car manufacturers and their suppliers, as well as companies in the forging, household equipment, packaging, energy and electrical industries.

Schuler AG – Germany
Fax: +49 7161 66 907
Website: www.schulergroup.com

EPIC announces executive management team

EPIC Piping has announced the executive management team that will be responsible for driving growth at its two facilities under construction. This leadership team will also drive the future international expansion of EPIC Piping.

David Chapman, Sr will lead the company as chief executive officer. Mr Chapman has been in the manufacturing and fabrication industry for over 45 years, managing the pipe and steel fabrication and distribution divisions for several global industry leaders. He will be responsible for managing business and operational strategies across the entire organisation.

Kent Shepherd joins the company as president of domestic fabrication. Mr Shepherd is an executive with more than 26 years of Fortune 500 experience in the pipe and steel fabrication industry. President of international fabrication Remi Bonnecaze is an executive with over 27 years of Fortune 500 experience in the pipe and steel fabrication industry.

Tom Calamia joins the company as chief financial officer. Mr Calamia will oversee and implement EPIC Piping's financial reporting and structure, and oversee the company's future financial growth. Chief administrative officer and CIO Jeremy Turner will oversee and implement EPIC Piping's information technology systems and human resource operations. "We are excited to be the fastest growing fabricator in the world and we envision EPIC Piping becoming the gold standard in the piping and manufacturing industry," said Mr Chapman. "Our management team will ensure that the highest standards are maintained as we grow domestically and internationally."

EPIC's total fabrication capacity currently exceeds 360,000ft^2, and will expand to more than 500,000ft^2 by 2016. Fabrication capabilities include carbon steel, chrome moly, stainless, Duplex steels, nickel-based alloys and jacketed piping.

EPIC Piping – USA
Email: contact@epicpiping.com
Website: www.epicpiping.com

More success for Fives Bronx

FIVES Bronx Ltd UK has agreed and signed a contract with a major Scottish pipe manufacturer, for the supply of a new straightening installation. The fully automated line has been purchased to process pipes in the range from 4½" to 16¾" diameter and at temperatures of up to 750°C.

Jon Dunn, managing director at Fives Bronx Ltd, commented, "This new contract represents the eleventh straightening line that we have supplied to this internationally based client, worldwide, in the past ten years and shows the confidence that they have both in our equipment technology and our company.

"The new contract is to replace a Bronx line that was originally supplied back in 1969, confirming the longevity and reliability of the Bronx brand, throughout the decades. The latest line will provide the client with a 21st century solution to their straightening requirements and is due to be delivered to their factory during the first quarter of 2016."

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fivesbronxuk-sales@fivesgroup.com
Website: www.fivesgroup.com

New look and better connections

INDUCTOTHERM Group has embarked upon a complete redesign of its corporate and individual company websites.

The primary goal was to create an integrated digital information resource more tightly aligned with the company's corporate strategies and its focus on customer success. Every facet of the corporation, people, products and brands is now smoothly integrated under the Inductotherm Group super brand. Each one of Inductotherm's products is available to its customers globally, supported by an infrastructure of 40 companies, ten global brands covering 50 product categories plus 38 manufacturing facilities worldwide.

Its long-held strategy of 'global, yet local' has never been more clear or provided more value to both customers and prospects. This all comes together in the brand new look and feel of Inductotherm Heating & Welding and in the totally new, well-integrated network of sub-company websites. The new, easy-to-understand sites will enable customers to find the products they want in a couple clicks.

Inductotherm Heating & Welding – UK
Email: info@inductothermhw.co.uk
Website: www.inductothermhw.com

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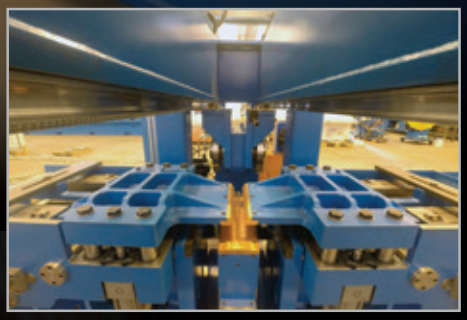


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Bangkok - Thailand

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Polysoude opens its doors in Nantes

POLYSOUDE held open days at its Nantes, France, headquarters in June. Over the two days, the company presented its latest developments in the fields of welding and weld overlay cladding using the TIG and TIGer (GTAW) process. Professionals and decision-makers from all industries who use welding in their line of business were invited to come and discover how they can optimise their productivity and guarantee a quality product. Representatives of the specialised trade press were also welcome.

Polysoude has always aimed to optimise its customers' productivity while improving the quality of their products by developing new solutions that tackle the most complex issues. Workshops on different topics, described below, offered opportunities to exchange information on the various types of mechanised and orbital TIG/TIGer welding and cladding applications. These applications are commonly used across a wide range of sectors such as conventional and nuclear power plants, solar farms, oil exploration, aerospace, processing of foods and pharmaceutical products, water treatment, etc.

For orbital welding, it can be easily demonstrated that using the hot-wire TIG process with an open head significantly increases welding speed and can be used to join thicker tubes than the cold-wire TIG process. Automation via a program recorded in the power source guarantees flawless production.

For very thick-walled parts, another way of increasing productivity in addition to the hot-wire TIG process consists of reducing the groove, and therefore the volume to be filled by the weld. The use of an open-type carriage welding head equipped with a narrow gap torch limits the quantity of metal to be deposited. Additional gains are made on preparing the groove by limiting the loss of material and the machining time. This technology guarantees a quality weld thanks to the TIG process and is perfectly reproducible by virtue of automation.

When high quality welds are required, orbital TIG welding is the ideal technology for tube-to-tube or tube-to-tubesheet welding applications. With or without filler wire, this is a stable, reliable process that can be used on steel, stainless steel, titanium and nickel and aluminium alloys, for example. The development of a welding programme guarantees a high-quality weld through automation. The welding cycle can be repeated as often as necessary with the same result.

Orbital welding equipment can be used in difficult conditions such as a confined space or where there is a lack of accessibility or visibility. On all of these machines, the welding parameters can be checked and compiled into a printable protocol for guaranteed traceability. Another application of the TIG process is TIGer cladding. To increase their lifetime, components are coated in a resistant layer by the weld overlay cladding technique.

Polysoude – France
Website: www.polysoude.com

Davis-Standard appoints VP of extrusion coating and solution coating

RICK Keller has been promoted to Davis-Standard vice president, extrusion coating and solution coating. Mr Keller previously held the position of vice president for the company's blown film business, and established Davis-Standard's market position in barrier agricultural films, membranes and agri-stretch films.

Mr Keller joined Davis-Standard (Egan) in 1981, working in various roles within the blown film, cast film and extrusion coating product groups. He has extensive experience with Davis-Standard, Egan, and Black Clawson Converting Machinery brands, and is a well-known presenter at technical conferences worldwide.

"Davis-Standard is well positioned for further growth and development of product lines for both extrusion and solution coating," commented Mr Keller. "We have an outstanding team to support our global efforts and serve our customers with high-speed web handling technology.

Rick Keller

"Our developments in extrusion energy efficiency, high-speed bond strength control and redesigned machine platforms will be what customers need for the future. Our goal is to reverse integrate these developments to the existing base of exceptionally robust lines still in operation after 40 to 50 years."

Davis-Standard designs, develops and distributes extrusion and converting technology. Its systems encompass more than ten product lines to support manufacturing applications and customers within every major industry. The company has manufacturing and technical facilities in the USA, as well as subsidiaries with facilities in China, Germany and the UK.

Davis-Standard, LLC – USA
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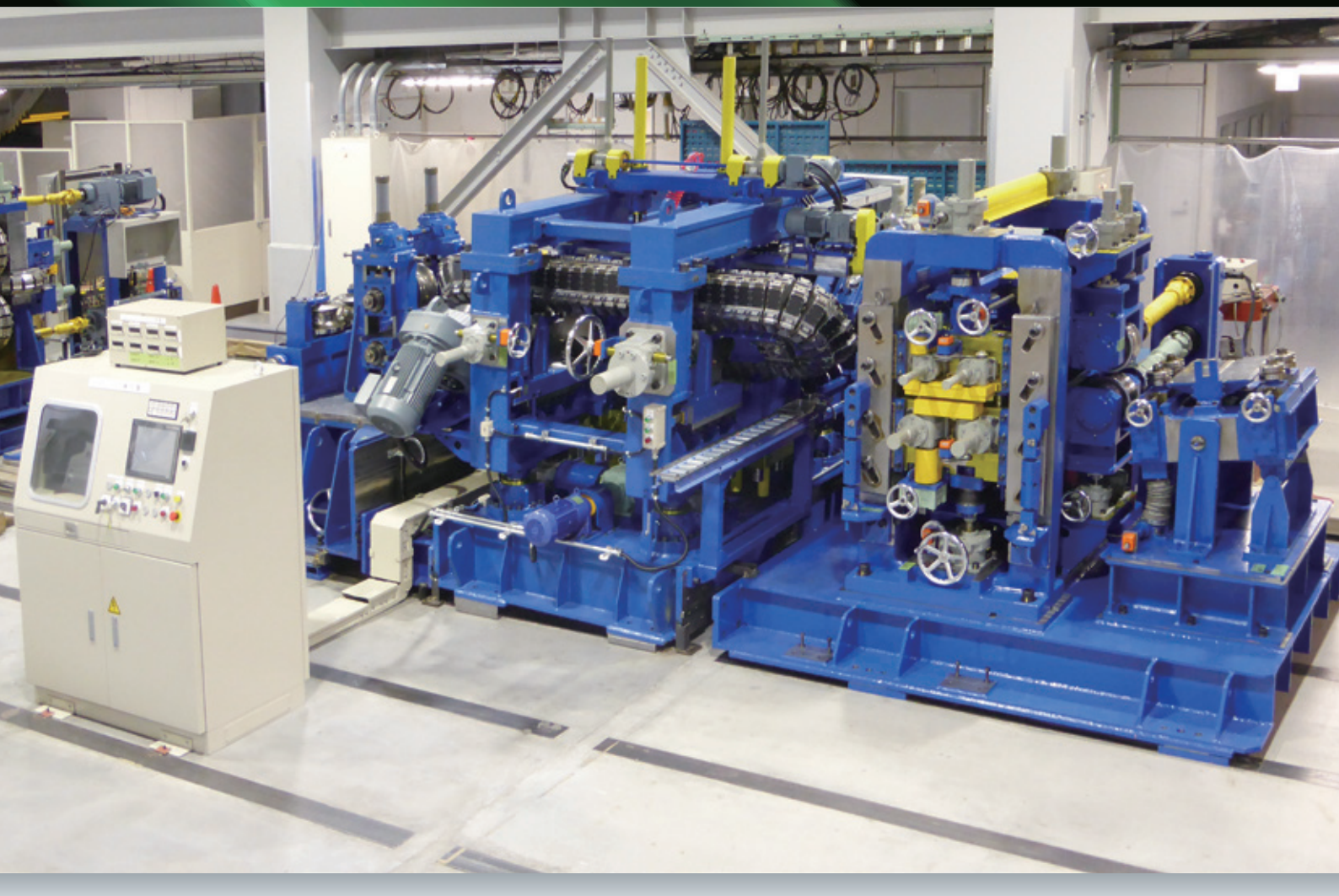

NAKATA MFG. CO., LTD.

3-7-6 Tagawa, Yodogawa-ku, Osaka, 532-0027, Japan tel. +81-6-6303-1900 fax. +81-6-6303-1905

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Extended management team at egeplast

THOMAS Drill has been appointed managing director of sales at egeplast international GmbH, a producer of plastic pipe systems.

”I am glad Thomas Drill joined egeplast as an experienced manager from the construction business,” commented Dr Ansgar Strumann, executive director.

“With him, we want to strengthen our sales and sustainably increase our project business with system solutions.”

Mr Drill started his career after having studied engineering at RWTH Aachen. He worked at Hochtief, where he was responsible for building construction in Berlin and Eastern Germany, after having been deployed in Belgium and Luxembourg by the same employer.

In the past five years he has been chairman of the executive board at Köster Bau GmbH. His responsibilities there included all national projects as well as corporate departments such as purchasing and cost accounting.

In early 2015 he worked as a consultant for a start-up in the construction business.

For the past three years he has also been teaching at Münster University of Applied Sciences.

“I will approach my new tasks at egeplast with a lot of energy,” said Mr Drill.

“I am glad to apply my 25 years of professional experience, for example in the successful interaction with clients and the professional realisation of large-scale projects. Next to our standard product range, we will be offering even more customised turnkey system solutions in the future.

“Beyond that, we will also enter new market segments with our cooperation partners. I am convinced we will be successfully expanding our market position with our high-quality products and solutions.”

Thomas Drill joined egeplast’s management in March

egeplast international GmbH – Germany
Fax: +49 2575 9710 110
Email: info@egeplast.de
Website: www.egeplast.de

Mill for stainless steel tubes commissioned in China

OLIMPIA 80 Srl specialises in engineering and manufacture of complete tube mills for welded tubes. The company recently installed and put into operation a complete tube mill for stainless steel tubes for a major tube manufacturer in China. The tube mill can produce an OD range from 12 to 50.8mm, in stainless steel quality AISI 300 and 400, Duplex and nickel alloy.

The line includes double decoiler, strip end welder, vertical strip accumulator, strip edge preparation, forming and welding sections, laser generator (6kW) and an Olimpia 80 patented bead grinder. Other features include an electro-magnetic bead roller, sizing group before and after the complete inline bright annealing system, eddy current control, straightening, laser diameter control system, cut-off by cold saw, and run out and unloading table up to 12m length.

All the machines are engineered and manufactured in Olimpia 80's factory in Italy, including the different roll sets delivered with the tube mill.

Asia is an important market for Olimpia 80's tube mills. The company recently finalised several orders in this part of the world, for projects such as the production of carbon steel tubes in Myanmar, and stainless steel tubes in Bangladesh.

Olimpia 80 Srl – Italy
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Advanced pipe coating equipment increases plant capacity

AJAX Tocco Magnethermic has shipped a 4,500kW, 12 pulse Pacer II induction heating system to the LB Foster Coated Products pipe coating facility in Birmingham, Alabama, USA. The installation of this advanced equipment marks a key development in LB Foster's capacity expansion plans.

The high-speed coating plant is capable of applying fusion bonded epoxy (FBE) to 12.75" to 24" pipe in lengths up to 80ft. The new Ajax Tocco Magnethermic system provides progressive, in-line heating of the pipe prior to application of the FBE coating, and features the ability to quickly change the line's inductors for differing pipe sizes to minimise production downtime. The LB Foster pipe coating facility is located on the site of American Steel Pipe. Ajax Tocco Magnethermic designs and manufactures induction heating and melting equipment for various industries and applications throughout the world. The company also provides a range of services that include laboratory process development, preventative maintenance, equipment repair and parts, coil repair facilities, and installation services.

Ajax Tocco Magnethermic – USA
Fax: +1 330 372 8608
Email: sales@ajaxtocco.com
Website: www.ajaxtocco.com

LB Foster Company – USA
Website: www.lbfoster.com

Chemetall acquires aluminium finishing business

CHEMETALL, a global business unit of Albemarle Corporation, has acquired the business of Chemal GmbH & Co KG, based in Hamm, Germany. The transaction will enhance Chemetall's integrated portfolio for the aluminium finishing industry. Founded in 1975, Chemal specialises in research and development of surface finishing chemicals for aluminium and its alloys.

"Consisting of advanced pre-treatment and anodising technologies, Chemetall is one of the few players globally positioned with a comprehensive product range for the aluminium finishing industry," said Joris Merckx, president of Chemetall. "This transaction will expand our expertise in this market and, combined with strong technical services offered by our wholly owned subsidiaries around the world, will enable us to further expand our presence in a key market."

With chrome-free pre-treatment technologies, such as the zirconium-titanium Gardobond® X and the silane-based, multi-metal Oxsilan® technology, the company has launched innovative processes to the market. "Our customers expect us to deliver a full portfolio of solutions to meet upcoming environmental legislation and achieve process cost savings," said Martin Ings, global segment manager aluminium finishing. "With the completion of this acquisition we can offer differentiated products and services to bring true value for our customers with minimal investments."

Chemetall – Germany
Fax: +49 69 7165 3018
Email: surfacetreatment@chemetall.com
Website: www.chemetall.com

Chemal GmbH & Co KG – Germany
Fax: +49 2385 6293
Email: chemal@chemal.com
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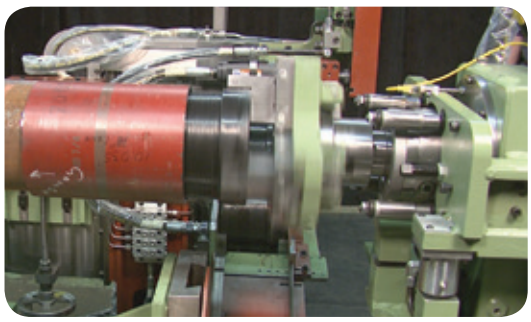

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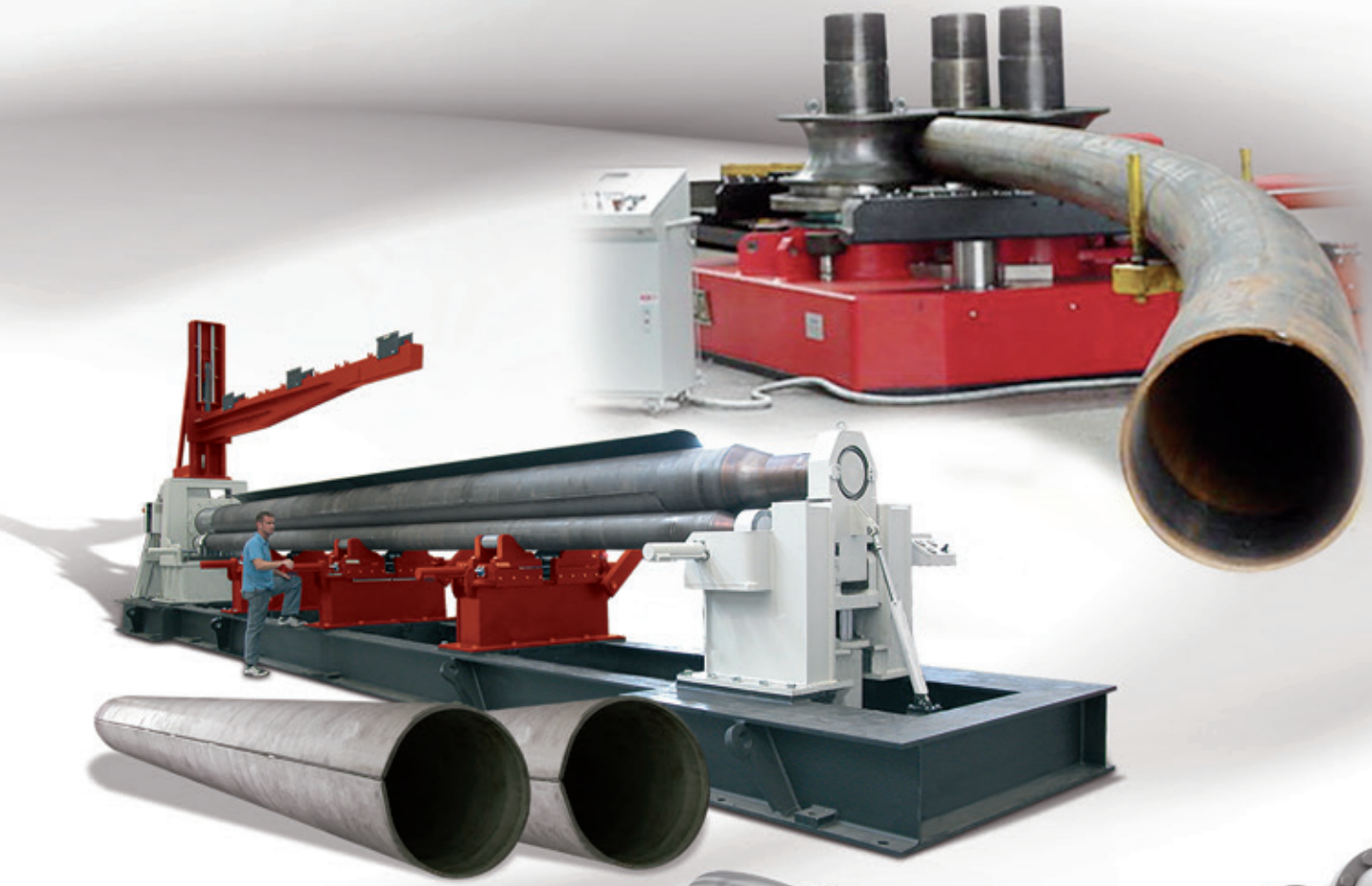

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AXXAIR brings expertise in design, manufacturing, servicing and training of high quality orbital cutting, bevelling and welding equipment for the tube and pipe industry.

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Axxair also makes aftersales service and repair its priority – such as equipment training, cutting/bevelling and welding samples. The company can provide training at its facility in the skills of cutting, bevelling and orbital welding in Valence, France, in Rastatt, in Seoul, South Korea, in Shanghai, China, and in Houston, USA, or it can send one of its specialists to a company factory for on-site training. When purchasing equipment, Axxair provides a welding report detailing all of the programs used so that the user does not have to repeat them.

Axxair – France
Website: www.axxair.com

30" ODF mill line

NAKATA has received its first order for the newly developed ODF (orbital die forming) pipe mill from a Chinese pipe manufacturer. The pipe size is up to 762mm OD, and 25.4mm wall thickness, and most of the products are API line pipes up to X80 grade.

Differing from the conventional roll forming process, ODF is an innovative technology in which movable dies are combined to form a continuous tool surface and work like a huge roll or moving press machine. This concept makes the forming process very gentle and stable, resulting in adaptability to a wide range of product sizes and material properties, excellent surface quality and lower work hardening level in the material.

Both steel plates and coils can be used as raw materials in this production line, and the pipes can be produced in 'plate-by-plate' or 'coil-by-coil' style respectively.

This hybrid production process allows the user to have the flexibility in selecting raw materials corresponding to the size of lot or dimensions of product. Nakata has a 4" ODF test machine in its shop, with which the customer can verify the performance of the forming process.

Nakata Mfg Co, Ltd – Japan
Fax: +81 6 6303 1905
Email: sales@nakata-mfg.co.jp
Website: www.nakata-mfg.co.jp

Successful opening for Bewo

AT the end of 2014 Bewo, the developer and producer of the CPO manual circular saw and high-performance automatic tube cutting lines, moved to a new building in Waalwijk, the Netherlands. The company has now held a ceremony to officially open the new facility.

The new location is more spacious, with modern facilities, and because the building is located next to a major highway, Bewo has increased its accessibility.

For the opening ceremony Bewo deliberately chose not to cut the traditional ribbon. The new building was instead opened by cutting a long tube, using its own Bewo CPO-315. All employees were allowed to cut a piece of the tube. After the cutting the tube dropped, clearing the path for the guests to enter the building.

