The international magazine for the tube & pipe industries

TUBE & PIPE Technology

管道技術

JULY 2017

VOL 30 NO 4 US$33

FIVES TECH + FIVES TEAM

TAYLOR-WILSON PACKAGING SYSTEM, FOR TUBE MILLS OR SEAMLESS FINISHING LINES

Fives designed the Taylor-Wilson packaging system to accommodate a multitude of variables, with three styles of machine to process tubes from 12 to 219 mm with lengths of 3 to 12 meters.

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The bundle is built-up by mechanical layering and transferred downstream to flexible material handling options.

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PIPE MILL 12”/16”/20”/24”Ø ERW/API/HSS

RETROFIT EXISTING PIPE MILLS WITH ADVANCED TECHNOLOGY


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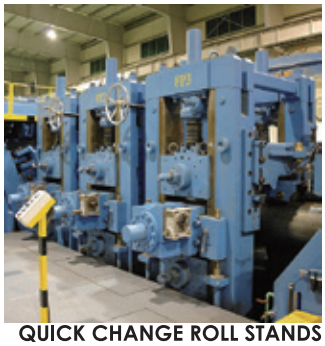
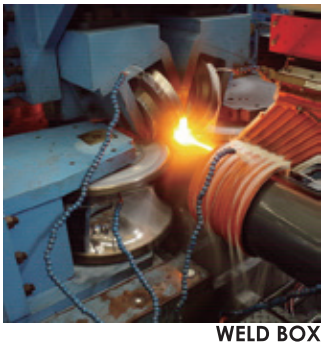
EDGE MILLING


CAGE FORMING SECTION


QUICK CHANGE ROLL STANDS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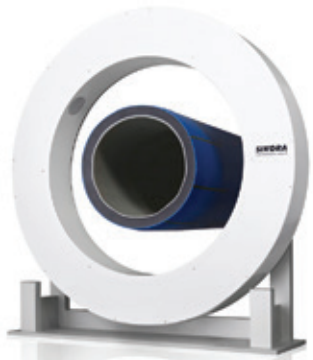

www.sikora.net/centerwave6000

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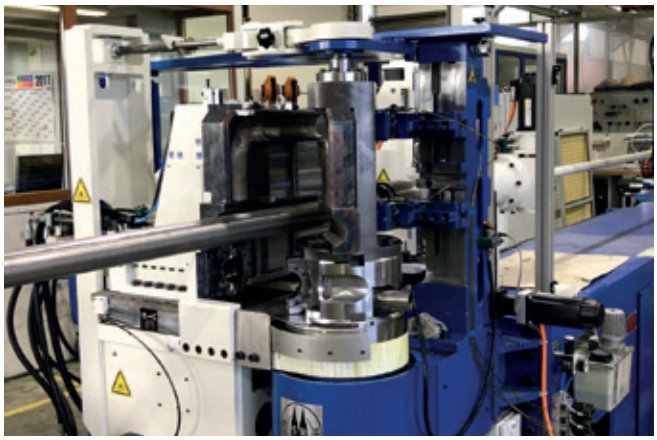

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The July Issue

Rory McBride – Editor

Welcome to the latest issue of Tube & Pipe Technology magazine.

This issue we have features on bending, forming & swaging as well as measuring and marking technology. We also have an in-depth article about TIG welding from Polysoude SAS.

In addition we take a look at two major international tube shows taking place soon – Tube Southeast Asia in Bangkok, Thailand, and Tubotech in São Paulo, Brazil. The TPT team will be at both events so we hope to see you there.

Next up is our September issue, which will have features on cutting, sawing & profiling, and coating, pickling & galvanising. The issue will be distributed at the fantastic FABTECH 2017 in Chicago as well as EMO in Hanover.

FABTECH is always an excellent show and should be even better this year. Messe Düsseldorf has teamed up with the organisers to offer a brand new pavilion for tube producers and suppliers, which is a fantastic idea and a great boost for the industry in the US.

The editorial deadline for the next issue is 7 July and the advertising deadline is 24 July.

Enjoy the magazine.

On the cover . . .

FD Machinery, based in China, is committed to being one of the biggest tube and pipe mill manufacturers in the world.

The company states that the qualities of innovation, quality and integrity are the foundation upon which the company is built.

At FD its commitment to technological advancements is second to none. It employs a world class staff of 40 engineers who have enabled FD to patent 60 distinct features that make their mills some of the fastest, most efficient, and cost effective in the world, the company said.

FD Machinery started business in 1988 in Dalian, China. Its 570,000ft^2 factory is located in the Bay Industrial district of Dalian.

While FD has equipment installed at major tube and pipe manufacturers in China, in recent years its focus has been on exporting equipment. FD Machinery has sold and exported equipment to Asia, Europe, Japan, the Middle East, Mexico and Africa.

FD Machinery is committed to producing the highest quality, cost-effective solution for tube and pipe manufacturing needs. Its innovative thinking has led to many patents that keep it and its customers at the forefront of tube production technology.

FD's designs are user friendly and its equipment is engineered for precision and long life. It employs many different weld technologies – HF, laser, TIG and plasma – to serve multiple industries.

Its products range from slitting to bundling and everything else that is required to complete the task in hand. Its 27 years of experience, worldwide equipment installations, and commitment to excellence make FD Machinery the tube and pipe mill experts you can rely on.