Bewo's new building

During the opening, Bewo gave comprehensive demonstrations on an automatic cutting line, based on the DCH-76 Sapphire cutting machine with de-burring machine and stacking robot. This universal cutting machine has a high production speed and effortless double production, even with tubes of different starting lengths. This specific cutting line will be exported to a client in Mexico to make products mainly destined for automotive industry.

One of the new factory halls

Operations manager Frans van Gorp commented, "Dealers and customers can turn to us for the best cutting machines and for training, advice and specific technical support. Worldwide we pursue growth with our excellent customer service, innovation, high quality and collaborations. For the world market all of this comes together in Bewo's new building. With the new location in Waalwijk we have found a good place for making our ambitions come true. We are ready for an innovative future!"

Bewo Cutting Systems BV –
The Netherlands
Email: info@bewo.nl
Website: www.bewo.nl

Fives exhibits at AISTech 2015

FIVES participated at the AISTech show, the premier technology event for the steel industry, which took place 4 to 6 May 2015 in Cleveland, Ohio, USA.

The AISTech show, having gathered over 500 exhibiting companies and more than 8,000 visitors, featured technologies from all over the world and provided perspective on the technology and engineering expertise for steel makers globally.

Fives exhibited its key solutions for the steel industry offered by its combustion, induction, steel and tube and pipe business lines. Fives provides key equipment solutions as well as full-line integration and services for equipment lifecycles, operation, optimisation and evolution.

It showcased its highly technical solutions for the steel industry such as DMS cold rolling and skin-pass mills and KEODS know-how and expert systems for processing lines, Stein reheating, heat-treatment and processing line furnaces, surface treatment equipment for pickling and degreasing, North American furnaces, burners, controls and service, CELES high-flux induction and cooling systems, Bronx and Taylor-Wilson finishing equipment and Abbey and OTO tube and pipe mills.

Fives technologies aim to achieve reduced operational expenses and to minimise environmental impact. During AISTech Fives featured its Stein Digiflex® furnace and North American regenerative forge furnace that carry Fives' Engineered Sustainability® brand for best-in-class designs to minimise environmental footprints.

At the same time the group highlighted its ultra-low NOx and CO_2 technologies and furnaces with proven fuel consumption reduction.

Fives – USA/France
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Redesigned pin-end greaser

PMC-Colinet is a machine tool builder that has been serving the steel tubulars industry for more than 100 years, with a focus on end-finishing equipment for pipe and coupling threading applications.

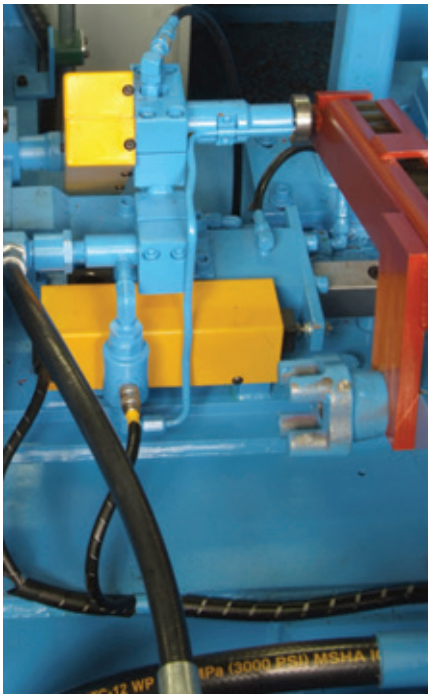
The company produces rotating product and rotating tool threading machines, as well as the related handling equipment, durable and perishable tooling, installation and training services to provide a complete equipment package from a single supplier. Product mix, not product geometry, determines the threading technology best suited for the job. The company's engineers identify this technology with customers during the discovery phase of each project.

PMC-Colinet designs and builds a full line of tube end-finishing machines that includes pipe cut-offs, bevellers, threaders, coupling starter and buck-on equipment, short-stroke and full-stroke drifters and automatic protector applier equipment. The company recently introduced a completely redesigned pin-end greaser that automatically applies a programmable volume of thread lubricant onto the pin end of threaded pipe. This device complements the company's automatic coupling ID greaser.

PMC-Colinet Belgium has developed a rotating product coupling cell arrangement that produces a fully machined, inspected, coated, painted and stencilled coupling from incoming mother tubes, while minimising personnel requirements.

The company's USA-based rotating tool group recently completed shop floor tests of a commercial tube finishing line that includes two ½" to 4" nominal OD, high-output CNC threaders, automatic coupling starter and protector applier. The protector applier is equipped with the pin end greaser. The protector applier and the coupling starter are each equipped with automatic feeders to maintain the 900+ pieces/hr output of the line.

All four of these machines are mated to a common walking beam table. All of the equipment is mounted on a common sub-base, piped and wired to minimise installation time at the customer's plant.



Automatic coupling greaser

PMC-Colinet – Belgium
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Website: www.pmc-colinet.com

PMC-Colinet – USA
Fax: +1 440 944 1974
Email: sales@pmc-colinet.com
Website: www.pmc-colinet.com

Asmag on course for expansion to become full-range supplier

TARGETED investment in core competencies plus global expansion, leading to stronger market presence – these are the declared and consistent goals of Austrian company Asmag, manufacturer of special purpose machinery and industrial equipment.

By acquiring the Italian machine engineering company OCN on 12 May 2015, the company took this strategy another significant step forward, gaining not only immediate access to OCN's plant assets, patent rights and specialist expertise, but also a new sales subsidiary and technical office in Italy.

OCN's product portfolio perfectly complements Asmag's current product range and represents another milestone in the Austrian company's evolution to meet its defined goals in the market as a full-range supplier. Founded in 1977, OCN has developed and produced machines and equipment for the metal industry at its site in Udine, Italy. It has a strong reputation in the field of non-ferrous metals and specialises in extrusion run-out systems and drawing machines for brass, copper, aluminium and steel tubes and bars. It is in precisely these fields that Asmag is pursuing its strategic aim of further extending its product portfolio to offer its customers the broadest possible range of equipment in the production of tubes, bars and profiles.

Customers of OCN worldwide have come to value the innovative expertise that the company has developed over the course of nearly forty years in the design and production of such equipment. Asmag is looking forward to utilising the significant advantages of this quality-orientated industrial synergy. OCN's forward thinking approach will integrate seamlessly into Asmag's existing operations, as customers of both companies have been able to depend on high quality, as well as innovative and individual solutions in the field of tube, bar and profile production for many years.

Whether for extrusion, pointing, drawing, straightening, cutting and chamfering, finishing, stacking and bundling or material handling, Asmag is a choice for special purpose machinery and plant equipment and claims that it does not rest until it has designed, manufactured and put into operation the best possible solution for the customer.

Asmag – Austria
Website: www.asmag.at
Website: www.ocn.it

Fully automated sawing solutions

KENT Automation, a division of MNM Mfg Inc, is an engineering and manufacturing company that offers a full range of innovative, customised and fully automated sawing solutions.

Recently the company supplied a double head mitre saw with pneumatic positioning of angles via a selector switch.

Currently Kent Automation is in the design phases of a multi-head cutting and milling machining centre for one of the world's largest composite fabricators. The equipment will be installed at its Canadian operations. This machine will be designed to mill and saw five styles of profiles at one time. There are four machines in total and they will be fully automated with an HMI touch screen for setup, monitoring and running the machine.

Since the early 1990s Kent Automation has supplied several thousand individual cutting and milling-related machines.

Kent Automation – USA
Website: www.kentautomation.com

Complex forms with reduced tooling

THE demands for tube processing are increasing. Geometry is becoming increasingly complex and materials are becoming ever stronger in connection with progressively light design. At the same time there are calls for efficiency across all sectors.

Rolling tube forming by transfluid is a process that opens up special opportunities for forming and reduces the use of tools to a minimum. Rolling technology displays its strengths most clearly if forming is to be carried out on tubes that have already been axially preformed, if sharp edged contours need to be created for sealing elements, or if perfect surfaces are required.

For tool-independent tube forming and for the creation of almost freely formed geometries, all transfluid t form bead rolling machines have a servo-electric drive and an easily operated CNC control system, if required. This allows the functions of different axes to be moved in an overlapping fashion. As all the setting parameters are stored, there are no complex adjustments and this saves valuable time. The forming process is possible both from outside to inside and from inside to outside. A further advantage of rolling tube forming is that even completely different geometries can be formed with a single tool, a clamping jaw and the rolling head. Tool wear is almost totally eliminated in a rolling process, and the lubricants that are necessary in the forming process can be reduced to a minimum.

If demanding forming is necessary on high-strength materials, a closed rolling head is used. The forming rollers are completely supported within this. The forming of highly complex geometries without space in the axial direction is carried out using three rollers that are included in an open structure. This means that the roller geometry can be carried out directly on a tube/flange connection.

A groove contour on a hose connection

It is also possible to roll threads or add edge designs with the same roller head and the corresponding rollers, with or without forming, depending on requirements. Trimming of already-bent components can also be realised by rolling tube forming without cutting and almost without burrs.

If complex geometries need to be formed almost without clamping length then a roller head takes over this role, allowing the rolling or separating process across two rollers. One roller is positioned as support on the inside or outside of the tube while the counter roller delivers the form. This kind of inner support or forming roller can be used from an internal tube diameter of 12mm, whereby very different tool pairings can be used. For example, this makes it possible to form and separate simultaneously.

Another advantage of this technology is the surface quality that is created by the forming. It is usually possible to do without a cost-intensive form clamping piece on tubes that have already been bent, because of the low loads that are transferred to the tube during the rolling process.

The t form SRM 622 tube forming machine allows the creation of almost freely formed geometries

transfluid Maschinenbau GmbH – Germany
Fax: +49 2972 9715 11
Email: info@transfluid.de
Website:
www.tube-processing-machines.com

framag's latest technology for cold circular saws

IN 2012 framag, a company supplying the latest cold circular saws for all types of steel, was commissioned by Schöller Bleckmann Oilfield Technology GmbH (SBOT) to replace two existing band saws with a new, ultra-modern KKS 1000 cold circular saw.

The aim was to reduce the cutting time for the high- and ultra-high-alloyed steels to be cut at SBOT, while at the same time increasing the service life of the saw blades. Both the price/performance ratio offered and the results achieved in previous test cuts with the material used prompted SBOT to award the contract for supplying the sawing system to framag.

The KKS 1000 is a cold circular saw suitable for a maximum diameter of the billet to be split of up to 380mm and is capable of efficiently sawing low-alloyed to high-alloyed steels with short cycle times resulting in high productivity. The system is equipped with a saw blade with brazed teeth and an additional coating.

Any slivers of material that are stuck to the saw blade are removed with a brush and the blade cooled. The complete sawing cycle, including feeding of the billets and removal of the finished cut parts, is fully automated.

During commissioning of the system in 2013 and over a period of about six months following that, the cutting parameters and the tooth geometry of the saw blades used were perfected such that the tools of the cold circular saws now have a service life that is roughly 200 per cent longer than those of the previous band saws.

The newly installed cold circular saw from framag also boasts roughly 100 per cent higher productivity than the two previous band saws combined.

The cold circular saw supplied by framag has enabled SBOT to saw the challenging material grades that are required for drill rods by suppliers to the oil industry efficiently, cost-effectively and with a high cut quality.

Mr Ehn, production manager at SBOT, said: "The framag saw was ordered following tests which showed it to be the best saw in terms of cut quality, blade service life and automatic operation. The KKS 1000 model is used in place of three band saws. After a year of operation, the decision has proved to be the right one."

framag – Austria
Website: www.framag.com

Induction technology for OCTG pipe end heating applications

INDUCTOTHERM Heating & Welding Ltd recently supplied its range of IROSS Fluxmanager equipment to a number of leading pipe manufacturers within the OCTG sector.

The IROSS Fluxmanager is designed for use in an array of pipe end heating applications for a variety of tubular goods including drill pipe, casing and API pipe.

Suited to the OCTG sector, the IROSS Fluxmanager system is specifically designed for use in applications such as preheat for swaging, hardening, annealing, removal of coatings and curing, friction welding and stress relieving.

The patented Fluxmanager unit utilises an efficient 50/60Hz low frequency system, which provides deep, uniform temperature distribution, ID/OD, both laterally and longitudinally along extended lengths of pipe ends.

The pipe end exits the coil immediately with a repeatable temperature uniformity of ±25°C (77°F) – no soak time is required.

The IROSS Fluxmanager system has quickly become recognised and adopted into the OCTG sector as standard equipment and when compared with traditional medium frequency pipe end heating techniques, the IROSS Fluxmanager allows greater control of end heating, with a shaped intensifier to concentrate power on the work piece. The system heats within tight specifications at a reduced cycle time and easily adapts to OD variation. Additionally, only four coil sizes are required to cover the entire range of OCTG pipe diameters, but specific coil diameters are available.

The shaped flux concentrator allows for complete repeatable results even when the pipe is placed non-concentrically in the coil itself.

Infrared, thermal imaging and intuitive data logging functionality can be specified by the customer in order to satisfy the stringent quality requirements within the OCTG market.

Inductotherm Heating & Welding – UK
Email: info@inductothermhw.co.uk
Website: www.inductothermhw.com

www.fdmachinery.com

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FD has engaged in pipe mill designing & manufacturing for over 26 years, and developed over 60 items with authorized patent.

FD aims to help huge enterprises to become a more competitive company in tube and pipe market.

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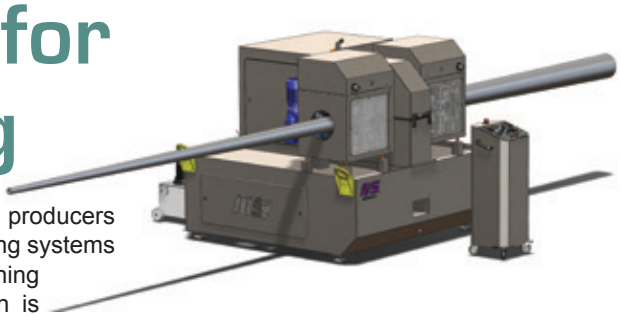
Automatic solution for conic poles finishing



MLW200 TC version, is a round tubes finishing machine developed by NS Máquinas capable of automatically polishing cylindrical and conical tubes from Ø25mm to Ø205mm.

The machine was designed to finish conic tubes without any manual adjustment, making it possible to polish a complete pole starting with Ø165mm and ending up to Ø75mm. The machine also permits the user to finish standard cylindrical tubes.

The light poles industry was the original market targeted with this model, but any application that needs a consistent surface treatment on conic shapes can benefit from the technology.

Traditionally, light pole producers have either manual polishing systems or centreless belt finishing machines. The first option is time consuming and requires significant labour costs. On the other hand, the available centreless machines, where the tube is rotated, show important safety concerns, as some tubes can be 12m long or more.

With the MLW200 TC the abrasive belts rotate around the tube giving flexible finishing without spinning the tube. This enables the safe working of both short and long tubes. Additionally, drilled tubes or slightly out-of-round tubes can be processed through this machine. The feeding units feature a precise diameter compensation system which, combined with the solid structure, assures a vibration-free and safe tube transport operation.

Round tube finishing machine

With a water cooling spray on the finishing area, MLW200 TC can polish different metals and safely work potentially explosive materials including aluminium. An automatic filtration and pumping system is integrated in the machine frame and can be easily removed for cleaning.

MLW200 TC offers a fast and reliable process up to four metres per minute. It also assures a constant finishing even along the longest lengths.

Changing abrasive belts is done in less than one minute. This brings a very fast and flexible process for productions with different poles specifications.

MLW200 TC is equipped with a tube detection program, which automatically stops the abrasive belts motor every time there is not a tube on the finishing station.

This automatic motor start and stop system reduces not only the consumption of energy, but also the bearings, rollers, v-belts and other mechanical components.

NS Máquinas – Portugal
Website: www.nsmaquinas.com

SFM rafted tube mill

UNIVERSAL Tube & Rollform, a world-wide supplier of quality tube, pipe and rollform machinery, is announcing the availability of a new 3" (76mm) x 0.166" (4.2mm) SFM rafted tube mill for sale.

This new tube mill was built to complement its current inventory and to offer customers in the tube and pipe industry an additional buying option at a more affordable price.

The new 3" (76mm) OD rafted tube mill is equipped with five-roll driven flattener, forming mill, sizing mill, welding section, spares and single point adjustment on the driven stands.

Since the start of the year Universal has been busy reconditioning machinery for its customers located all over the world.

Its latest project involved multiple tube mill and rollforming lines that were completely reconditioned using both new and used materials. This reconditioning process is a smart alternative, offering better performance, safety and durability while keeping the budget in line. The machine is located at the Universal Tube & Rollform warehouse in Perrysburg, Ohio, USA.

Universal offers one of the world's largest in-stock selections of used, reconditioned and new tube mills, pipe mills and rollforming machinery. It also stocks high frequency welders, straighteners, cut-offs, end formers, deburrers, accumulators and slitting lines.

Universal Tube & Rollform Equipment Corporation – USA
Website: www.utubeonline.com

Weld bead removal for stainless steel tubes

WITH more than 500 machines sold around the world, Bossi Srl – Macchine Finitura Metalli has established itself as a major producer of belt grinders for the removal of stainless steel tube weld beads. The system is installed on tube mills with TIG and laser welding systems. Bossi "STP" bead grinders are the result of technological innovation and experience gained over many years in this field.

These machines can work tubes with outside diameters from 6 to 410mm. Their main features are ruggedness and low maintenance demand. They also have adjustable working pressure, and adjustable number of oscillations. The abrasive belt speed is adjustable by inverter, and oscillation amplitude is adjustable.

They also have an automatic centralised greasing system, which make them widely used bead grinders by stainless steel tube producers around the world.

With the exception of some parts which, for manufacturing reasons, cannot be made of stainless steel, the rest of the bead grinder can be made in this useful metal that, in addition to lengthening the lifetime of a machine that is subject to dirt and water, means that it is possible to avoid the worked tube from coming into contact with machine parts of different metal and getting contaminated. This problem can give rise to complaints, especially for tubes that are used in the chemical, pharmaceutical and food industry.

The bead grinder can also be supplied with a double control panel allowing the possibility of installing it on any type of tube mill in both tube feeding directions.

Bossi can also supply brushing machines for round, square and rectangular tubes for any size and for all the speeds in TIG, laser and HF welding systems.

Bossi's stainless steel bead grinder

Bossi Srl – Macchine Finitura Metalli
– Italy
Fax: +39 02 9466265
Email: info@bossi-srl.com
Website: www.bossi-srl.com

Multi-Cut efficiency from Austria

AUSTRIAN machinery specialist Linsinger has produced its popular tube cut-off machine-series Multi-Cut for many years.

Managers responsible for service and maintenance in tube mills often find that machines need to be repaired and improved more than suppliers sometimes claim when they originally purchased the machine. This is something Linsinger specifically works to avoid. “We plugged in the Linsinger Multi-Cut and it has been running from the first minute,” said the manager responsible for the maintenance department of the German tube specialist Mannesmann Line Pipe MLP in Hamm.

The Linsinger tube cut-off machine was first installed in 2004 and has worked continuously since then without a problem.

The construction and installation of the cut-off machine into an existing pipe production line was a smooth process with the help of Linsinger and its technicians.

The 50-ton machine has shown its pedigree from the beginning. With low tool costs and optimised saw blade life the Multi-Cut MC 4-610 cuts the burr-free inner and outer edges of longitudinal welded tubes in an exceptionally fast time.

A logical development of the Linsinger cut-off machine Multi-Cut MC4, which works with four independent controlled drive assemblies, is the Multi-Cut tube cut-off machine MC3, which helped to revolutionise tube cutting with cross-section dimensions of between 150 and 660mm. The stationary tube cut-off machine MC3 is particularly suited to the sampling of tubes’ respective endcuts, and is deployed both for welded tubes and seamless tube mills.

It possesses three smaller circular saws, which are fixed on a radial revolvable disc and deliver a tidy, ready-for-sale cut.

Considerable shorter length of cycle results from the simultaneous engagement of all three saws in the tube and the rotation about 120°; the pure cutting time for a P110 steel tube of dimension 244 x 13.5mm is about eight seconds.

Another essential advantage is that if one saw fails, the machine is able to continue the work without interruption to the schedule or changing of the sawing blade.

Furthermore, the cutting time can be synchronised optimally to the sawblades, which benefits the cost effectiveness of the machine.

Compared to the larger and more expensive sawblades of conventional steel circular saws, the Multi-Cut machine can be used with smaller and less expensively priced sawblades.

When combined with the longer durability of the smaller sawblades this results in a reduction of the tooling costs, which, after often more than 20 years in use, clearly carry more weight than the costs for the machine itself.

The MC3 also features fully automated tool changing, which is performed by a robot as soon as a certain number of cuts have been made. The robot changes all three sawblades in only 90 seconds. Over the lifecycle of the machines of approximately 20 years this can help to save more than half a year during three-shift operation.

“Not only through accuracy but also due to its cost effectiveness the MC3 is state-of-the-art. The additional charge compared with conventional saws amortise within two to three years,” said Linsinger-CEO Hans Knoll, when he summarised the multiple advantages that many customers worldwide have enjoyed.

The tube cut-off machines, Multi-Cut MC3 and MC4 from Linsinger, Austria have made tube cutting technology faster, more efficient and more economical.

Linsinger Maschinenbau GmbH – Austria
Fax: +43 7613 8840 951
Email: maschinenbau@linsinger.com
Website: www.linsinger.com

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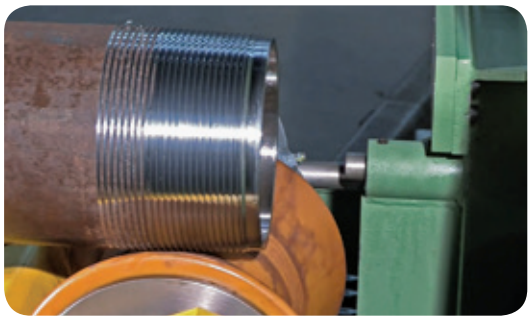

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Induction heating for oil country tubular goods

Aurélien Lechoisne of EFD Induction outlines the benefits of using induction heating for pre-heating and stress relieving tubes and casing destined for the world's toughest environments.

OIL country tubular goods (OCTG) refers to tubing and casing meeting the specifications of API 5CT. Although the standard states that API 5CT pipe may be made by the seamless or electric resistance welding (ERW) process, the reality is that OCTG typically refers to seamless threaded pipe. OCTG also includes seamless and ERW transmission pipe that carries media such as oil, gas and water, conforming to API 5L standard.

The diameter of a pipe's end must be reduced or expanded prior to threading. This change in diameter is achieved by swaging, a process that introduces additional stresses into the pipe end. Left untreated, such stresses render pipe ends brittle, making them susceptible to deformation.

Two heat-treatment methods are used to overcome this problem: the first involves avoiding the stresses altogether by pre-heating the pipe end prior to swaging; the second method involves removing the stresses by 'stress relieving' after swaging.

Various heating technologies exist for bringing the pipe ends to the temperatures needed in both methods. Induction heating, however, has the ability to meet four criteria critical to OCTG manufacturers in today's hyper-competitive market.

Firstly, induction heating is extremely accurate. Target temperatures and heat penetration depths can be reached and maintained for very specific areas for exact time periods. Secondly, induction heating is highly productive. Because heating occurs only in narrowly defined zones, no time is wasted heating adjacent areas or the ambient air.

Thirdly, induction heating is extremely controllable. This makes it suitable for maintaining temperatures within pre-determined narrow tolerances. Finally, induction heating – by virtue of its speed and accuracy – confines the heat to the pipe end. The induction heating process is simply too quick and controllable for unwanted heat transfer to occur along the pipe.

The benefits mentioned above are due in large part to induction heating producing heat in the wall of the pipe end itself. This fundamental fact not only contributes to the speed of induction heating, but also makes it a no-contact technology – a feature that helps minimise the risk of unwanted interference or contamination of the pipe end.

Another crucial factor is customisation. As induction coils are available in a practically unlimited range of designs, the actual heating process can be optimised to the specific composition, dimensions and requirements of particular work pieces.

Coils are only one element in an induction heating system. The other key component is the heat source (also referred to as generator or converter, as it converts the mains supply into the high frequency supplied to the coil). Today's solid-state induction heating systems typically feature the actual generator – those used in EFD Induction systems feature Sinac units – as well as matching and cooling equipment. Power ratings and frequency ranges vary widely.

For example, EFD Induction has to-date built systems for pipe ends with outer diameters as small as 60.33mm ($2^{3}/_{8}$") with a wall thickness of 4.83mm (0.19"), up to an outer diameter of 558.8mm (22") with a wall thickness of 23.42mm (0.92").

The particular features of an induction heating solution will vary from supplier to supplier, but there are some points of difference that merit careful consideration.

One such factor is the use of 'flux concentrators' with the coil.

Concentrators are components that focus, or concentrate, the heat into particular areas of the work piece. Undoubtedly beneficial in other induction heating applications, their use in pipe end heat treatment is questionable. This is because concentrators are relatively short lived, and must be replaced at regular intervals – leading to production shutdowns and additional costs.

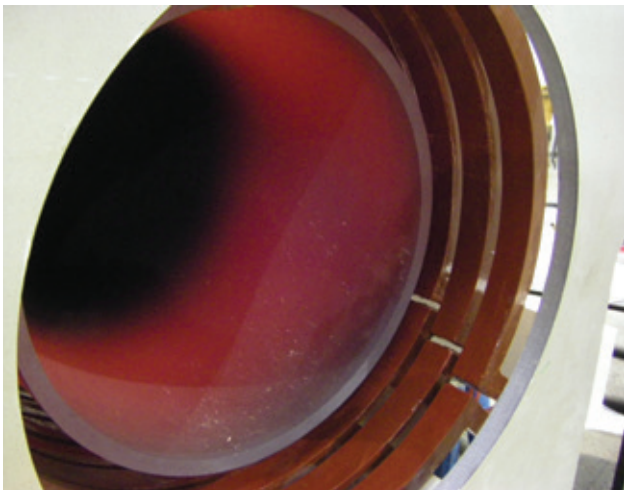
Concentrators can, however, be dispensed with if good quality customised coils are used – preferably coils designed using advanced simulation software.

The saving delivered by maximised uptime and output soon recovers any additional capital outlay caused by using such coils.

A final argument in induction heating's favour is its track record. A tried-and-tested method, induction heating for OCTG heat treatment is a technology currently in worldwide use. EFD Induction, for instance, has devised and built systems for some of the leading names in the tube and pipe industry.

Induction heating, thanks to its high efficiency and absence of toxic by-products, helps manufacturers satisfy tough environmental and energy-consumption regulations – not a bad bonus when making products needed to meet the world's growing energy demands.

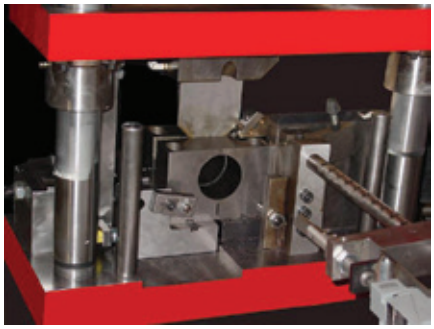
EFD Induction –
Email: sales@efdgroup.net
Website: www.efd-induction.com

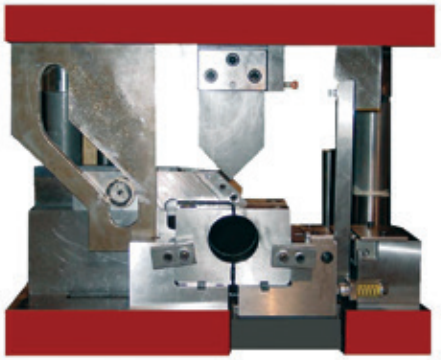


Induction heating for OCTG heat treatment is a technology currently in worldwide use

Offline tube cutting

OFFLINE tube cutting is a popular value-added service offered by most tube mills and tubing distributors. For basic cut-to-length requirements, some very mature techniques for tube cutting are enjoying a revival in popularity.





Vogel Tool & Die is a US manufacturer of tools used for processing tubular parts. Now in its 81st year, Vogel continues to produce a dual blade cut-off die for stationary recutting of tubes and pipes. This die-set type tool uses low cost blades to produce a cut without deformation and on shorter parts, a typical length accuracy of ±0.005".

The company reports an increase in interest and sales of this tool, currently offered for up to 6" OD and up to 0.25" wall. Instead of bringing larger and expensive machines in-house, such as multi-axis lasers, Vogel's cutting tools are designed to be installed into and operate in a punch press. For companies with idle presses, this reduces the total investment significantly.

This 'old-school' technology has a number of financially friendly benefits. The most popular size tool includes blades that are under $50 and are easy to sharpen in house.

Because the tube is simply pushed through an opening in the tool and an adjustable stop signals the press to operate, the skill level of the personnel assigned to tube cutting will likely be far below the requirement of those who perform laser cutting or even bundle cutting with saws.

Additional savings can be realised due to Vogel's equipment producing a single slug that ejects from the tool. For companies still saw cutting, this eliminates chip removal from cut parts.

Eliminating this operation saves handling time and provides customer benefits, since the end user will never find a part that has a few overlooked chips loose and rattling around inside their finished goods. When processing higher value materials such as aluminium, brass and copper, slug collection for scrap value is easy and convenient, increasing total revenue from each cutting job.

In addition to tube cutting dies, Vogel manufactures a variety of tube coping tools, piercing, v-notching and custom-designed tools for specialised tubular fabrication projects.

Vogel Tool & Die – USA
Website: www.vogeltool.com

Circular saw blades

50 years' experience in metal cutting circular saw blade production, along with constant technical cooperation with pipe producers and machine manufacturers, enables Stark to offer the high-performance Olympic line, fully dedicated to tube cutting applications.

The range includes three kinds of blades: HSS circular saw blades; throw-away TCT saw blades; and resharpenable TCT saw blades.

Circular saw blades from Stark

The HSS circular saw blade is an alternative to TCT saw blades for tube cutting. Its special steel and PVD coating allow it to be used at the same peripheral speed as TCT circular saw blades.

The feed rates in the central area of tube crossing are claimed to be 40 per cent higher than feed rates of TCT saw blades, and so the blade cuts thin tubes 20 per cent faster than TCT saws. It is suitable for carbon steel, alloyed steel with high tensile strength, stainless steel, stainless steel and non-ferrous materials.

In recent years, tube processing technology has changed greatly. Steel's higher tensile strength values, greater tube thickness, and faster production line speed are often required by customers. The range includes Olympic 100, suitable for hard material, cutting with low vibrations; and Olympic 200, suitable for stainless steel cutting.

Stark Olympic also includes a range of TCT circular saw blades suitable for orbital cutting machines.

For cutting tubes with large dimensions, customers are increasingly using orbital cutting heads equipped with two to four blades.

Stark developed a new PVD-coated resharpenable blade with special tooth shape, with the aim of reducing the effort during cutting and to reach a longer tool life. According to the section and the material to be cut, Stark can supply different toothing geometries, specially developed to obtain the highest cutting performance.

Stark SpA – Italy
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All-terrain butt fusion welding

RITMO's Delta 500 All Terrain is a new butt fusion welding machine with working range from Ø 200 to 500mm (6" to 20" IPS) for HDPE/PP pipelines for the transportation of water, gas and other fluids. The main characteristic of the All Terrain line is its wheel drive for an easy working position on job sites.

Delta 500 All Terrain is equipped with front steering wheels and rear traction, and is powered by a low-vibration diesel engine. The machine body and on-board generator are easily removable for work in tight spaces. The machine can be powered using 230V three-phase 50/60Hz. A wheeled chassis designed to be lifted using a forklift and two lateral rollers complete the welding machine.

Built according to the international standard ISO 21307 High Pressure, the machine welds fittings such as elbows, tees, Y-branches and flange necks.

Ritmo's Delta 500 All Terrain

The assisted opening/closing/lifting of clamps-heater-facer is patented by Ritmo, and the machine is equipped with a fast-locking system to place and remove inserts in a few seconds.

The Easy Life welding system is able to manage the welding process in a semi-automatic way. The electronic system ensures the continuous repeat of the welding cycles and automatic control of the pre-set parameters. The operator only needs to validate the welding phases.

The user-friendly graphic display allows quick setting of welding parameters. The Easy Life system can store up to 4,000 welding cycles and sum them up into a PDF file. This report can then be transferred to a PC/laptop through a USB port. GPS traceability and data logging are included.

The on-board electric facer is equipped with a safety microswitch to prevent accidental starts. The Teflon-coated heating plate is supplied with a high-temperature-proof bag that also prevents the heating element from being scratched.

Ritmo SpA – Italy
Email: info@ritmo.it
Website: www.ritmo.it

Robot with an elevated payload

A NEW model has been added to the Comau range of robots. The Smart NJ 650 features an elevated payload, and was designed to meet the need for robots than can efficiently manipulate components of significant size and weight.

The robot can handle a payload of up to 650kg, has a maximum horizontal reach of 2.7m and ISO 9283 repeatability from 0.15mm. Like Comau's other heavy load and high reach robots, the Smart NJ 650 is characterised by high stiffness, a compact, space-saving design and an optimised load capacity/payload relationship.

The new Smart NJ 650 has a load capacity of 650kg and reach of 2.7m

The Smart NJ 650 is suitable for multiple industrial applications, including handling, spot welding of large body parts for the automotive sector, and the manipulation of heavy components for machine tending operations, as well as palletising, deburring and polishing, packaging and machining in general. It can also be deployed within the food and beverage industry, foundry operations or virtually any other industrial sector.

Arturo Baroncelli, segments management director at Comau, said, "The new Smart NJ 650 allows us to expand and strengthen our presence in market segments that need to process heavy pieces. It also enables us to respond to new production areas that increasingly require robots with a large payload capacity."

Comau SpA manufactures flexible, automatic systems and integrating products, processes and services that increase efficiency. Headquartered in Torino, Italy, with an international network that spans 15 countries, Comau offers systems, welding lines and body assembly lines (body welding), machining systems for the assembly of engines (powertrain), and a wide range of industrial robots for all application areas. The company also provides eco-sustainability and maintenance services for a wide range of industries.

Comau SpA – Italy
Website: www.comau.com

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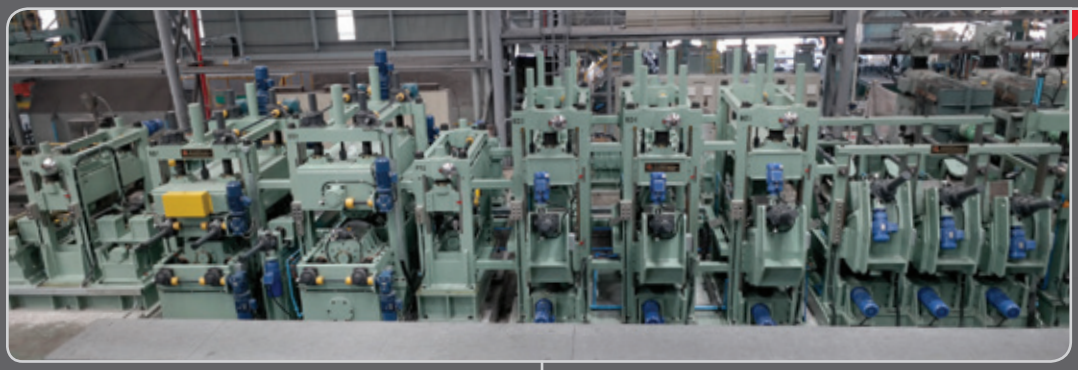
E-mail: sales@bcpre.com Homepage: www.bcpre.com
Tel: +82 31 313 7151~3 Fax: +82 31 313 2305

Tube mill & finishing line capable of producing **API 3" to 12" OD x 18t & API 8" to 24" OD x 20t** pipes, developed with advanced technology and verified through continuous R&D based on extensive field experience accumulated **over 40 years in the tube mill & finishing line sector.**



i-Special Forming System uses an edge forming method which gives an advantage over conventional forming facilities. As the strip edges contact each other in an "I" shape on the squeeze stand, it secures excellent welding quality, and it is capable of forming various sizes without changing the roll. In particular, it is excellent for the forming of heavy wall high-strength pipe.

Available size :
8"~20" x 16t & 12"~24" x 20t, API X70

V-Shear & Welder connects the ends of two coils. As it connects the two ends on an improved 40° groove by bevel cutting, this results in excellent strength of the joint, maintaining the welded surface beautifully as the ends are welded. It also boasts a short welding cycle time, and a longer life of the Z-shape cutting blade.

Available size :
3"~12" x 16t & 8"~24" x 20t

Milling Cutter boasts a precise control system, excellent design, optimum cycle time, a high quality cutting face, and long life of the cutting blade.

Available size :
3"~12" x 16t & 8"~24" x 20t

End Facer & Hydrostatic Tester
2"~6" x 500bar Four Head
4"~12" x 700bar Double Head
8"~24" x 500bar Single Head
16"~62" x 350bar Single Head

GLOBAL PATENT

- i - SPECIAL FORMING SYSTEM (2014)
- CASETTE TYPE ROLL CHANGING BOX (2012)
- INSIDE BEAD REMOVING E/Q (2012)
- BEVELLING CUT IN SHEAR & WELDER (2011)
- ROLL CHANGING METHOD IN TUBE MILL (1996)

Cassette Type Quick Changing System enables fast and easy replacement of the roll by pre-assembling the roll before replacing it on the Cassette Box.

Available size :
3"~12" x 16t & 8"~24" x 20t

MAJOR SUPPLY LIST

- Supplied 20" i-Special Forming Stand to AJU Besteel Co., Ltd. (2014)
- Exported 20" API OCTG Pipe Threading Line to SAUDI Steel Pipe Co., Ltd. (2013)
- Supplied 8" Heavy wall Tube Mill Line to HUSTEEL Co., Ltd. (2012)
- Supplied 8" Milling Cut-Off M/C and Shear & Welder to HUSTEEL Co., Ltd. (2011)
- Supplied 60" Hydrostatic Tester(Max. 500kg/m^2) and End facing to HISTEEL CO., Ltd. (2009) & GLOBAL PIPE (2010)
- Exported API 20" Tube Mill Line to SAUDI Steel Pipe Co., Ltd. (2009)
- Exported 18" Tube Mill Line to NAKATA Mfg. Co., Ltd. in Japan. (2005)
- Supplied 12" tube mill line and finishing equipments on full turn-key to HUSTEEL. (2004)
- Exported 24" end facing to NKK (JFE) in Japan. (2002)

We provide API, high-strength and high-end tube mill line and an advanced finishing line alongside the latest technology on a turnkey basis.

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- Max. 2-Head Automatic End Facing & Bevelling M/C
- Max. 5-Head, 700bar Hydrostatic Tester
- Automatic and Semi-automatic Bundling M/C
- Related Equipment and Facilities to Comply with API Standard

Transforming technologies

GFU (Gesellschaft für Umformung und Maschinenbau GmbH), founded in 1989, is a specialist in transforming technologies for tubes. The company has become an established producer of chipless forming equipment, mostly used for tubes.

GFU's portfolio includes engineering and manufacturing of upsetting presses, swaging or calibration presses, high-speed end-forming units, neck down machines, expanding and reducing machines, and forging machines.

The OCTG industry uses upsetting presses and swaging presses made by GFU to manufacture drill pipes and casings.

Customers around the world are producing oilfield pipes using machines made by GFU.

GFU upsetting technologies are also used in the production of automobile components such as tube camshafts (built camshaft), sway bars, stabilisers and drive shafts.

The high-speed end-forming is also used for automobile applications. This technology, developed and patented by GFU, is used for the gas-tight closing of tube bottom shapes as a single-piece solution, and without any welding.

The company states that, based on this forming process, high-pressure airbag vessels in millions of cars worldwide are made on GFU end-forming machines. Shock absorber manufacturers use GFU knowledge for closing the tube bottom of their shock absorbers.

Flanged shafts, conveyor rollers, pressure accumulators, extinguishers and gas tanks are other examples of products manufactured using GFU technology. Using GFU forging machines many companies produce components such as axle beams (monobloc axles). These machines also find application in manufacturing air suspension components and stabiliser bars.

For applications that require combined processes, GFU engineers find solutions to bring these combined processes in line.

Most of the GFU-engineered production plants, eg for airbag vessels, are designed as turnkey solutions including tube separation, a bottom closing unit, a neck-down unit, machining equipment, cleaning station and complete tube handling.

GFU – Germany
Fax: +49 6561 12430
Email: info@gfu-forming.de
Website: www.gfu-forming.de

Low-force fusion

THERMOPLASTIC pipe fusion equipment expert McElroy has launched the Acrobat™ 160, a low-force fusion machine for 63 to 160mm polypropylene pipe.

The Acrobat 160 allows operators to fuse pipe for plumbing, mechanical and geothermal projects and a variety of other indoor applications where work spaces are often very limited. Its small footprint and light weight makes it an easy machine to manipulate when performing fusions overhead as well as on the ground, within crawl spaces, attics and other confines.

"The unique installation challenges that commercial buildings present were a perfect fit for us because of McElroy's extensive background in product innovation," said Chip McElroy, president and CEO of McElroy. "We are excited to offer job site solutions in this market with the Acrobat 160 and our entire line of polypropylene tools and accessories."

The Acrobat 160 can be configured from four to three jaws without using tools, for added flexibility in tight spaces. The machine weighs 40lb in the four-jaw configuration, and only 29lb in its three-jaw set-up. The narrow jaws allow fusions for flanges to outlet branches of tees and most fittings.

The machine is provided with a hydraulic power unit (HPU) and inserts for commonly butt-fused polypropylene pipe sizes. The facer and heater can be loaded from the top or bottom (in the three-jaw configuration) of the carriage, giving the operator better access and flexibility regardless of the joining challenge.

The Acrobat 160 is compatible with the DataLogger® quality assurance tool, which allows operators to record and document the key parameters of the pipe fusion process to ensure the integrity of fusion joints and increase job site accountability.

It is also available in a productivity package that includes a manual machine stand and two PolyPorters®, which aid in lifting the pipe as well as performing as a pipe stand.

McElroy's Acrobat 160 low-force fusion machine

McElroy – USA
Fax: +1 918 831 9256
Email: fusion@mcelroy.com
Website: www.mcelroy.com

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Mobile bending systems

JUTEC Biegesysteme GmbH develops and manufactures tube bending systems. The standard of Jutec bending systems, their controls and machine construction is a result of the company's long-standing experience and continuous development.

The company's range of mandrel bending machines includes bending system solutions up to D = 90mm, with simple and convenient operation via a solid user interface, and USB ports for data exchange. The systems offer efficient and convenient handling, and bending radii up to 1.5xD.

For higher output and low downtimes, Jutec has developed 'Power Hydraulics', which helps reduce the cycle time per sheet. Using the proven rotation stopper, which is optionally available, or the quick-acting chuck, the production volume of serial parts can be significantly increased. Dimensional accuracy of serial products is guaranteed for both standard parts as well as single parts.

The model 3000 mobile bending machine for pipe diameters up to 35mm has received a new maintenance-free three-phase motor that is driven by a frequency converter and allows power supply of over 230V.

The motor can be smoothly adjusted in speed, and the bending tool can drive backwards with higher speed, which leads to shorter cycle times. The repetition accuracy is increased, and the tool can be set to 0.5°.

The model 6000 mobile bending systems can now bend pipes more precisely to an outside diameter of 60mm.

The frequency converter technology enables the use of the machine with 230V with the model 6000S for pipes up to 48mm (the power supply of 400V for pipes up to 60mm in the model 6000D remains unchanged).

Jutec's mobile Bending System 6000 for up to 60mm tube diameter

Operating panel with USB connection for fast data transfer

In comparison with the previous model with 400V power supply, the power consumption of the three-phase drive is reduced by around 30 per cent. Using the menu-driven user interface with touch screen control, 99 programs with up to eight bending angles can be stored. The ramp function (slow acceleration and deceleration of the bending axis) increases the precision, and the bending quality in the starting and end regions is improved.

All models are available from stock at short notice.

Jutec Biegesysteme GmbH – Germany
Fax: +49 6431 9349 25
Email: info@jutec.de
Website: www.jutec.de

Polishing and grinding

GRIND Master offers automatic centreless belt grinding and finishing machines for belt grinding, bright finishing and satin finishing of round tubes and pipes.

The machines have easy settings to ensure quick changeover from one job size to another. The floating belt grinding heads are designed to take care of bend and ovality in tubes. Up to ten heads are offered.

An automatic loader/unloader is available as an option, and machines are designed for dry grinding as well as wet finishing.

A wide range of consumables, including abrasive belts, flap wheels, non-woven wheels, sisal and cotton buffs, can be used in predetermined sequence for achieving the desired finish.

Tube up to 220mm diameter can be finished, and the machine can be supplied with an auto tube size setting, which requires only two to five minutes for setting the machine.

Grind Master also offers a six-head belt grinding and polishing machine for round bars. From the raw black bar, a ground and finished bright bar can be created on this machine. The process of belt grinding removes surface defects at higher speeds, compared to conventional wheel grinding.

VSM ceramic belts for roughing and compact grain belts for finishing give consistent finishing results. The machine can achieve finishes up to 0.12 Ra and h9 tolerance.

Grind Master Machines Pvt Ltd – India
Fax: +91 240 2376205
Email: sales@grindmaster.co.in
Website: www.grindmaster.co.in

Pipe robots for the internal grinding of welding seams

MACHINING of weld seams is necessary whenever the quality assurance and safety of the seams are subjected to high stresses.

Specialised in the development and production of self-propelled, tethered pipe robots for the interior inspection and non-destructive testing of complex pipeline systems, Inspector Systems also offers technologies for interior machining. The basic structure of all of the robots consists of several drive units with special rubber coated wheels that are flexible and connected to each other and to the testing or machining module by means of folding bellows. This modular design ensures a high degree of bendability and allows insertion into the pipe system, even when only a small amount of space is available – such as with open armatures or flanges.

Due to the pneumatic pressing of the rubber wheels against the inner wall of the pipe, the robot gets centred/stabilised and is able to drive through bends ≥1.5D as well as horizontal and vertical sections, in particular of so-called 'non-piggable' pipeline systems.

With its grinding robot technology, approved by renowned international companies and expert organisations in the offshore, oil and gas and nuclear industry, Inspector Systems has the technical know-how to competently grind welding seam connections from the inside and thereby prolong their fatigue.

Beside the removal of weld undercuts the qualified two-step process (grinding/polishing) eliminates surface cracks as well as corrosion areas or any other kind of debris and defects. Additionally, a prevention of surface cracking is given and even a difficult conditioning of the misalignment between pipe ends can be performed. Once the robot has reached the location inside the pipe, the grinding module is fixed by a clamping system.

Controlled by an on-board grinding camera, a powerful three-phase current motor with changeable grinding disc mounted on a rotating unit (380°) and a radial stroke makes it possible to machine local areas point by point with an accuracy of 0.1mm.

Standard robots from inner diameter 75mm to 1,200mm are available for visual inspections combined with possible laser measurements for online defect sizing and evaluation of the interior pipe ovality or weld seam profiling. A 100 per cent determination of the wall thickness or detection of pitted areas can be done by using available ultrasonic robots. Customised robots can also be produced.

Inspector Systems – Germany
Website: www.inspector-systems.com

Check fixtures from GeTech

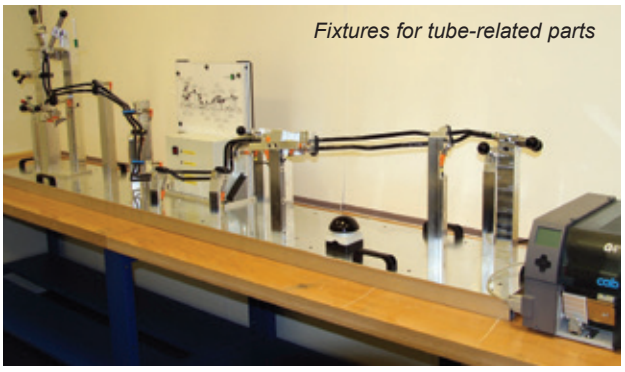
GETECH specialises in the design, manufacture and measurement of check fixtures (gauges), primarily for the automotive industry.

GeTech manufactures different types of fixtures, such as bend fixtures, assembly fixtures, CMM fixtures and fixtures for prototypes.

Materials used are mainly aluminium, stainless steel, brass and plastic. Depending on the requirements of the customer, the material can be anodised and tempered. These check fixtures are, among others, designed for tube-related parts, such as aircon systems, brake and fuel lines, power steering and fuel injection systems.

For the designs GeTech's own engineering department uses Autodesk Inventor, a 3D solid based CAD program, in which different formats can be imported. The customer's 3D model is used as a reference during the design process.

After approval of the design by the customer, the fixtures are produced in-house with high quality CNC machines, programmed with CAD/CAM.



Fixtures for tube-related parts

When assembled, the fixtures are measured with a 3D coordinate measuring machine.

The customer is provided with a measurement report according to their own specification. GeTech's process is ISO 9001 certified. An advantage of having engineering, production and measurement in-house is that GeTech can be very flexible and can therefore easily adapt to last-minute changes and quickly implement improvements in processes.

Innovation is one of the key factors within GeTech. Recently, it has developed a sensor check assembly fixture. With this new sensor check fixture the customer is able to audit products even more accurately.

The fixture checks the accuracy of the form/curves, the fittings and fasteners. The position and the type of tube is also checked.

When the result of all checks is positive, the sensor lights are turned off and the operating software sends a signal to a printer for approval to print a label.

GeTech BV – The Netherlands
Email: info@getech.nl
Website: www.getech.nl

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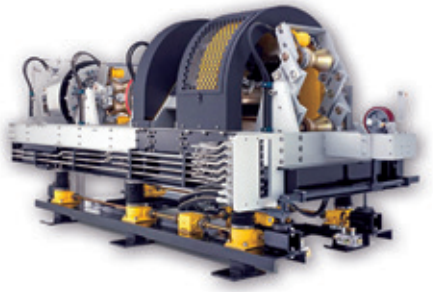
Pushing the limits of EDM inspection

SCAN Systems, a USA-based company in the OCTG industry, offers "out-of-the-box" on-location custom flaws and artificial reference indicators to create test standards for calibration. The company has developed innovative detection technology over the years that has helped to overcome a number of challenging industry obstacles.

EMI inspection machines have traditionally relied upon slip rings to transmit data from the longitudinal rotating assembly back to the computer for processing and interpretation. Worn out or dirty slip rings can cause signal loss, leading to less reliable data and unseen indication of potential flaws.

Scan Systems applied some Silicon Valley-style technology to the EMI process and has incorporated wireless capabilities into its M-Series EMI inspection equipment, and removed slip rings from data transmission. This development utilises a Wi-Fi radio inside a rotating head spinning up to 250rpm, and overcomes the large amount of magnetic flux created by the surrounding large electromagnets. This benchmark in the industry allows for improved data accuracy and elimination of significant data errors, and because the data is digitised immediately at the sensor, any signal noise from outside interference is non-existent. "Your Internet went wireless years ago. It's about time that EMI inspection equipment followed suit," said Matt Rutledge, general manager/VP of Scan Systems.



The Pitco M-Series from Scan Systems

Scan Systems' ESP upgrade to its M-Series line is the first EMI inspection technology to use hall elements in the longitudinal sensors, which enable detection and repeatability on flaws up to 30° off the axis on the OD surface and 20° off axis ID surface (industry standard is 7° to 10° off axis).

Additionally, by utilising hall elements, the number of sensors can increase from 16 to 64 channels of data for better resolution and ability to detect much smaller flaws than the limitations of traditional PC coils. Scan Systems claims to be the first in the world to bring the ability to detect oblique flaws to EMI inspection. Also, because of the use of hall elements and the proprietary Digi-Pro® processing software, if the operator is set to detect at 30°, he will pick up flaws between 0° and 30°, making for a more accurate and precise pass.

Scan Systems has developed an EMI system that can report the linear location of a longitudinal flaw, the circumferential location, and whether it is on the ID or OD surface of the pipe. Historically, EMI inspection equipment was limited to reporting the linear location of a potential flaw. Though a few manufacturers would discriminate between ID and OD indications, the reliability of the methods utilised made the reporting less than accurate. Through significant innovations made in sensor technology, data collection methods, and sophisticated software algorithms, Scan Systems' latest ESP upgrade to the Pitco™ M-Series EMI inspection now provides the inspector with a level of accuracy never seen before in EMI inspection of OCTG material. This advancement provides the circumferential location and can report on multiple flaws on the same plane and ID/OD location in degrees of probability, saving valuable time during the prove-up process.

One of the toughest tasks for an EMI unit operator can be interpreting and locating the signal from a pipe flaw. Having an alternative view of the data can be beneficial in determining a pipe's condition. Scan Systems developed a display that not only makes it easy to illustrate where pipe flaws are located but also provides additional information on the characteristics of the flaw.

Many OCTG MFL equipment manufacturers claim their machines detect flaws on 0.545" (13.84mm) walls and greater during the inspection process, but often these claims ignore a key component of a quality inspection – repeatability. This refers to equipment's hardware and software capabilities to identify the signal given by an imperfection or artificial reference indicator and report those imperfections at a similar amplitude consistently and repeatedly.

API 5CT specifications require a minimum of 20 per cent repeatability on all inspection runs. Using advanced signal processing algorithms combined with proprietary sensors and cutting-edge signal detection hardware, Scan Systems' Pitco M-Series with ESP upgrade has dramatically improved the ability to separate a flaw's signal from the background noise offering the best S:N ratio on any given pipe.

While 0.4" (10mm) pipe wall thickness has historically been the limit for existing EMI/MFL inspection equipment, Scan Systems' Pitco M-Series with ESP upgrade can reliably detect and repeat on N5 ID notches up to 0.545" (13.84mm) wall thickness and N10 ID notches up to 0.625" (15.875mm) walls. This ability to accurately detect and repeat on these types of indications is a remarkable accomplishment.

Scan Systems Corp – USA
Email: mattr@scansystems.com
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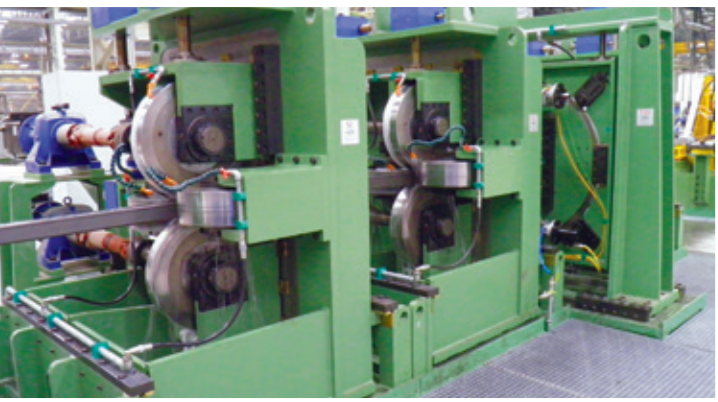
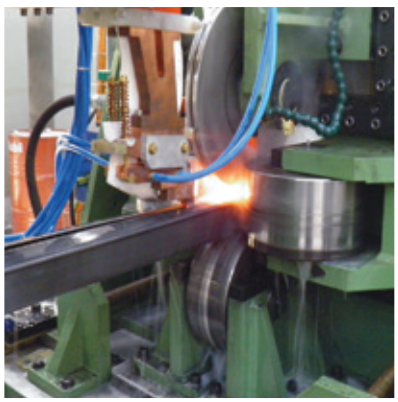
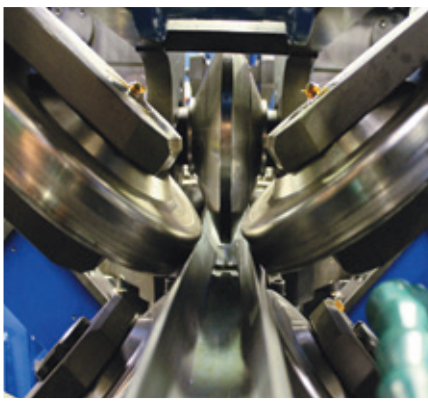
olimpia80

TUBE MILLS



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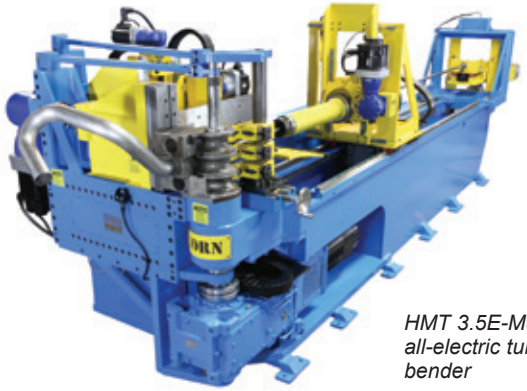
All-electric CNC tube benders



HMT 3.5E-MS all-electric tube bender

HORN Machine Tools, a US manufacturer of tube bending equipment, has introduced a line of all-electric CNC benders from 2" to 10" capacity.

The machines are based on the proven design of the HMT hybrid benders, with the clamp and pressure die now equipped with large electric servo motors. The machines are 100 per cent domestically designed and produced at the company's facility in Madera, California.

The all-electric benders have special features that can include 'Quad Stack' design, allowing the user to mount up to four sets of full size bend tools at once. This gives the flexibility to switch between sizes rapidly, or allows for greater capability to bend complex shapes. The machines can also be equipped with a shearing device and load/unload automation for continuous production.

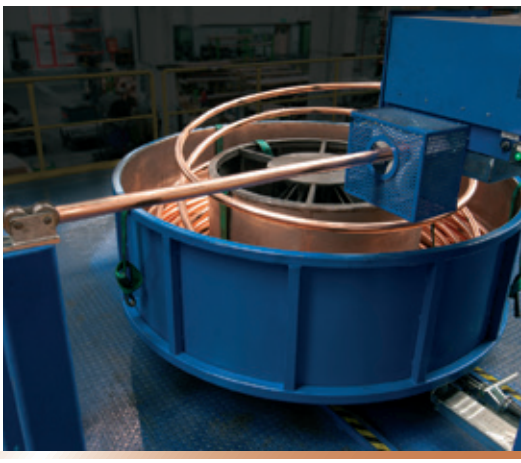
The powerful machines are designed for 24/7 production. They can bend very tight radius stainless steel on the rated diameter size. Draw bending in combination with push rolling capability are included as standard features. System reliability is enhanced by removing the hydraulics and implementing all-digital servo systems with fewer components, less wiring and greater remote diagnostics capability.

According to company president Kent Horn, "For some time now our customers have been asking for a domestically produced all-electric bender that is faster, easy to program and has overnight parts availability. Our line of all electric machines is the answer to all these requests and more."

Mr Horn continued, "Our machines bend tube very fast, but high production tube bending is not simply a matter of faster bending speed, it is a combination of all the axes moving fast in simultaneous motion to reduce non-value added cycle time. Fast clamping, stack shifting and carriage positioning are going to improve production rates as well as bending speed."

The machines are equipped with the BendPro CNC control, which provides simple-to-use yet powerful features for teach moves, cycle time optimisation and remote troubleshooting capability.

Horn Machine Tools, Inc – USA
Fax: +1 559 431 4431
Email: info@hornmachinetools.com
Website: www.hornmachinetools.com



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TubeShaper software launches

THOUSANDS of Hexagon Metrology's portable measuring arms (also known as 'portable coordinate measurement machines') are utilised every year in industrial applications that range from high-accuracy inspection of turbine blades to the laser scanning of Olympic athletes.

However, what is not widely known is that this versatile technology actually has its roots in tube production, back in the 1970s.

The first articulated measurement arm was constructed for the measurement of complex tube geometries by Homer Eaton of the Eaton Leonard Corporation in 1974. While it used a computer that weighed more than 20kg – more than twice the weight of a modern Romer Absolute Arm – it provided the basic measurement concepts that are still in use today.

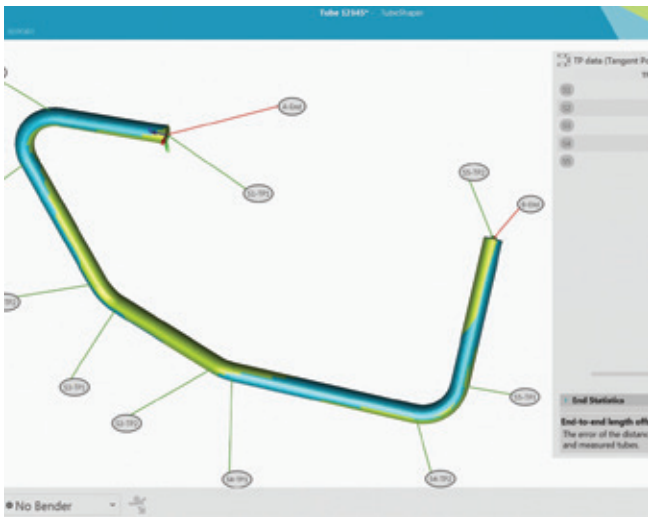
"No-one could have imagined how the use of portable measurement arms has changed over the last 40 years," said Stephan Amann, global business development manager for Hexagon Metrology, which today produces the Romer Absolute Arm in its two original factories in the USA and France.

"Originally the arm was developed for tube measurement only, and today it's used in industries ranging from aerospace to dentistry. Portable computers, smaller electronics, 3D laser scanning and better accuracy have led to this change in our business over the last three decades, but now we're going back to our roots with a totally new product."

This product is the Romer Absolute Arm Tube Measurement solution, using TubeShaper – Hexagon Metrology's new software for tube and pipe measurement.

"Our last step in this market was back in 2005; that's a lifetime ago in the software world. Since then, we've maintained our product range, but some new thinking was long overdue. The tube measurement market has changed radically in the last ten years, and the competition is stiffer than ever before, so we're really proud of what we've done with TubeShaper. We feel that it's the result of four decades' experience in not only the tube sector, but in our other business areas too."

Hexagon Metrology – Switzerland
Website: www.hexagonmetrology.com



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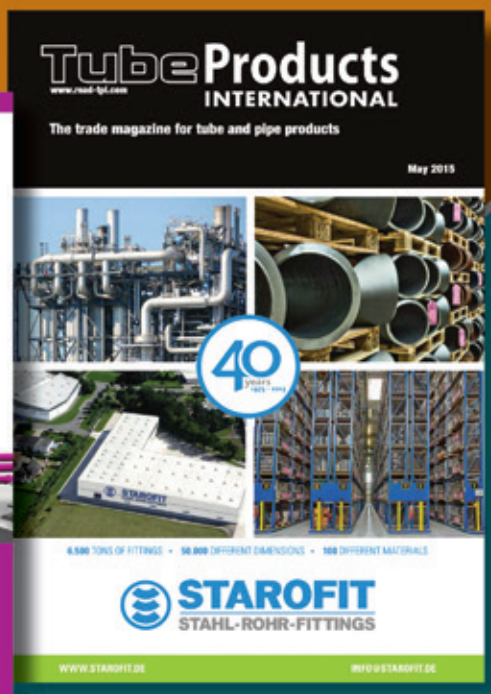

LEADING MAGAZINES

for the tube and pipe industries

Production hydroforming press systems

Interlaken hydroformer

INTERLAKEN Technology, a manufacturer of production press equipment for hydroforming, elevated temperature forming, and hot stamping systems, has introduced a four-column hydroforming press system for running high-volume production parts. The high-volume hydroforming press system is available in clamp forces from 250 to 5,000 tons.

Hydroformed parts are stronger and weigh less due to structural integrity and fewer welds or add-on pieces. Other benefits include elimination of secondary operations, reduced scrap, lower material and manufacturing costs, and increased design flexibility.

With more control over forces and motions, Interlaken's Hydroforming Press is claimed to provide a greater overall quality of formed parts. The multi-channel closed loop control system is easily programmed to handle various sizes and materials. It also offers dynamic mode switching, which enables the user to switch between a variety of feedbacks such as force, position, internal pressure and other system variables.

As a hydroforming partner, Interlaken's engineers will develop, test, analyse, build samples and create tailored hydroformed parts, as well as searching for better and more cost-effective ways to solve problems.

For over 35 years Interlaken Technology Corporation has been designing and manufacturing servo-controlled equipment with sophisticated controls and monitoring software. The company offers an extensive warranty, and service and technical support.

Interlaken Technology – USA
Fax: +1 952 856 4221
Email: sales@interlaken.com
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www.siempelkamp.com

Cage forming for square sections

THE latest generation of linear cage forming technologies has been put into operation in North Europe, at a manufacturer of high quality stainless steel tubes.

The complete, fully automatic tube mill, including surface finishing, tube end facing, unloading and packaging sections, can produce square tubes from 40 x 40mm to 120 x 120mm, and rectangular tubes from 50 x 40mm to 180 x 60mm, in a thickness range from 2 to 8mm in stainless steel austenitic, ferritic and Duplex grades.

The maximum mill speed is 80m/min. The mill can produce all square and rectangular tubes within the size range, without change of any rolls in forming, welding, sizing, straightening and clamp jaws in cut off.

The main advantages of the technology include facility and rapidity in changing the profile dimensions; simple maintenance; and simplicity in software utilisation.

The mill makes it easy to produce both square and rectangular tubes by means of computerised control, where data is stored in order to produce all the tube sizes in the range.

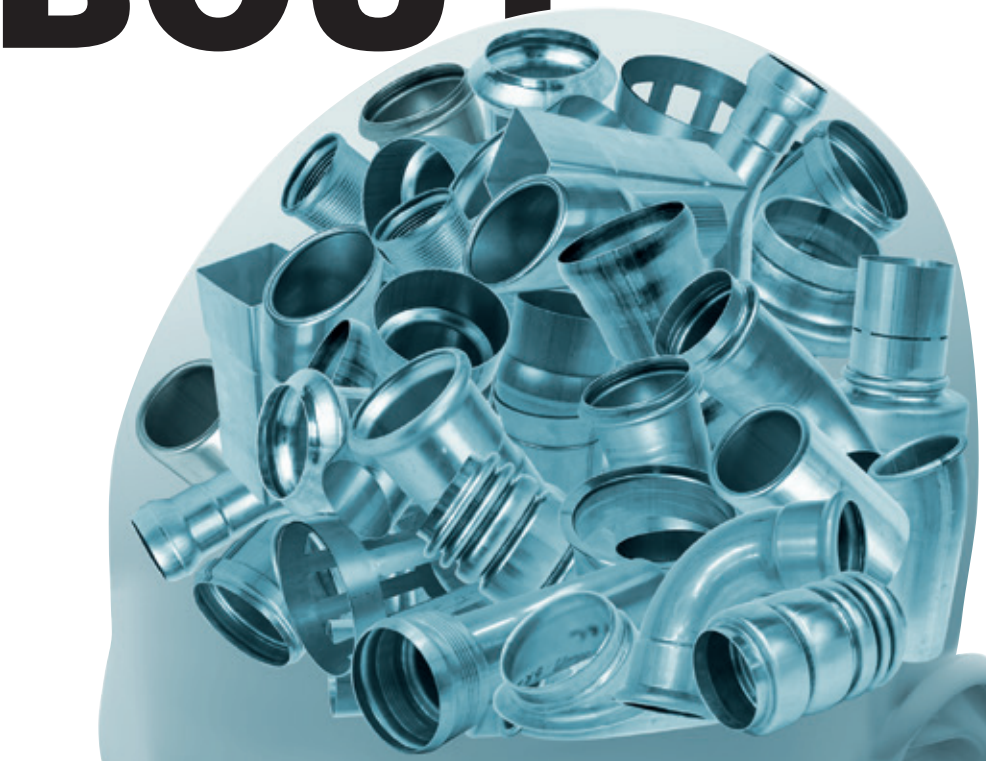
Linear cage forming technology

The PLC records all the utilised data, and it is possible to create particular 'shapes' with different angles. From the PC it is possible to see the 'tube flower' to be produced. The average time for changing tube set-up is around ten minutes.

Olimpia 80 Srl – Italy
Email: olimpia@olimpia80.com
Website: www.olimpia80.com

IT'S ALL WE THINK ABOUT

TUBE END FORMING



wecotech

swiss technology worldwide – wecotech.ch

Tube cleaning to enable IRIS inspection

INTERNAL Rotary Inspection System (IRIS) is the inspection technique of choice for asset owners requiring accurate inspection reports. For IRIS to be performed correctly the tubes must be cleaned to bare metal, which can be a challenge when cleaning is completed using traditional techniques.

A Canadian refinery was concerned about its CCR platformers' VCFE tube integrity, as traditional contractors that used water jetting/chemicals could not achieve IRIS inspection standards. The site needed to accurately determine tube wall thickness to anticipate asset life. A capex replacement of these multi-million dollar heat exchangers looked inevitable. 100 per cent of the 1,434 tubes per exchanger had to be cleaned to production standard and ten per cent of tubes had to be highly polished to IRIS standard. Deposits with the tubes were found to be gummy, hydro-carbon scale.

The small 18" diameter man way/nozzle, located on the side of a fully welded header at right angles to tube sheet, was accessed using bespoke remote technology developed by UK-based Tube Tech International. The tubes were drilled, descaled, polished and inspected to production standard. A remote control IRIS Standard tube polishing technology was then applied from top down. This technique is also capable of inspecting vertical tubes of 65 feet (20m) upwards. A guaranteed IRIS inspection standard was achieved first time and both CCR platformers were cleaned simultaneously within the client's timeframe.

Commenting on the success of the contract, the turnaround block coordinator said: "I think you have made your mark here and you left a great good impression with the PI group and the right people in the PI group who want to use you in future – especially for IRIS. When you do IRIS testing and you do it the first time and there is no rework then there is no added cost, whereas onsite in the past we had to clean and re-clean and re-clean, and it's not only the cost of the cleaning company, it's the cost of all the other resources that are supporting that activity. So it all compounds. Although the outset costs were higher than your typical incumbent, the overall cost is cheaper because of less re-work and less compounding costs from other resources."

Tube Tech International – UK
Email: info@tubetech.com
Website: www.tubetech.com

High-quality tools to boost profitability

MANY tube and pipe processing companies exclusively use custom-made bending machines to achieve maximum precision and productivity. The full machine capacity, however, is often only possible in combination with a high-quality tool solution.

Global competition, more complex tube geometries, more exotic materials – the market requirements rise continuously. With them, the requirements placed on production processes and production machines change as well. High-quality tool solutions provide a major contribution to faster throughput times, reduced non-productive times and an improved total productivity. "Those making false economies usually invest double – in the form of time and money," commented Hartmut Stöhr, managing director of Schwarze-Robitec. Tube bending machines are high-tech products, which offer constant high quality only with the corresponding tool outfit. Detailed questions regarding the geometry of the tubes to be processed, their material and their output quantity determine the dimensioning of machine and tool to a decisive measure.

A lack of know-how can then quickly take its toll in the form of high reject rates, lack of quality and complaints. "Those who don't buy the tools from the bending specialist should check carefully whether the initially lower investment costs can actually be maintained across the complete production cycle," advised Mr Stöhr. "I recommend users to play it safe in this sensitive area and to benefit from the advice and experience of the machine manufacturer."

For this reason, pipe and tube bending machine expert Schwarze-Robitec does not sell any ready-made tool series products. Instead, the company offers a modular-configurable accessories programme which is adapted flexibly to the specific project requirements. This comprises single-stack tools and multiple-radius bending tools both for series and high-volume production.

Schwarze-Robitec designs the concrete material equipment especially for the respective user industries – specialised know-how has been available for decades for the automobile, boiler and power plant industry, plant and shipbuilding as well as the offshore industry.

Common to all material solutions is the use of high-quality materials and special hardening processes, which optimise the precision, wear resistance, dimensional stability and thereby the endurance of the tools. A high repeat accuracy is also ensured.

"At the beginning of each project we provide detailed advice with the aim of finding the absolutely best bending solution for the customer," reported Mr Stöhr. "The result is always a long-term convincing production solution at the highest level."

Schwarze-Robitec GmbH – Germany
Fax: +49 221 89008 9920
Email: sales@schwarze-robitec.com
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Cold cutting and bevelling

PROTEM's TTNG cold cutting and bevelling machines and US ID clamping bevelling machines can be equipped with optional tooling to enable the machining of plastic coating of pipelines up to 130mm wall thickness. All maintenance work (cutting and bevelling) can be performed on existing pipe lines or at the end of pipes, machining the coating on various lengths to give space for the welding equipment.

Heating the coating at high temperature and removing it manually with a blade, or using machines with a water jet cutting system (which can damage the pipes), is no longer necessary.

Protem SAS – France
Email: contact@protem.fr
Website: www.protem.fr

Sawyer improves ratchet clamp

SAWYER Manufacturing Company has redesigned its Ratchet Clamp with a lower profile to allow better access to the butt join, helping welders effectively and quickly align and weld pipe.

The ratchet mechanism has also been improved with a built-in handle and enclosed threads to protect against dirt and weld spatter, all while retaining the true double ratchet feature that allows for quicker closure on the pipe to increase speed and performance.

The Ratchet Clamp is built with a focus on speed and accuracy. The ten-ton ratchet can deliver precision and rugged durability with ease. The clamp is designed with an open bridgework to allow full 360° welding, ensuring a quality weld. The machined headrings are precision-bored for consistent and accurate fit up. The Ratchet Clamp's new yellow colour provides high visibility and improved safety.

"There are a lot of clamps out there," said Dave Hembree, Sawyer Manufacturing vice-president. "I believe our customers will be pleasantly surprised by the small but important changes we have made."

Sawyer Mfg Co has been manufacturing and designing welding and pipeline equipment since 1948. Equipment is designed, engineered and manufactured in the company's new facility in Oklahoma, USA. Sawyer equipment is used in the construction and maintenance of pipeline, waste water and sewer lines and other welding and pipeline applications.

Sawyer Mfg Co – USA
Email: sales@sawyermfg.com
Website: www.sawyermfg.com

Precise pipe production

IT is no longer possible to imagine life and work without a computer, and it is the right software that makes computers so valuable for daily use. Pipe production also requires systems that allow safe bending of the pipes and monitoring of the process.

CAD systems are commonly used for the designs. Pipe isometrics are usually already determined in the design. These then need to be transferred to production with as few errors as possible. An optimum bending result is achieved by taking material-specific values into account. Manufacturers of pipe systems wish to and must document this. Other important factors are the repeat accuracy and the variety of different isometrics. This naturally overtaxes manual administration and that is why the use of powerful software is so important.

Beyond pipe bending there is often also a need for different extension modules in order to document complete processes.

transfluid Maschinenbau GmbH has developed a specialist software called ‘t project’ for the challenges of fast, reliable pipe processing. It has a user-friendly structure and offers intuitive possible uses without intensive training. The software is based on the Windows operating system, which is always updated in accordance with the current version standard.

The ‘t project’ software also allows the administration of process data for forming technology. Corresponding ‘nesting’ software is available for cut optimisation in the integration of separation lines.

Three versions of the transfluid software are available for different requirements within pipe processing as single workplace or network versions. For reasons of sustainable production and data protection, transfluid has ensured that ‘t project’ is connected centrally to the internal company security system via networks.

The version ‘t project Basic’ converts isometrics into bending data that the pipe-bending machine can utilise directly.

Correction values and overbending values are calculated automatically. The software calculates the sawing length in accordance with isometrics and material-specific data. In order to be able to carry out a simple, manual check on the bent part, the operator is provided with a measurement of the diagonal from the beginning to the end of the pipe. IGES and PCF software are some of the available interfaces.

These interfaces are used to achieve the connection to CAD, measurement machines and/or Office programs. If the pipes are not drawn in CAD then the input of the geometry into the software is possible absolutely, relatively or via bending data. It then converts the data into the relevant bending data.

The version ‘t project Professional’ offers the same basic configuration as the basic version.

It can also carry out a collision test to determine whether the pipe will collide with the machine or the machine environment.

transfluid Maschinenbau GmbH – Germany
Email: info@transfluid.de
Website:
www.tube-processing-machines.com

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RFID pressure transmitters for hydraulic applications

STAUFF presented its PT-RF series of pressure transmitters at Hannover Messe 2015. The innovation in the field of universal pressure measurements for fluid technology applications will provide benefits for system operators, maintenance personnel and repair technicians, as well as for original equipment manufacturers.

The use of these transmitters in a hydraulic system allows the wireless collection of pressure data without having to connect measuring devices to the user's equipment, eliminating the possibility of introducing contamination into the system and speeding up the process.

The operating principle of the pressure transmitters is based on RFID (radio frequency identification) technology. The energy required for a measurement is transferred to the pressure transmitter via the antenna of the associated reading and display device so that the transmitter requires no internal or external power supply in the traditional sense (eg in the form of a battery) and no external wiring.

As well as the system temperature, other relevant information is transmitted as a standard, including media temperature, date and time of the measurement, and the unique serial number of the pressure transmitter. The software included with the unit allows subsequent evaluation and further processing of the measurement results previously transmitted to the PC or notebook via the USB interface.

The pressure transmitters are available in five different versions and cover the usual measuring ranges for hydraulics between 0-16 bar and 0-600 bar (absolute), depending on requirements, with a precision of max ±1 per cent full scale. Temperature values can be displayed from -40°C to +85°C.

The pressure transmitters are available with ¼" BSPP (with FPM profile sealing rings) or ¼" NPT screw-in threads. Corresponding connection pieces are available for the temporary or permanent use of existing test couplings.

Measurements can be carried out at the press of a button, without extensive training and within a few seconds, and then documented in a reliable process. Unscrewing and re-installing pressure gauges or other measuring and display devices – practically a temporary opening of the system – is not required. Potential hazards for people, machines and the environment, for example from emitted residual oil in the test hose or leaks at the measuring point, as well as ingress of dirt into the system (eg in dusty environments) can be effectively excluded.

PT-RF pressure transmitters for direct installation

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Website: www.stauff.com

New SmartFit™ software optimises multiple sections of pipe

PIPE measurement specialist Optical Metrology Services (OMS) has released a new version of its award-winning SmartFit™ pipe fit-up optimisation software.

In addition to the sequencing of single pipe ends, the new software is now capable of sequencing multiple pre-welded sections of pipe (doubles, triples and quads), while also providing improved visualisation of pipe fit-up and new, automated reporting features.

Winner of a Queen's Award for Innovation in 2014, OMS's SmartFit service is a system for managing pipe preparation and fit-up in readiness for welding prior to pipelaying. For the oil and gas industry, SmartFit ensures accurate fit-up of pipes prior to welding and laying in trenches, thus preventing environmentally damaging leaks.

The new software is now capable of sequencing multiple pre-welded sections of pipe

The latest version of the SmartFit software was developed by OMS in response to the changing needs of the oil and gas industry. Rather than weld single pipe ends, some of the latest pipelaying vessels are now designed and equipped to carry and/or weld multiple sections of pipe – in doubles, triples or quads. Typically, these vessels carry pipe ends that have either been pre-welded onshore into multiple sections, or the vessels have facilities to weld the pipe ends onboard into multiple sections prior to the pipeline reeling and laying processes.

David Briscoe, senior software engineer at OMS, commented: "The SmartFit software is now able to simulate, sequence and optimise batches of double, triple or quad pipe ends to suit individual customer requirements. For the pipe contractor, this enables pipe ends to be part-welded into multiple sections onshore, which in turn means less time is spent welding individual pipe ends onboard the pipelaying vessel. This can significantly reduce vessel hiring costs and project risk."

The OMS software is now more intuitive and easier to use, providing 2D/3D visualisation of pipe ends, which not only reduces operator error, but also aids the end customer or pipe contractor's own understanding of the benefits of using pipe fit-up optimisation software in order to reduce weld cut-outs and delays to the pipe welding and laying processes.

SmartFit also provides improved reporting features in various formats to suit the operator, analyst or pipe contractor. Results and automated statistical reports can be generated and exported directly into different formats, including MS Word, MS Excel, .CSV file, image/graphical reports, as well as more detailed technical reports that include every pipe joint/HiLo value in a pipeline.

The SmartFit system is accurate, traceable to National Standards, light, fast to operate and highly portable. The system has been applied aboard a wide variety of pipelaying vessels and spool bases around the world.

Prior to OMS introducing SmartFit to the oil and gas industry, pipe fit-up problems occurred at a mean rate of one in every 15 pipe ends. Using SmartFit, such problems are rare or non-existent. OMS estimates that its customers are saving approximately £9mn per year.

Optical Metrology Services – UK
Website: www.omsmeasure.com

Cut-to-length and coping in one operation

A TUBE producer and fabricator in the automotive industry asked Haven to develop a process that combines length trimming and radius coping into a single operation.

When welding two round tubes together to make a T-connection, coping is the preferred way to condition one tube end for a tight fit. For this application, the customer is required to trim both ends of a tube after bending to obtain matching finished lengths. Coping is usually a separate operation, so the challenge for Haven was to combine the trim-to-length and the coping into one operation.

The basic action of this process is no different to that of a standard dual-blade shear cut-off – clamp, nick and shear. The width of the blade removes an equivalent amount of material (kerf) from the tube, but is greatly increased when coping. The design of the clamp die and shear blade had to be changed.

Standard design has a flat, two-plane interface between the shear blade and the clamp die, making a square cut. For this application the blade's outgoing side, or scrap side, remains flat, while the incoming side is profiled to match the cope radius and depth. Likewise, the clamp die is designed with a concave profile to match that of the shear blade. As with a square cut, the profiled die and blade interface creates the shearing surface that parts the tube.

Haven Manufacturing – USA
Fax: +1 912 264 9001
Website: www.havencut.com

Thread protection in 20 seconds

COMPANIES seeking an alternative between tedious manual operations for applying pipe thread protectors and expensive robot automation can now choose a new customised product from Automation Engineering Company LLC.

AEC's automatic thread protector applicator is based on the principles of a mechanical compliant system that can handle a variety of thread protectors, providing precision torque within a 20-second takt time (or less), and can handle pipe from 2.5" (63.5mm) to 13⅝" (350mm) in diameter.

"Pipe ends are not always perfectly perpendicular or aligned, so we've designed a system that adjusts to the pipe angle a couple of degrees in any direction," said AEC president Manfred Gollent. "We use all-electric controls so it moves forward exactly to the pitch of the thread."

Protective caps are fed into the automatic thread protector applicator using a de-palletiser capable of full-height pallets. The de-palletiser loads

with a slim profile pallet jack or forklift. Fully automated, thread protectors are fed row-by-row into a chute ready to be picked up for application.

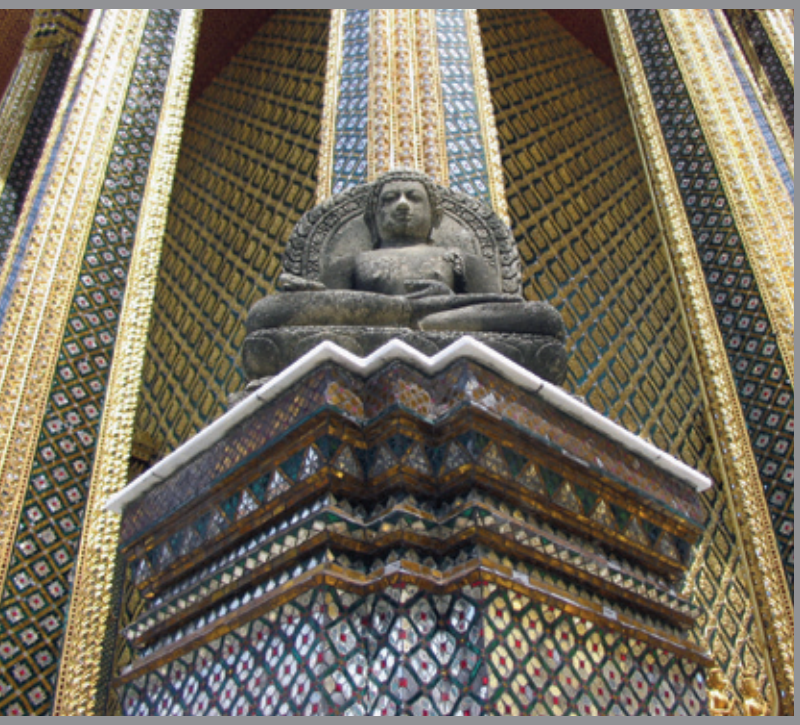
To accommodate different pipe sizes, the thread protector system adjusts vertically during changeovers. The pipe itself never moves. The only manual interference occurs when grippers and cradles are changed to accommodate pipe sizes. Changeover to a different size of pipe takes less than ten minutes.

Unlike other systems that currently rely on robots for applying thread protectors on tube and pipe, AEC's solution requires lower investment and comes with an automated doping system. In addition, an automatic, vision-based inspection system provides assurance that the pipe end is threaded and doping is applied correctly. The inspection process can identify if a pipe has a reject stripe and, therefore, skip the protector application.

"It's a very cost-effective solution that allows pipe mills to reduce pipe-to-pipe cycle times," Mr Gollent said of AEC's automatic thread protector applicator. "We continue to take proven technologies and designs and apply them in new and creative ways."

Automation Engineering Company LLC – USA
Website: www.teamaec.com

Tube Southeast ASIA



16-18 September 2015

10th International tube and pipe trade fair for Southeast Asia

Tube Southeast ASIA returns to The Bangkok International Trade & Exhibition Centre (BITEC) from 16 to 18 September 2015 in Bangkok, Thailand.

The trade fair provides an attractive focal point and springboard for local businesses and international companies seeking to broaden their export of tube and pipe products and technologies.

Organised by Messe Düsseldorf Asia, more than 400 companies will be exhibiting their latest innovations during the three-day event.

As ASEAN prepares for further development with a major line-up of infrastructural projects in the pipeline, the wire and tube industries remain strong through robust support from the region and around the world.

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Oil and gas

The idea that injecting water deep into the ground can trigger earthquakes, talked about for decades, moves beyond speculation

Seismic activity in Texas near the Dallas-Fort Worth area has increased substantially recently. Kansas, Colorado, New Mexico and Ohio have all experienced more frequent quakes in the last year. But Oklahoma is by far the worst-hit state, according to a study released on 23 April by the US Geological Survey (USGS). Oklahoma in 2014 had more earthquakes of magnitude 3 or higher than California, further evidence of a huge increase recorded in recent years.

For the first time the USGS has published results of a mapping of areas in the eastern and central United States hit by earthquakes thought to be triggered by human activity. The areas highlighted on its map "are located near deep fluid injection wells or other industrial activities capable of inducing earthquakes," the study authors said.

In an interview with the *Los Angeles Times,* Mark Petersen, chief of the USGS National Seismic Hazard Project, said the pattern of increased quakes is troubling. He told Rong-Gong Lin II, Jon Schleuss and Thomas Suh Lauder, "These earthquakes are occurring at a higher rate than ever before, and pose a much greater risk and threat to people living nearby." The reporters wrote that the release of the map "comes as officials are coming to terms with the idea" that wastewater disposal following oil and gas extraction by hydraulic fracturing, or fracking, is causing more earthquakes. The wastewater generated by this method – which involves shooting a high-pressure mix of water, sand, and chemicals deep underground – is often forced underground as well, and can trigger earthquakes along faults that haven't shifted in a very long time. ("Man-made Earthquakes Increasing in Central and Eastern US, Study Finds," 23 April)

Another entity, the Oklahoma Geological Survey, said on 21 April that the sharp rise in quakes in the state is "very unlikely to represent a naturally occurring process," since they occur in the same area that saw a huge jump in wastewater disposal over the last several years. The seismicity rate in 2013 was 70 times greater than the background seismicity rate observed in Oklahoma prior to 2008, state officials said.

Larger and more frequent quakes

To put the increase in both size and frequency of human-induced earthquakes – and their threat to public safety – into perspective, the *Times* cited a magnitude 5.6 earthquake believed to have been caused by wastewater injection that hit near Prague, Oklahoma, in 2011, injuring two people and destroying 14 houses. That same year, a 5.3 earthquake struck a remote part of Colorado, near the town of Trinidad close to the New Mexico border, which the USGS said was also triggered by wastewater injection.

In another instance, from the 1960s, according to a study reviewed in the journal *Science* at the time, many scientists concluded that injection of chemical-waste fluid in the Denver Basin triggered seismic activity.

For an example farther afield, Messrs Lin, Schleuss and Lauder called attention to the desert town of Gazli in the former Soviet republic of Uzbekistan, where earthquakes were once rare occurrences. Like Oklahoma, this region was some distance from the boundaries of the giant tectonic plates whose crashes create the huge quakes well known in California. Then, in 1976, two big earthquakes hit the Gazli area. And a magnitude 7 quake struck in 1984, killing one person and injuring more than 100. As noted by the *Los Angeles Times*, "Scientists writing in the bulletin of the Seismological Society of America at the time suggested that the quake could have been induced by human activity at the gas field."

Some 150 million Americans are at risk from earthquakes and the economic toll of quake damage is roughly $4.5 billion a year

"Nearly half of all Americans – 150 million people – are threatened by possibly damaging shaking from earthquakes."

Rong-Gong Lin II, one of the three the *Los Angeles Times* reporters mentioned in the previous item, was quoting scientists at a meeting of the Seismological Society of America to present the results of another study. Contributors include attachés of the US Geological Survey (USGS). ("Nearly Half of Americans Threatened by Earthquakes, Study Finds," 22 April). That figure – 150 million people, from all 50 states and Puerto Rico – represents a jump from 1994, when the Federal Emergency Management Agency estimated that 75 million Americans in 39 states were at risk from earthquakes. The sharp increase in exposure to quake damage is largely traceable to population increases in areas prone to earthquakes, particularly California, said William Leith, a study co-author and senior science advisor for earthquake and geologic hazards at USGH.

A dollar value can be put on the threat. Authorities calculate the average financial loss to earthquakes in the contiguous 48 states (excluding Alaska and Hawaii) to be roughly $4.5 billion a year, mainly in California, Oregon and Washington state. "Earthquakes remain an important threat to our economy," Kishor Jaiswal, a research contractor for the USGS, said in a statement.

Security expert: the petrochemical sector of the Middle East, in particular, should be on alert against cyber assaults

Andrew Wadsworth, head of process control security at the defence technology company Lockheed Martin (Bethesda, Maryland), is concerned that the nations of the GCC – the

Cooperation Council for the Arab States of the Gulf, excepting only Iraq – will likely be subject to cyber threats to their oil, gas and industrial facilities in the foreseeable future. The region's high dependency on the oil and gas industry makes it, he said, "a big juicy target."

A former geologist with over 30 years' experience in the petrochemical industry, Mr Wadsworth distinguishes between a traditional information-centred hacking attack and an assault on an industrial control system. According to the security expert, cyber assaults on oil and gas control systems across the Middle East hold potential for inflicting significant damage. In an interview with the Dubai-based *Khaleej Times,* carried by the Middle East media portal YahooNewsME, Mr Wadsworth stressed the importance to an effective defence of a working familiarity with "real world" pipelines, compressors, turbines, oil wells and power plants. He said, "You have to have a real appreciation of the process that is being controlled in order to understand what the impacts are if it goes wrong." ("Oil and Gas Platforms at Risk of Cyber Attack," (26 April)

Lockheed Martin is currently working with authorities of the United Arab Emirates (UAE) in Masdar City on improving cyber security at oil and industrial facilities. Mr Wadsworth believes that, while there is regional awareness of and interest in the issue, the UAE is more prepared "to put money into it than a lot of other countries."

› He pointed out the difference between the forced shutdown of some production in the UK, the impact of which would not be devastating from an economic point of view, and the shutdown of ADGAS or ADCO in the UAE. Mr Wadsworth observed, "That's a huge part of your country's revenue."

More 'Dreamliner' woes

Boeing's substitution of electrical for mechanical components to achieve lighter weight may compromise its 787 jetliner

The 787 midsize wide-body from Boeing Co (Chicago) is much more reliant on electrical power than previous generations of airplanes. The twin-engine jetliner, which seats 242 to 335 passengers, was given a carbon composite structure, and many mechanical components have been replaced with electrics to save weight and allow more economical operation.

Following Boeing's discovery of a software error that could result in a total loss of power to the craft, the US Federal Aviation Administration (FAA) on 30 April announced that it would order operators of the 787, known as the Dreamliner, to turn off its electrical power at intervals. The precaution grew out of Boeing's finding that the plane's power control units could shut down power generators if they were powered without interruption for 248 days, or about eight months.

As reported by Jad Mouawad of the *New York Times*, the plane maker said that it would be unlikely for a given aircraft to remain with power on without interruption for eight months, and that power was routinely turned off and on again in the course of regular maintenance on all its airplanes in service.

Boeing said it was working on a software update that should be ready by the fourth quarter. Meanwhile, it noted that the problem had emerged only during laboratory simulation and said that powering the airplane down would eliminate the risk that all six power generators on a given craft would shut down at the same time. ("FAA Orders Fix for Possible Power Loss in Boeing 787," 1 May)

How great the danger?

The FAA's AD (airworthiness directive), ordering the Off-On procedure, was succinct:

"We are issuing this AD to prevent loss of all AC electrical power, which could result in loss of control of the airplane. If the four main generator control units (associated with the engine-mounted generators) were powered up at the same time, after 248 days of continuous power all four GCUs will go into failsafe mode at the same time, resulting in a loss of all AC electrical power regardless of flight phase." Presumably, if an electrical shutdown were to occur during take-off or landing, the loss of control could be a serious matter.

Mr Mouawad recalled a series of problems with the electrical systems on the 787 since the plane entered service in 2011. The entire 787 fleet was grounded for more than three months in early 2013 after two incidents involving lithium-ion batteries. One of these involved a fire on a parked 787, which eventually obliged Boeing to redesign the battery casing as well as the internal fuel cells.

Qatar Airways and other operators have also reported failures with the plane's main electrical panel, leading to the grounding or delay of flights. Last year, according to the *Times*, Boeing received a waiver from the FAA that allowed it to deliver its first 787-9, a stretched version of the Dreamliner, even after two components failed to meet airworthiness regulations.

› Boeing has so far delivered 264 Dreamliners to carriers including Japan Airlines, Air India and Ethiopian Airlines. It alerted operators about the new potential problem in mid-April.

In brief . . .

› California Gov Jerry Brown on 28 April announced new legislation that would increase fines for wasting water and empower local governments to impose them. Penalties to a maximum of $10,000 per day, up from $500, were sought under the measure proposed by Mr Brown in response to severe drought conditions. "Egregious" cases of non-compliance would draw the very high penalties.

Earlier in the month, the governor had ordered the state to conserve a million and a half acre-feet of water over the next nine months – a directive termed "drastic" by *New Yorker* staff writer Dana Goodyear. Noting that it can be hard to visualise a large quantity of water, she defined an acre-foot as what it takes to cover an acre to the depth of twelve inches: some 325,000 gallons. A million acre-feet is about what the city

of Los Angeles uses in two years. ("Letter from the Imperial Valley," 4 May)

Ms Goodyear wrote, "The intensifying four-year drought has devastated small communities in the north, decimated groundwater supplies in the Central Valley, and made the cities fear for the future. To achieve [the savings mandated by the governor], Californians are starting to forgo some of the givens of life in modern America: long showers, frequent laundering, toilet-flushing, gardening, golf."

"Compared with the high-speed trains of Western Europe and East Asia, American passenger rail is notoriously creaky, tardy and slow." (the Washington-based *National Journal*, 18 April). Simon Van Zuylen-Wood illustrated his point with the Acela, currently the only "high-speed" train in the US, which runs at an average pace of 68 miles per hour between Washington and Boston. In comparison, he noted, a high-speed train from Madrid to Barcelona averages 154mph. The most punctual trains operated by the US National Railroad Passenger Corp (Amtrak) arrive on schedule 75 per cent of the time. Judged by Amtrak's standards, he wrote, Japan's bullet trains "are late basically 0 per cent of the time."

In March, the US House of Representatives voted to fund Amtrak for the next four years at a rate of $1.4 billion per year. Meanwhile, Mr Van Zuylen-Wood observed, China will be spending $128 billion on rail in 2015. "Thanks to the House bill, though," he wrote, "Amtrak passengers can look forward to a new provision allowing cats and dogs on certain trains."

Steel

As seen from Pittsburgh, Canada's ArcelorMittal Dofasco is having a very good year

"Call it a tale of two steel companies – the best of times for one and the worst for another."

Steve Arnold, of the Ontario-based *Hamilton Spectator,* placed on one side ArcelorMittal Dofasco (AMD), Canada's largest producer of flat carbon steel and a current success: stable, profitable, and looking to take on workers to keep its mills humming.

On the other side he set United States Steel Corp (USS), of Pittsburgh, with $75 million in losses for the first quarter of 2015 and its Canadian branch in court-ordered protection from creditors. ("Dofasco Thrives as US Steel Topples Off the Cliff," 30 April)

As reported by the *Spectator*, the contrasts between the companies were on display on 29 April, when USS president Mario Longhi acknowledged that thousands of forced layoffs had left his mills running at barely more than 72 per cent of capacity. On the same day, AMD president Sean Donnelly told a local Chamber of Commerce that his company is running at up to 97 per cent of capacity and is having trouble filling the jobs it has on offer.

For his part, Mr Longhi explained the poor performance of USS by citing the battering sustained by the American steel industry from metal dumped in the US at less than its cost of production. The US Department of Commerce supports that view. Through February the department reported that steel imports to the US rose 25 per cent from the same period a year earlier. “Illegal dumping in this market is ongoing and it has to end,” Mr Longhi said. “We need legislative relief that is sustainable.”

On another front, USS is in the midst of a multi-year cost-cutting programme. Dave Burritt, the company’s chief financial officer, told analysts that the programme, known as the Carnegie Way, will yield savings of $340 million in 2015. As for the company’s struggling Canadian branch, in bankruptcy protection since September, its financial results are no longer included in the figures reported by the American firm.

“They are going through their motions to get their issues resolved,” Mr Longhi said. “We will keep an eye on it and see how it goes.” Mr Arnold rather pointedly observed that the parent firm’s stake in the Canadian restructuring is more than a matter of monitoring from a distance: USS believes it is owed more than $2.2 billion by its unit in Canada.

The common enemy: imports

That is not to say that AMD, while much more comfortably fixed, is entirely worry-free. Mr Donnelly said the company is facing “a huge wave of retirements in the next few years” as baby boomers retire, leaving a void in skilled trades workers and others. Another concern is that auto makers, accounting for 40 per cent of AMD’s business, continually demand lighter-weight but no less strong grades of steel as they strive for greater fuel efficiency. The search for those materials keeps 85 people busy in the company’s research and development labs. “Aluminium is a huge threat to us,” the AMD chief told Mr Arnold. “There is a lot of intensity in the research area to combat alternative materials.” But these are concerns that USS can only envy.

The challenge faced by the two companies together is that posed by imports, with the situation for Canadian steelmakers not much better than what confronts their counterparts to the south. Mr Donnelly told his Chamber of Commerce audience, “Imports remain a huge issue in North America.” The *Hamilton Spectator* reported that the Canadian Steel Producers Association backs that claim. Its data indicates that Canada’s demand for steel is roughly 16.6 million metric tons a year. Imports of 9.9 million mt give foreign producers about 60 per cent of that market.

Other news of steel . . .

Grain-orientated electrical steel (GOES), a fairly niche product made by only 16 producers worldwide, is essential to the manufacture of transformer cores, and the European transformer industry has expressed deep concern about anti-dumping duties imposed by the European Union on

imports of the steel. The tariffs, of between 21.6 per cent and 35.9 per cent, are a response to the complaint lodged in June 2014 by the European steel producers association Eurofer. The five countries whose products would be penalised are Japan, Russia, China, the US and Korea. The duties, put in place following the European Commission presentation of its proposal to EU member states in late April, are provisional through November. If confirmed, they would remain in effect for five years. Steel analyst Seth Rosenfeld, of the global investment banking firm Jefferies, told Reuters (28 April) that GOES imports represented only about 1.5 per cent of all EU steel imports in 2014. He noted, however, that on the back of its announcement in March of new stainless anti-dumping duties, "further protectionist policies by the European Commission may begin to portray a more proactive policy response than seen historically."

Automotive

A heads-up for Detroit: prospective buyers of cars prioritise collision avoidance over infotainment touch screens

"People want their cars to be cars." The comment by Brian Radloff, the director of automotive accounts for Nuance, a company that creates voice-recognition software, was prompted by the somewhat surprising results of a JD Power survey of US drivers conducted between January and March. The auto marketing information firm's 2015 Tech Choice Study reached 5,300 consumers who either bought or leased a new vehicle over the previous five years.

As summarised by Greg Gardner of the *Detroit Free Press* (22 April), the technologies most preferred by the Power respondents were:

- Blind-spot detection (preferred by 40 per cent)
- Night vision (33 per cent)
- Enhanced collision mitigation (30 per cent)
- Rear-view cameras (30 per cent)
- Self-healing paint (25 per cent)

The least favourite technologies were:

- Systems that monitor health and wellness (only 9 per cent considered these a priority)
- Hand-gesture controls (8 per cent)
- Biometric driver sensors (8 per cent)
- Touch screens that provide tactile feedback (8 per cent)

Mr Gardner pointed out the study's other notable finding: that young consumers – whether or not they can afford the extra expense – expressed themselves willing to spend more on in-vehicle technology than older drivers.

Millennials (born circa 1982) queried by Power are receptive to spending an average $3,703 on optional technology in

their next vehicle. Baby boomers (born between 1946 and 1964) would spend $2,416. Pre-boomers (born before 1946) averaged $2,067.

Reviewing the survey results at an Automobile Press Association lunch in Detroit, Kristin Kolodge, Power's executive director of driver interaction research, said that – despite the heavy advertising and promotion automakers lavish on their connectivity systems – interest in technologies that connect a smartphone to a car is evidently "lukewarm".

To Ms Kolodge this reflected, at least to some extent, the respondents' loyalties to the makers of their smartphones. Apple iPhone users rejected touchscreens based on Android systems while Android users snubbed touchscreens based on Apple's iOS system.

But her summary of the Tech Choice Study findings had another emphasis altogether: "There is tremendous interest in collision-protection technologies across all generations."

Elsewhere in automotive . . .

Ford Motor Co attributed its disappointing first quarter – in which revenue fell by 5 per cent, or $2 billion, to $33.9 billion – to the strong US dollar and lower sales of the Edge SUV and new F-150 pickup, two of the company's most profitable vehicles. Ford in late April said the continuing launch of the F-150, which went on sale late last year, hurt North American sales because dealers did not yet have a full inventory.

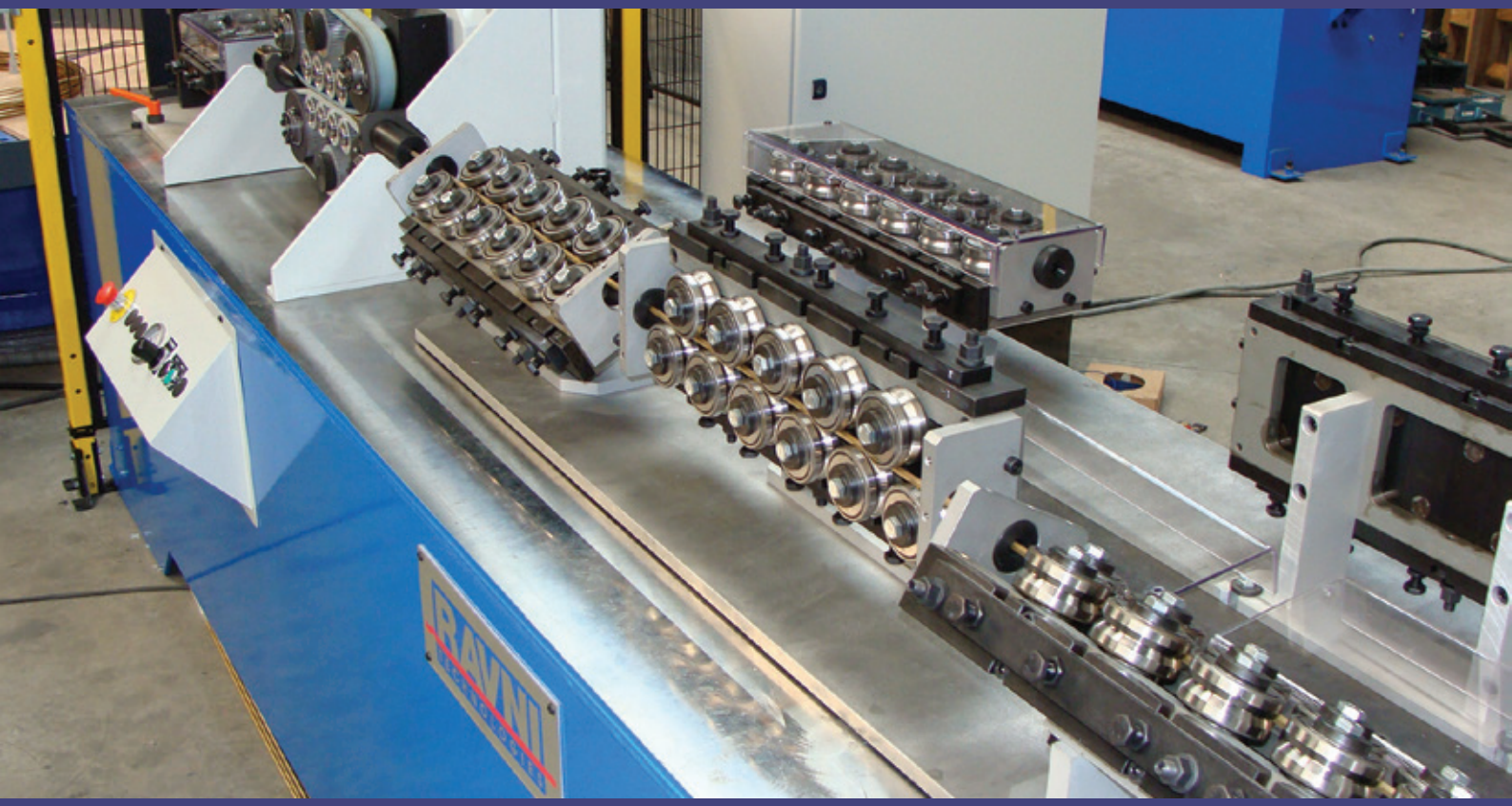
Two plants make the F-150, in Michigan and Missouri, but only the Michigan plant was fully operational in the first quarter after a longer than usual changeover to making the truck's body out of aluminium instead of steel. Sales of the F-150 were down 40 per cent, or about 60,000 vehicles, for the quarter, and dealers were not expecting normal levels of trucks on their lots until the summer. Sales of the Edge were down about 15,000 vehicles as the company changed over to an updated model.

In contrast to Ford, General Motors Co enjoyed a good first quarter – its best in North America since it exited bankruptcy in 2009 – in which it posted a $945 million profit. Home-market buyers of large pickups, SUVs and crossovers compensated for the impact of the strong US dollar and weak sales in Brazil and in Russia, where GM will stop nearly all manufacturing.

The automaker is considering adding capacity in Arlington, Texas, to make even more of its highly profitable SUVs at the plant there. GM is also anticipating pressure to squeeze more output from its pickup factories in Flint, Michigan, and Fort Wayne, Indiana, should the shift in preference away from passenger cars toward crossovers and light trucks prove steady.

Dorothy Fabian, Features Editor (USA)

Straightening technology and equipment



Tube straightening machine from Ravni

At one time straightening was a simple bending operation with the addition of some readily calibrated “overkill” to compensate for springback.

The challenge of longer lengths, played off a spool, was met by running the tube through a series of precision rollers.

Twists even of the spaghetti variety quickly yielded to a couple of V-blocks and a judiciously placed manual press. But the tubing industry did not linger very long in its early stage, and straightening was key to progress into the era of nasogastric tubes, cathode ray tubes, and nylon stuffing tubes.

It continues to be pivotal today, in the hands of the successors to the pioneers of straightening technology and equipment.

A representative selection of their products and services will be found in the pages of this section of *Tube & Pipe Technology*.

Straightening of oil and gas tubes

TUBES, square bars and profiles, which were previously straightened almost exclusively through the rolling process or by simple manual presses, can now be precision straightened to ensure tight linearity tolerances.

Heavy-duty automatic straightening machines have improved through the use of sophisticated kinematics, actuators and electronics. Applications in fields such as energy, oil and gas, steel mills and hydraulics require processes that guarantee high quality finished products. For example, in the oil and gas and nuclear fields the increasingly stringent international API guidelines and recent events have made quality standards of pipes for these applications among the most rigorous in the world.

The Galdabini Gantry heavy-duty machine is designed for straightening long raw tubes and bars, forged or finished. Workpiece measurement takes place by continuous scanning (laser), which allows reading and reconstruction of the actual deformation curve.

Fully automatic straightening is fast and optimises machine parameters, in addition to controlling workpiece deformation (absolute and linearity error).

The advantage of this process is the straightness results over the entire length, certified and repeatable measurements and high productivity of the system, especially when operating 24 hours a day, equipped with loading/unloading units.

The aim of reducing longitudinal dimensions to the minimum is achieved, maintaining machine frame stability and flexibility of use. The machine is electromechanically or hydraulically controlled, depending on the tonnage.

Measuring before and after straightening allows full traceability of the product, with an important impact on the quality of the production cycle. Easy maintenance is assured by diagnosis and maintenance messenger systems for the remote control of customer service.

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Synergy for turnkey tube manufacturing

FASPAR, a specialist in coil processing equipment, and Olimpia 80, an expert in systems and equipment for welded tubes, have shared their experience and core business to ensure the quality of strip products at the entry of tube mills.

This operation can be underestimated, but it is important in order to fully exploit the capacity of the tube mill.

Faspar has been a producer of turnkey equipment for the processing of metal coils since 1966.

Its main product range includes slitting lines; levelling, straightening and cut-to-length lines (with feeder, rotary shear or flying shear); surface finishing lines; feeding and pressing/punching/bending lines; and tension/stretch levelling lines.

Olimpia 80 Srl has specialised in the engineering and manufacture of systems and equipment for welded tubes since 1980.

The main product range of Olimpia 80 consists of complete tube mills and components.

Faspar and Olimpia 80 recently put into operation one slitting line and two tube mills, positioned side by side, in a Ukrainian plant of one of the world's largest titanium producers. The final use of these titanium tubes is in the energy field (nuclear) and heat exchangers.

The Faspar slitting lines can process grade 1 and 2 coils, VT1-0 up to 10 tons, at line speeds up to 200m/min, and in thickness from 0.4 to 2.5mm, in order to produce strips with width from 35 to 200mm, suitable for the tube mill lines and final output tube diameter.

Olimpia 80 tube mills lines can process tubes with outside diameters from 12 to 60.3mm, and thickness from 0.4 to 2.5mm, welded with a TIG system. The final tube length is from 4 to 26m.

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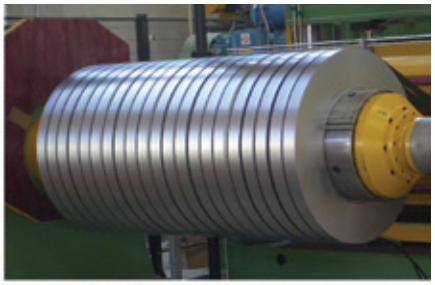
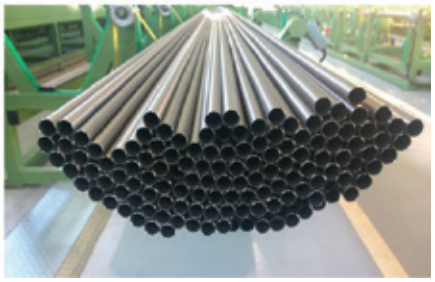
Faspar and Olimpia lines and final products





Tube straightening

Straightening machine by Bültmann

GERMAN company Benteler Steel/Tube GmbH has placed an order with Bültmann for the delivery of a ten-roll tube straightening machine for diameters up to 160mm. The Bültmann machine in conjunction with the patented entry channel ensures an optimal guiding of tubes, and straightening speeds up to 250m/min.

The height and angular adjustment of the straightening rolls is performed hydraulically. When the positioning has been carried out, the rolls are centrally clamped with zero clearance by means of hydraulics. The internal suspension of straightening rolls allows a small roll distance relative to the usable length of the straightening rolls.

The ten-roll tube straightening machine offers several straightening modes, and allows the straightening of tubes within a large diameter range. All calculations for the machine settings are supported by PC, and the values are stored in a database. Defined increases in strength can also be reached reproducibly.

Due to their compact design, Bültmann's new ten-roll straightening machines can replace old six-roll straighteners used in existing lines.

Bültmann GmbH – Germany
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Slit and straighten

FASPAR SpA is a machine building company based in Milan, Italy. With a 4,000m^2 production area, Faspar is now a well-known company for its main products: slitting lines; levelling and straightening and cut-to-length lines (with rotary, flying and mechanical shear); surface finishing lines; feeding and pressing/punching lines; tension/stretch levelling lines; roll forming lines; and sandwich panel lines. Processed material can be mild/carbon steel, galvanised steel, pre-painted steel stainless steel, aluminium, titanium and copper. Over 300 Faspar machines are used in Italy, Europe, Russia, Asia, North & South America and Africa by a wide range of customers.

Faspar SpA – Italy
Website: www.faspar.it

Handheld pipe/tube straightener

THE new handheld pipe/tube straightener from Kwix UK is an efficient handheld manually operated tube straightening tool that easily and accurately straightens light wall tube from a coil or any other tube.

The low cost handtool will straighten all types of coiled tubing – copper, aluminium, stainless steel and brass. It maximises the flow, simplifies installation, reduces labour costs and material usage, accelerates the flow for better efficiency and gives a professional looking finish. The straightening process also strengthens the tube.

Kwix UK manufactures the Kwix tool for all popular coiled tubing with outside diameter sizes in both metric: 4, 5, 6, 8, 10, 12 and 15mm, and imperial: $^1/_8$", $^3/_{16}$", $^1/_4$", $^5/_{16}$", $^3/_8$" and $^1/_2$".

Over 10,000 units have been sold worldwide in the past two years and the Kwix tool comes with a 12-months guarantee.

The Kwix tool is used by plumbing and heating, air-conditioning, refrigeration and HVAC engineers as well as car, plane and train restoration companies, and even for RF coiled cabling.

Kwix UK – UK
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Tube, bar and wire straightening machines from Italy

VIOLI Srl, a specialist in the design and production of industrial machinery for the manufacturing of tubes and wires, has developed a line of straightening machines for metal profiles, both circular and complex, that includes the MRT, MRP and MRF series.

The MRT series for tubes and bars is equipped with straightening groups consisting of hyperbolic pairs of rollers obliquely mounted with an inclination opposed to each pair. The orientation of the axes, combined with the hyperbolic geometry of the rollers, allows the profile to rotate forward.

All the rollers are mounted on motorised and independent supports, flowing within bushings that allow the operator to modify the height and the angle of the system. Acting on the vertical axis is possible to adapt the straightening machine to different diameters, and to correct the line of the advancement of the profile in order to create a process of metal stressing and to get products perfectly straight.

The MRT series includes three models with different capacities: MRT5 for tubes and bars with diameters from 3 to 11mm; MRT5M for diameters from 10 to 30mm; and MRT5M50 for diameters from 25 to 50mm.

The MRP series products are designed to straighten square, rectangular or complex profiles, hot or cold drawn. The devices consist of single or double straightening groups of motorised rollers, adjustable in height with a decimal display system.

Acting on the vertical axis is possible to correct the line of the advancement of the profile, in order to achieve perfectly straight products. Simply replacing the traction rollers allows processing of almost all the profiles included in the working range.

The MRF series devices are completely managed by PLC, and are designed to straighten tubes and bars made of steel or other materials, hot or cold drawn, and wrapped on coils.

Violi Srl was founded in 1992 and originally specialised in designing and manufacturing industrial machinery, typically used in goldsmith processes.

Research and innovation have been vital to the activity of the company over the years, and it has developed many technologically advanced machines.

Fom 5 to 10 October Violi will take part in the EMO 2015 show, the world machine-tool exhibition, which will this year take place at Fieramilano in Milan, Italy.

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Bendcheck assures straightness

ABSOLUTE straightness is one of the concise quality criteria in the production of round bars and pipes. Bendcheck – the precision laser measuring system from Zumbach – monitors bending continuously without missing any sections directly within the production process. This replaces the ODAC® laser measuring heads used currently to manually spot test with a non-contact online test for bending. Apart from the gain in quality the manufacturer also saves considerable time through the use of the online data check.

Bendcheck can be used for synchronous real time scanning in the production process; quality assurance directly after the straightening process; direct integration in the production process (customer-specific installation); and no time-consuming and laborious checks with manual tools.

The system measures the position and diameter of the product at three different locations along its axis. Bendcheck calculates the deviation of the central measuring head in respect of a virtual straight line projected from the position of the left head to the position of the right head, from the data. This value is either divided by the distance or by the distance squared. The operator can select the preferred formula for the bend calculation. Thanks to this information, the bend of the product is continuously calculated and graphically displayed.

Customer-specific system installation with three ODAC® 18XY laser measuring heads

Bendcheck can be operated in a continuous measuring mode without encoder, or in a triggered mode where the measurement pulse is generated by an encoder along the cutting edge. The respective data is clearly shown on a display board. Diameter, absolute bend value, bending angle as well as the individual and current measurements of the three measuring heads are clearly shown. Additional statistics complement the informative value of the measurement.

Zumbach Electronic AG – Switzerland
Website: www.zumbach.com

Square and rectangular sections

THE latest generation of linear cage forming technologies has been put into operation in North Europe, at a manufacturer of high quality stainless steel tubes.

The complete, fully automatic tube mill, including surface finishing, tube end facing, unloading and packaging sections, can produce square tubes from 40 x 40mm to 120 x 120mm, and rectangular tubes from 50 x 40mm to 180 x 60mm, in a thickness range from 2 to 8mm in stainless steel austenitic, ferritic and Duplex grades. The maximum mill speed is 80m/min.

The mill can produce all square and rectangular tubes within the size range, without change of any rolls in forming, welding, sizing, straightening and clamp jaws in cut off.

The main advantages of the technology include facility and rapidity in changing the profiles dimensions; simple maintenance; and simplicity in software utilisation.

The mill makes it easy to produce both square and rectangular tubes by means of computerised control, where data is stored in order to produce all the tube sizes in the range. The PLC records all the utilised data, and it is possible to create particular 'shapes' with different angles. From the PC it is possible to see the 'tube flower' to be produced.

The average time for changing tube set-up dimensions is around ten minutes. All the electrical equipment and motorisation are engineered to save energy, and to recover power and reuse it in the line circuit.

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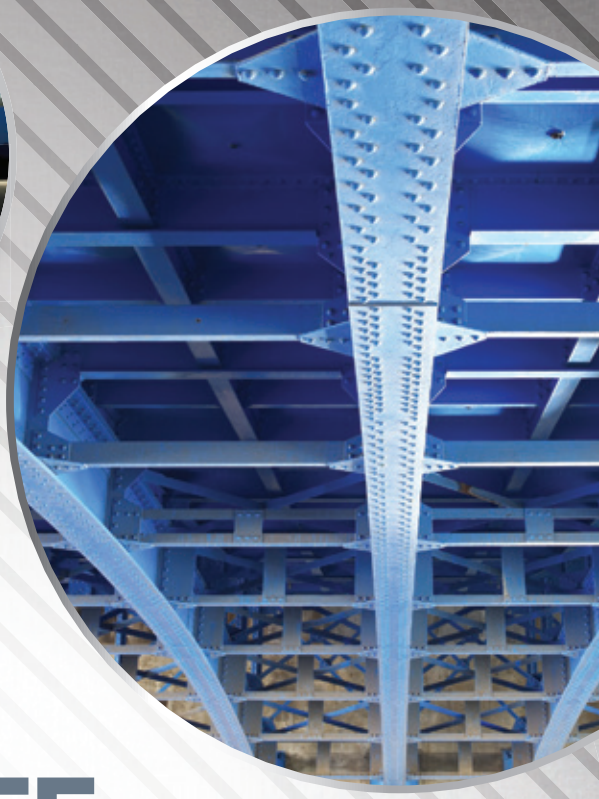
Double-sided turkshead straightener

RAFTER Equipment Corporation has finished a new RT-2000S raft set and double-sided turkshead straightener for a North American tube producer. The equipment will replace older American Electric Fusion (AEF) tube mill equipment that is worn and has lived its useful life. The company reversed engineered the raft plates and drive shaft connections so that they would work with the existing equipment. The new driven and idle side roll stands will include updated quick-change features and be more robust than the ones they replace. The turkshead will offer the same improvements. Rafter Equipment Corporation manufactures tube mills, pipe mills and roll forming machines.

Rafter Equipment Corp – USA
Website: www.rafterequipment.com



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New solution for mechanical bonding of CRA lined pipes

CRA lined pipes or CRA clad pipes are corrosion-resistant pipes consisting of a corrosion-resistant inner pipe and a carbon steel outer pipe that can withstand internal and external pressure.

Potential applications for pipes with CRA material are subsea pipelines for sour gas and oil, water reinjection systems, saltwater pipelines, and process pipes in the chemical industry. CRA lined pipes are mainly used as flow-lines, riser pipelines, interfield pipelines and water injection pipelines.

There are two methods of bonding the CRA material to carbon steel: metallurgical bond (CRA clad pipes) and mechanical bond (CRA lined pipes).

The metallurgical bond between two different metals (bonding of plates) is achieved by hot rolling, co-extrusion, weld overlay or explosive bonding. A disadvantage is the limited number of suppliers due to the demanding and complex manufacturing process of metallurgically bonding the plates, which creates high costs.

Mechanical bonding between the backing steel pipe and the CRA pipe by use of spring back variation can be performed by means of hydroforming or by a full length pipe expander.

There is growing demand for CRA lined pipe due to the fact that corrosive conditions are expected to increase as produced fluids contain higher water cuts and greater concentrations of H_2S and CO_2. In addition, these increasingly corrosive products need to be transported over longer distances, with higher pressures, and in an environmentally friendly way.

Fontijne Grotnes has found a solution to bond the backing steel pipe and the CRA pipe with the company's full length pipe expander, for which a patent is pending. The company has more than 40 years' experience in designing and manufacturing full length pipe expanders for the LSAW pipe industry.

The expander head, actuated by the main cylinder and horn and drawbar expands the pipe sections from the inside. This ensures a constant production process according to API 5L through calibration of the pipe over the full length in roundness and diameter; straightening of the pipe; testing of the pipe weld seam; stress relief of material in way of the weld zone; and improvement of mechanical properties by exceeding the material yield strength.

For bonding CRA lined pipes by means of a full length pipe expander, the inner and outer pipe are telescopic aligned and subsequently positioned on the infeed and outfeed loading cart. The pipe is fed incrementally with the use of the loading cart over the expander head.

Fontijne Grotnes Group – Netherlands
Website: www.fontijnegrotnes.com

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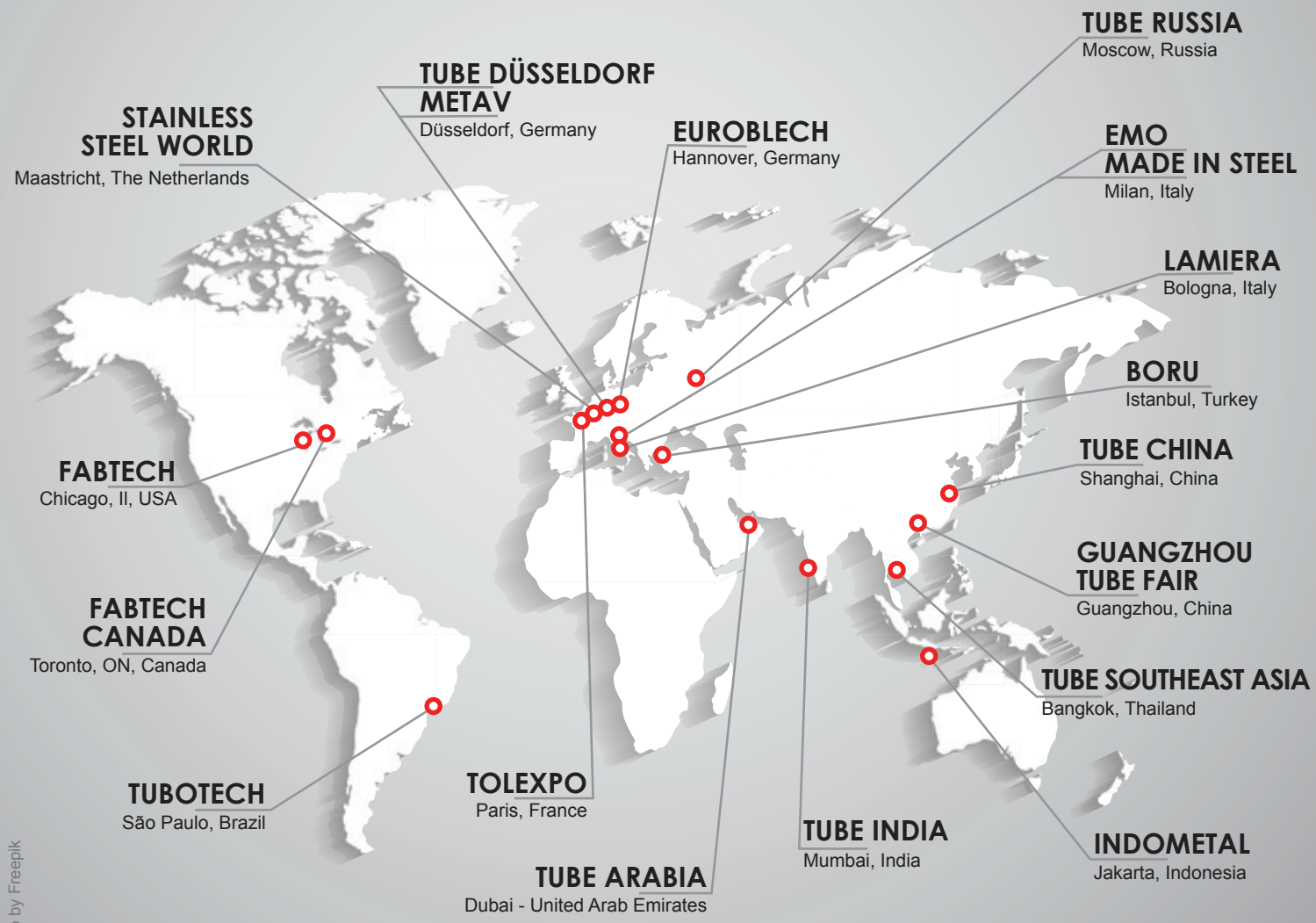

International sales team: Tel: +44 (0)1926 334137 - tpt@intras.co.uk

这一栏目专为我们的中文读者介绍国际管道行业的最新技术和行业新闻的综合信息。

金属管道生产的在线质量保证

THE Machines公司以高效率和低能耗生产金属管道成型设备。使用这些机器设备，有一个精确的成品管道质量检测系统是非常重要的。

THE成型和焊接技术能以高生产效率对几乎所有已知的金属进行成型加工和焊接。

该系统核心部分之一是在线质量检查。

公司开发和推出了新的焊接产品质量检查系统，速度达50米/分钟。涡流检测和外观视觉检测的结合能以很高的精度在线分析生产。

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Tosçelik选用Thermatool焊接系统

土耳其精密钢管生产商Tosçelik Profile and Sheet Ind Co公司已经开始启动位于迪洛瓦西的新钢管厂，将采用Thermatool公司制造、运送和安装的感应焊接系统。

Thermatool目前在土耳其有275套固态焊机，而Tosçelik目前共有近40套在运行中的Thermatool设备。

Thermatool的CFI和CFD系列感应焊机被选用并安装在奥斯曼尼耶工厂，好处是可使用HCT（热影响区控制技术Haz Control™ Technology）焊机。提供给Tosçelik的这些装置可利用变频和双功能（感应和接触焊）内置的系统。

Thermatool销售经理Jon West评价到：“变频技术使Tosçelik能够在同一台轧机上生产几种不同材质的管道，尽可能利用现有的焊接辊以及相同基础的轧机设置。我们还推荐和指定两台CFD双功能（感应/接触焊）焊机，在一个系统里提供两种焊接工艺，可以快速地转换。”

Tosçelik的Suhat Korkmaz补充道：“为确保产品质量，我们工厂总是使用高科技设备。多年来，我们现有的钢管厂一直成功使用着各种Thermatool加热和焊接设备。”

Tosçelik公司生产各种规格的精密管道，如API 5CT-5L管道、镀锌或非镀锌水管和气管道、天然气管道、重系列机械管道、工业用管、脚手架管，和标准的、聚乙烯、聚氨酯、环氧树脂、涂底漆的或镀锌的方形、矩形、异形和圆形中空型材。Inductotherm Heating & Welding 是 Inductotherm Group 集团的一部分，是Thermatool、Radyne、Banyard以及Newelco的欧洲生产和技术总部，生产适用于金属加工行业的各种感应加热和焊接设备。

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将轴向和辊轧成型优势结合起来

transfluid 组合成型机REB 645-5 SRM 622

在管道成型过程中，常常会用到焊接这种耗时且昂贵的方法，尤其是管道连接。transfluid Maschinenbau公司一直在寻找一种更有效的方法来应对这一挑战。

董事总经理Stefanie Flaeper对这一技术选项解释到：“此处成型几何体是满足这些大部分要求的答案，能提供明显的经济优势。这些几何体具有加工的绝对可靠性和功能性。尤其是0型环成型几何体对很多产品来说都非常重要，比如汽车行业。几何体，包括配件的法兰，在后期也常常需要。”

这种成型最好是用能同时进行模锻和轧制的机器来完成。公司专门开发的transfluid组合系统在需时可以在模锻过程中进给这种外部组件，并精确定位和固定住这些组件。这一过程也生产在下游轧制过程中可能需要的预制成型件。辊轧形成最后的几何体，加工出用于最佳应用的表面。Flaeper女士解释说：“加工过程中公差基本上与生产后的公差一致。轧制过程对精度的要求是必须的，因此轧制头是数控控制的，而且所有轴的运动是可自由编程的，甚至包括搭接。”

组合机器能可靠、高效地加工，即使是针对大直径管道。对于小管道，transfluid装置节能而且是由伺服电机准确驱动的。几乎可以加工所有类型材料。

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汽车制造商优质管道检测

随着汽车工业不断地提高质量，管道生产商也开始转向技术先进的检测设备。为满足这一需求，Magnetic Analysis Corp (MAC)公司为精密钢管制造商Tube Products of India公司在印度Thiruthani的新工厂提供了综合性多功能检测系统。

最近试运行的设备专门针对液压缸管道市场生产大直径、厚壁、冷拉和焊接钢管。多功能检测系统包括超声波和涡流检测技术，确保100%覆盖并精确检测内径、外径和内部纵向和横向缺陷以及壁厚变化的区域。同时利用超声波检测和涡流检测技术的优势可提供更准确的检测结果。

该系统包括MAC的16通道Echomac® FD-5超声波检测仪、180毫米的超声旋转检测仪以及MultiMac®涡流检测仪。

Echomac超声旋转检测仪是MAC多功能检测系统的一部分，用于Tube Products of India公司Thiruthani工厂液压缸管道提供检测

16通道超声波检测仪能100%扫描管道表面，用8个传感器检测纵向缺陷，另外8个检测横向缺陷。还有四个额外的传感器检测壁厚。

涡流环形线圈检测适合检测超声波检测有时会遗漏的短缺陷。这样就可以完成全面的缺陷检测。

系统额外的组件包括自动控制装置以及确定了缺陷区域和位置的检测报告；5个双夹具，能精确地导向、定中以及输送管道通过检测；去除涡流检测残余磁力的退磁器；以及为超声波检测提供耦合的水循环系统。

该系统能检测的焊接冷拉精密管道的尺寸范围为直径40到180毫米、长4到12米以及壁厚3到12毫米。

Tube Products of India公司的综合管道生产设施为国内和国际汽车制造商提供管道，以及为发电厂和锅炉提供换热器管道。

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塑料颗粒中的杂质检测

高级材料的纯度是影响成品质量的决定性因素，这些材料用于医疗技术、薄膜挤压、航空航天和汽车工业，以及超高压电缆生产。生产和使用完全清洁的材料是至关重要的。

Sikora公司的Purity Scanner纯度扫描仪是一个用户至上的系统，能在塑料颗粒进入下一个生产过程前提供100%在线检测和自动分选。

Purity Scanner将X射线检测技术与双轴光学检测系统结合起来。能够检测颗粒内部和表面的小至50微米的金属和有机杂质。专门开发的X射线检测技术使Purity Scanner甚至能够检测彩色颗粒的杂质，并自动分选出来。

Purity Scanner还有一个在设备内输送颗粒的独特系统。颗粒的进给由不锈钢振动送料机完成。这个运送系统是加压密封的，因此材料不会接触空气中的灰尘其他污染物。这种组合可以确保系统能分选出污染物，而且不带入新的污染。运送系统集成在密封外壳里并稍微加压，避免污染物进入系统。如需清洁系统，可以快速方便地打开系统。清洁理念的开发是为了满足顾客运行不同材料或颜色的需要，以及他们想在更换材料时清洁系统。除了清洁，还可以将整个运送系统更换成干净、密封的系统。

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焊机升级改进总谐波失真度

EFD Induction公司宣布其低功率Weldac焊机将可以选择使用12脉冲二极管整流器。之前的低功率Weldacs焊机用的是6脉冲整流器。新整流器已经被证明有助于将电流总谐波失真度从典型的25-30%减少到约11%。

谐波失真的问题，或通常被称为“谐波”，是电力利用和电力系统管理器日益关注的问题。非线性荷载的扩散造成干扰，从而影响设备性能和总供电电压。新的12脉冲二极管整流器可达550千瓦。需要时可以提供自耦变压器，还可以安装额外的小型外部谐波滤波器来满足电气和电子工程师协会制定的指导方针。

EFD Induction公司固态Weldac焊机提供的从电源入口到焊接线圈测得的总效率很高。这种效率加上新的12脉冲二极管整流器，有助于将电力消耗和冷却水消耗降到最低。

新的12脉冲二极管整流器在Weldacs焊机单机柜里，输出功率为550千瓦。EFD Induction的大功率Weldac焊接系统也可选用12脉冲二极管整流器。

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EFD Induction 的小型固态*Weldac* 焊机现在可选用*12*脉冲二极管整流器

方形和矩形型材笼式成型技术

最新一代线性笼式成型技术已在北欧优质钢管制造商工厂投入使用。

这套全自动轧管机，包括表面精加工、管端车削、卸载和打包部分，可生产厚度为2到8毫米，材质为奥氏体、铁素体和双相不锈钢的40x40毫米至120x120毫米的方形管道以及50x40毫米至180x60毫米的矩形管道。最大轧制速度为80米/分钟。

该轧机可生产尺寸范围内所有方形和矩形管道，在成型、焊接、定径和矫直过程中无须更换轧辊，也无须更换切割夹具。

该技术的主要优点包括外形尺寸改变方便、快速，维护简单，软件使用简单。

该轧机通过计算机控制可以轻松地生产方形和矩形钢管，数据储存在计算机控制装置内，以便能生产范围内所有尺寸的管道。

可编程逻辑控制器记录全部用到的数据，可以在不同的角度创建特殊的“形状”。可以从电脑上看到将要生产的“管道生长情况。”

管道尺寸设置更换平均用时约为10分钟。所有电气设备和机械化装置都 设计为节能式，能恢复电力并在线路中重新使用。

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数控冲压生产线

APOLLO Ltd公司的Twin Classic数控冲压生产线配有无刷式机械化ALX棒材进料器， 棒材进料速度可达到1米/秒。

该生产线中心液压动力装置上双发动机装置——每个汽缸一个，每台冲压机有三种冲压速度可选。可以根据冲压要求去掉其中一个汽缸，或两种不同的程序可以同时进行。这适合大、中型生产，也可以根据要求装配第三个垂直头，从棒材的三面或四面进行冲压。该机器快速、准确，同时可以冲压一根或多根管道。装有棒材装载/卸载储存箱的机器可以不需要操作者操作，而且可以冲压半椭圆或矩形管道，而且不起泡。2米长的棒材加工周期大约为50秒。

Apollo还生产一系列通用卧式压床，工具可以方便地更换，以便对各种形状的材料进行弯曲、冲压或剪切。该机床是液压控制装置，由齿轮箱向汽缸供应压力。

有P170、P320、P400 和 P620四种不同的机型，分别为17、32、40和62吨——可以选配数控系统和可编程电机驱动的侧面挡板。

自润滑汽缸位于工作臂同一个轴上，可以充分利用释放的液压力。

该设备使用三个螺旋钩销就可以改变，操作者在零点几秒的时间就能完成，同时保持 机器的继续运行。根据所使用工具的型号，工作滑块的冲程长度可以改变，消除了空转时间。

该压床适应在自动化过程中使用。可以连接到自动数控敷设机，用于大量冲压和剪切操作，然后用键盘输入相关编程数据。

Apollo的Twin Classic冲压生产线

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确定测量偏差

Zumbach Electronic AG公司表示精确校准测量技术意味着确定测量装置的测量偏差。在校准过程中，测量仪器无技术干预，在不是调整的情况下，测量仪器应设置或调整到保持尽可能小的测量误差，或确保测量误差数不超过误差限制。

测量装置的正式校准应按照检测权威机构的规程进行，并标上相应的印章。检测机构会确定相关的测量装置是否符合相应的必要条件。

校准有效期根据实际需求而定，如制造信息，质量标准要求或公司内部规定以及客户的具体规程，而不是有固定的使用有效期的正式校准。

为了能够比较测量结果，必须能够通过一系列与国家或国际标准装置的比较测量值来反馈信息。因此，使用中测量装置的显示，或代表材料，必须与标准装置进行一步或多步比较。每一步都用标准装置进行校准，标准装置已经由更高水平的标准装置校准过。根据标准装置的排列等级——消耗或工厂标准，从参考标准装置到国家标准——按校准层次结构点进行。可以延伸到从内部 校准实验室，到公认校准实验室，最后到国家度量衡机构。

不同的标准、规程和准则对执行专业校准有效。装置能校准前必须满足基本要求。

为了进行校准并便于观察，必须知道一些必需的实际条件。当公司决定遵守具体的标准或准则时，或产品的生产应遵守当地法规时，仪器校准规则是非常重要的。

标准和规程如ISO 9000系列对所有工业国家的质量保证来说越来越重要。可能就会明确要求对产品质量有直接或间接影响的所有检测设备都必须校准。这包括比如生产过程中作为参考的检测设备。

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激光焊机用于薄带钢卷材端头焊接

Guild International公司新的激光焊接技术能在薄如0.003英寸的带钢上焊接卷材端头。

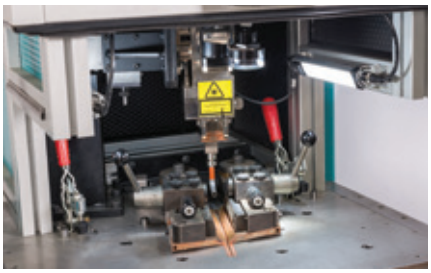
目前的技术采用氩弧焊焊机能焊接0.008英寸的带钢，而且需要引弧和收弧板。Guild的新焊机，名为LHMA激光焊机，能在薄如0.003英寸的带钢上完成完全边对边的焊接，而且不需要引弧和收弧板。

该焊机使用光纤激光器通过连接到聚焦头的光纤电缆提供焊接所需的能量。聚焦头将能量集中成小光点，完成钢、不锈钢、铜及铜合金和铝材的焊接。

该焊机还包括一个摄像头和人机界面触摸屏，使操作者能够在焊接前观察带钢的组对。卷材两端的切断、对准和焊接只需要两分钟。

焊接计划可以储存起来，以便快速检索，参数可以通过人机界面触摸屏轻松的设置。还提供联锁安全罩确保操作者安全。

对这一技术感兴趣的客户，Guild International公司工厂里有一个全面运转的LHMA激光焊机，为客户提供客户指定材料的焊接样品。



Guild的LHMA激光焊机近视图

公司提供一整套卷材端头焊机，适用于几乎所有应用，包括适用于各种厚度和宽度的激光焊接机。专利产品系列包括Zipwelders™、电阻焊机、半自动剪切-焊接机以及带材储存器，包括Supercoils®和Superloops™。

Guild还生产全套旋转和截剪机，以及开卷机、高速漏斗机以及压扁机。公司的工程师团队可以帮助确定客户需求，确保设备设计适当，并能与现有设备兼容。

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蛤壳式管道冷切机

DWT公司将哈壳式管道冷切机加工能力扩大到72英寸。这种哈壳式管道冷切机金属切割效率高、可调整范围大而且易于设置。这种便携式切管机用于管道切割和开坡口，避免了管道切割中的热影响区。

专用于重型厚壁管道切割，切割速度以及设置都非常快，因此现场操作也很快。DLW-HD哈壳式切割机能够在很多应用中进行安全、精确地切割。稳固的框架结构结合高质量小钢齿轮和轴承为具有挑战性的工作提供了坚固的结合。

特点包括带分离框架技术的冷切机，用于环状管道切割。

紧凑的尺寸可用于受限空间作业；管道焊接时快速、安全地夹紧和调整；以及用于管道焊接坚固的管道冷切机。DLW-HD用于外径48到72英寸、壁厚100毫米内管道的冷切割。这种分体式构造的切管机可安装到管道组装延伸上。特殊用途，如远程控制，可用于受限空间管道焊接。

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板材铣边机

LINSINGER的板材铣边机能为焊接提供完美的形状，能处理长12米、宽3米、厚150毫米的金属板材，甚至更大的尺寸也可以使用。

Linsinger的PFM 45/500数控铣边机的其中一个用途是用于石油和天然气工业储罐的生产。该机器能以极高的精度对金属板材进行铣边加工，这是实现良好焊接结果的先决条件。

精确的尺寸以及焊接边缘的完美准备对储罐制作有重要影响。PFM 45/500数控铣边机的公差超过±1毫米宽度、±2毫米长度，轻松地超过了相关质量标准。该机器使用Linsinger标准设计的高频轧制用圆周铣削刀。

高频铣削不产生热影响，因此也不会改变金相结构（即没有篮变）。这样可以确保质量一致，无热损伤或弱点。

一旦待加工板材放在辊道上，并读入数据后，一切都是全自动运行的。板材根据输入的数据对齐，并液压拉紧。然后配有硬质合金刀片的圆盘形切割头开始运行。在首先铣削纵向和横向边缘后，客户的起重机将板材旋转180°，进行余下两边最后的铣削。

所有形状加工都是在单程完成，不管是否四个面是要相同的形状还是不同的形状都可以。进料速度可以达到一致的10米/分钟。

仿形铣头可以是夹层的，使刀具形状可以根据具体加工要求快速重新配置成需要的铣削外形（如X、Y、N或J）。还有特殊的刀具用于所有边缘加工外形，包括U型。所有加工需要的道具都放在一个箱子里，以便快速更换。

全自动工具更换站使用嵌入每个铣头里的接近内径芯片来检测合适的工具。该系统无需操作者介入。

“高度复制”的Linsinger铣床设计解决了在重型板材波动时边缘外形不一致的潜在问题。

该设计确保板材全长的边缘外形一致，即使它是不完全平整的。

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Linsingerplate铣边机

Elotherm TemperLine™ – benefits of induction heat treatment for tube and bar material

By Dirk Schibisch of SMS Elotherm

Induction quench and temper (Q&T) has become firmly established practice, particularly in applications that require precise, fast, flexible and repeatable heat treatment of tubular and bar material.

A process in successful use for heat treatment of bar material for many years, induction quench and temper has recently been extended to cover tubular products, mostly for OCTG (oil country tubular goods), including technologies for pipes with upset ends.

Very high flexibility

Current demands for a reduction of stocked material and the large number of different materials lead to a flexible just-in time production strategy in heat-treatment shops, with small batch sizes of just 30 to 50 metric tons.

In many cases this means that batches with different material dimensions and grades need to be heat-treated at different quench-and-temper temperatures several times a day.

For a change of the batch, the whole induction line can be run empty within a few minutes and set up again for the next batch with minimum work effort. To do so, the owner has at his disposal high-speed tool changing systems to ensure that operation can be changed over to energy-efficient heating coils with a suitable diameter within a few minutes.

Design of a typical Elotherm TemperLine™ Q & T induction line for long products

Excellent homogeneity of material hardness

A characteristic feature of an induction quenched and tempered workpiece is its very homogeneous microstructure and hardness. Actually, these results are not exclusively due to the induction principle alone, but mainly to combining the process technology with a matched mechanical and electrical design of the induction line.

In the TemperLine™ induction quench and temper system by SMS Elotherm, the material to be treated sequentially passes through the whole process of austenitisation, tempering and, if necessary, soaking.

In the process, each incremental cross section of the long product is subjected to identical heating and quenching conditions, as the passage speed is constant throughout the whole process. This then results in the correspondingly high homogeneity referred to the hardness and microstructure of the material.

High strength and notch impact strength

In conventionally fired units, the tempering process takes place within a temperature range of 400 to 600°C for a long period of time, to achieve a reduction of the hardness or, respectively, tensile strength via the microstructural transformation after soaking. However, an undesired side effect is the so-called “temper brittleness”, which significantly reduces the notch impact strength.

This effect arises through the precipitation and recrystallisation of carbides at the grain boundaries during the transformation of the microstructure, especially in nickel-chrome steels that are susceptible to such an effect. This is in contrast to the induction quench and temper process in which the critical temperature range between 400 and 600°C is passed so quickly that the described temper brittleness with precipitation of carbides cannot arise. The material retains its good strength characteristics and notch impact strength without becoming brittle.

Typical homogeneous temperature between head and tail of long products moving through an Elotherm TemperLine™

Easy change-over of the induction coils to a different diameter

It is for these reasons that, for example, the safety-critical fastener elements in offshore platforms for the production of oil and gas are heat-treated with the described induction technology.

Heat treatment without surface decarburisation

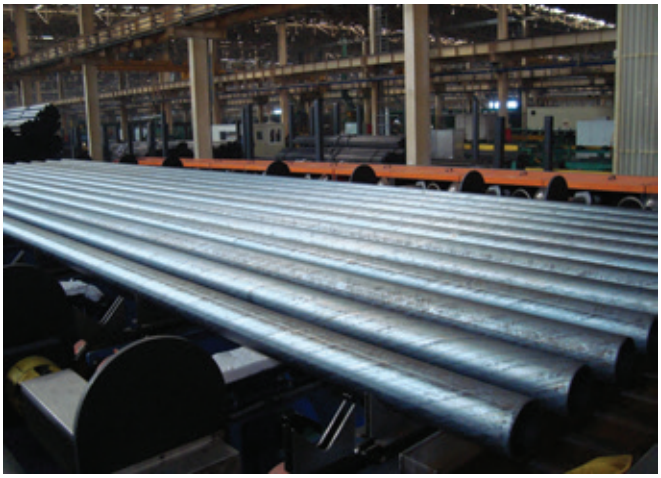
Due to the long residence time of the heated material at high temperatures, especially in the austenitic area, an undesired surface decarburisation of the heated material normally takes place in conventional combustion furnaces.

This negative effect weakens the workpiece in the area close to the surface and leads to an inhomogeneous hardness over the whole cross section of the material. No such decarburisation takes place in induction quench and temper, as the material is kept at a high temperature for a very short period of time only.

The microstructure produced by the induction heat treatment does not contribute to a further decarburisation of the surface, but, on the contrary, even reduces the ferrite pockets. The extremely short preheating and residence time at austenitisation temperature also minimises the formation of scale during heating. In this way, not only the material yield is all in all higher, but especially the service life of the roller tables is significantly extended.

In conventional heat treatment lines, these conveyor units are heavily stressed by the strongly abrasive effect of the brittle-hard scale and they wear rapidly, with the rollers having to be re-machined or replaced frequently.

The result of the induction Q & T process of tubes: convincing straightness



Innovative solutions for new products

The exploration of some oil or gas fields requires casing tubes for lining the actual drill hole that must withstand extreme loads. For example, in many particularly deep drill holes, low ambient temperatures or salt water require the use of casing tubes that must satisfy very stringent requirements in terms of strength or leak proofness. These casing tubes typically have an outside diameter from 5 to 10¾" with upset-end diameters of up to 16".

The special challenge in the induction process lies in the substantial difference in weight between the straight tube body and the upset ends, which according to the relevant specification API 5CT may amount to 65 per cent.

To be able to still have a uniform austenitisation temperature and homogeneous hardness and microstructural conditions after tempering, additional heating of the upset ends is needed. For this, induction preheating coils are arranged upstream of the actual austenitisation system.

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Website: www.sms-elotherm.com

Flexible enclosure welding

By Dr M J Fletcher, Delta Consultants (Huntingdon Fusion Techniques)

Many of the metallic materials in common use now are prone to contamination when in contact with atmospheric gases, such as oxygen, nitrogen and hydrogen.

This is particularly the case when this contact occurs at the high temperatures prevailing in fusion welding.

Introduction

Control of contamination can be effected in the majority of cases by shielding the local welding area with a protective inert gas such as argon, as in GTAW (TIG welding) or by introducing a protective slag as in MMAW (stick electrode welding).

With many metallic materials, however, including some titanium and nickel alloys, more stringent precautions are necessary, and to ensure satisfactory weld quality the entire joining process needs to be undertaken inside a vessel from which all potential contaminating products have been removed.

A glove box also provides the means of providing protection against contamination by using an inert gas such as argon to replace air by 'flushing' or 'purging'.

Purging has become the preferred term in this context. However these are still relatively expensive to manufacture.

For many years the cost of metal enclosures precluded all but the major companies taking on work involving fabrication of nickel and titanium alloys.

To the rescue came Huntingdon Fusion Techniques HFT®, a decade or so ago, with the introduction of flexible enclosures that exploited the opportunities offered by advanced engineering polymers.

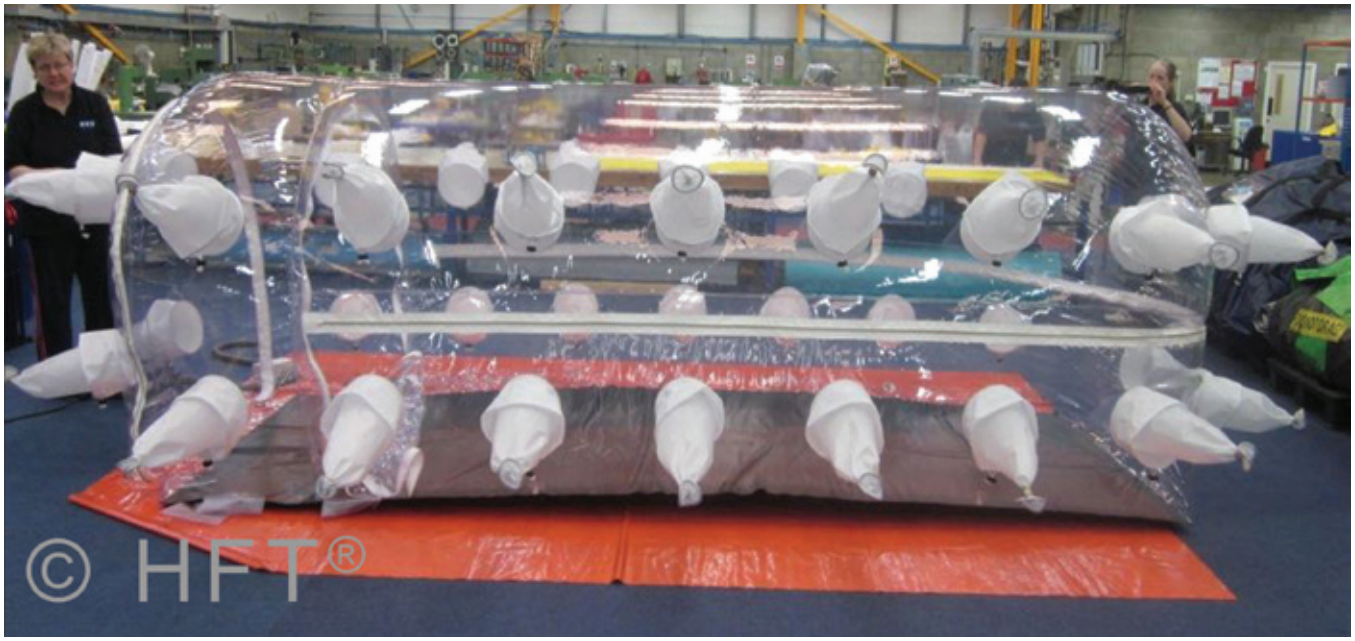
These innovative products offered significant attractions over both vacuum and glove box alternatives: a significant reduction in cost, very small floor footprint and availability of a range of sizes from stock.

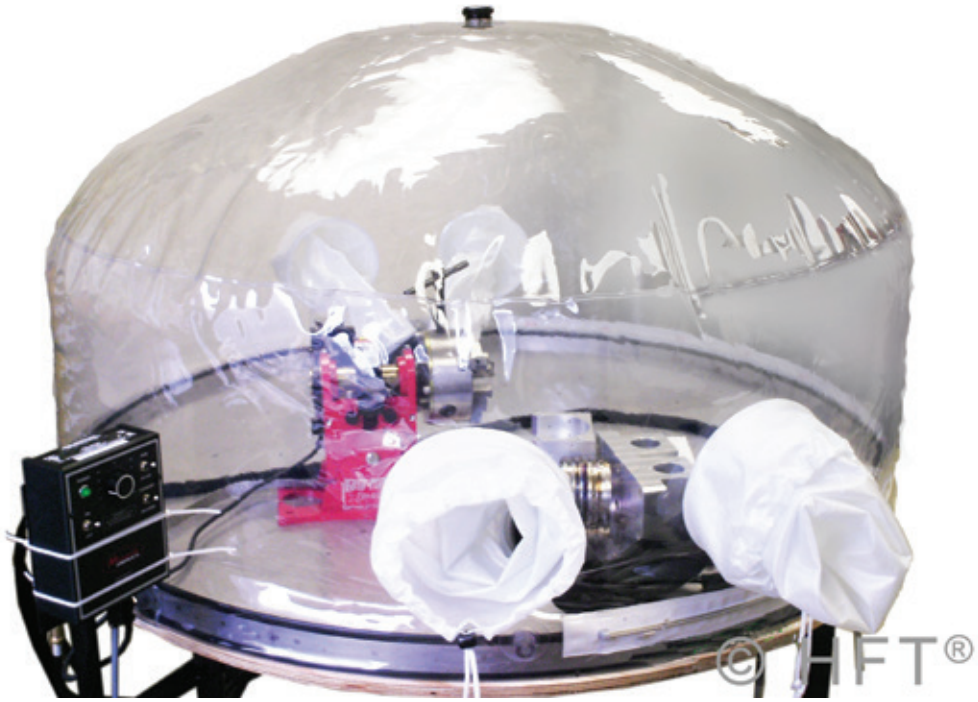
Since that time the HFT® product has been developed and is rapidly becoming the preferred alternative enclosure.

Technical specification

The vertical sides are made from translucent material and the top is constructed using optically clear sheet. Ultraviolet stabilised engineering polymers are used throughout during manufacture. Material thickness is nominally 0.5mm (480 microns).

A principal access zip is fitted and this has a total length typically 60 per cent greater than the enclosure diameter, ie a 900mm enclosure will have a 1,400mm-long main zip.





Additional entry points provide for operators' gloves. A service panel incorporates access ports for welding torches, electrical leads and cooling water supplies.

A purge gas entry port and an exhaust valve to vent displaced gas to atmosphere are incorporated into each enclosure.

In the unlikely event that a repair is necessary, it can be carried out by the user on-site. A kit is provided with each enclosure for this eventuality.

Cost

Size for size, the HFT® range costs less than ten per cent of a metal glove box and only two per cent that of a vacuum system.

Flexibility

Size and shape can be made to meet customer requirements. Standard models from 0.3 to 3m^3 are available from stock. Weight is very low and the enclosures occupy little space – the collapsed volume of a 1.25m-diameter system is less than 0.2m^3 and it weighs only 8kg. They can thus be moved easily and stored efficiently, so floor footprint is minimised.

Large viewing area

The entire upper section is manufactured from optically transparent ultraviolet stabilised engineering polymer. This offers the opportunity for use by several operators at the same time – ideal for training purposes.

Multiple access points

Systems can be manufactured with numerous access locations for personnel gloves and gas/electrical entries. Large leak-tight zips afford easy access for components.

Flexible Welding Enclosures® are now used by leading manufacturing companies across the globe.

The aerospace, automotive, biochemical, medical, food and beverage, semiconductor and nuclear sectors all take advantage of the low cost and ease of use.

All these operations are exposed to some extent to the need for extreme levels of quality control over cleanliness during manufacture.

Contamination introduced during fabrication can so easily lead to loss of strength and corrosion resistance. Particulate contamination raises issues of expensive litigation or at best rejection of product.

All standard enclosures are packed in a box 1,160 x 670 x 280mm, irrespective of size, and their shipping weights are typically:

- 7.2kg for a 36" (900mm) diameter enclosure
- 8.7kg for a 48" (1,200mm) model
- 10.7kg for a 60" (1,500mm) size

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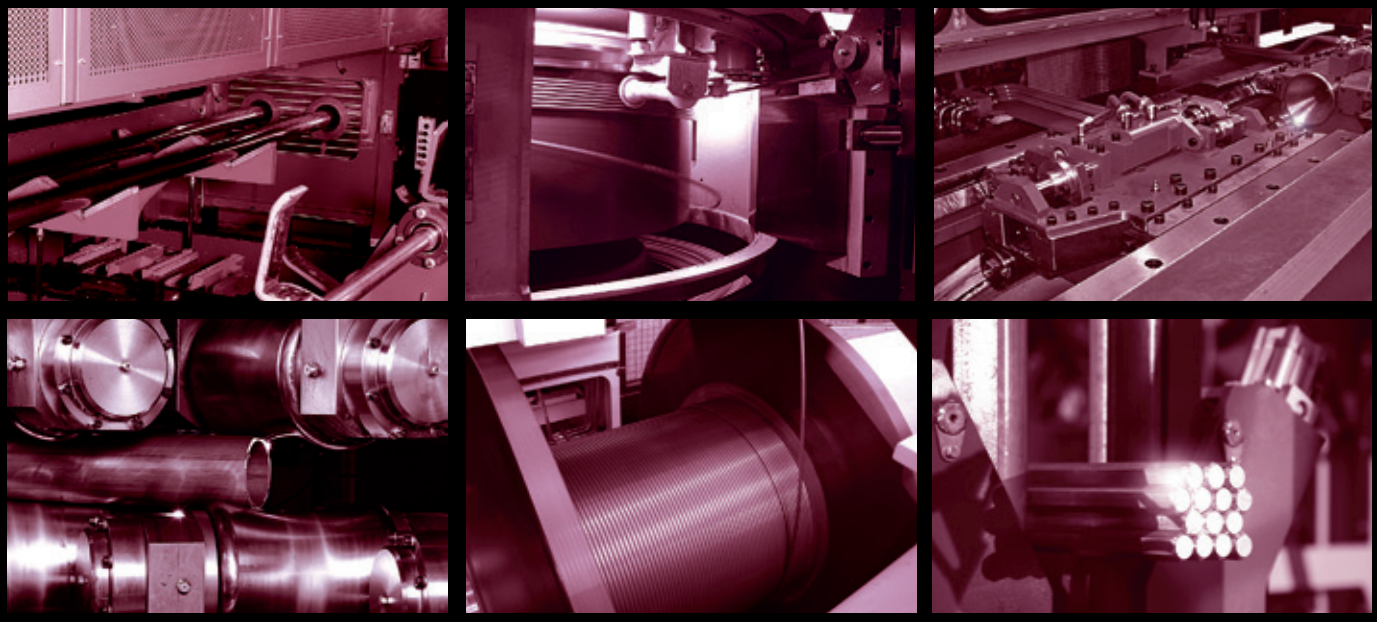

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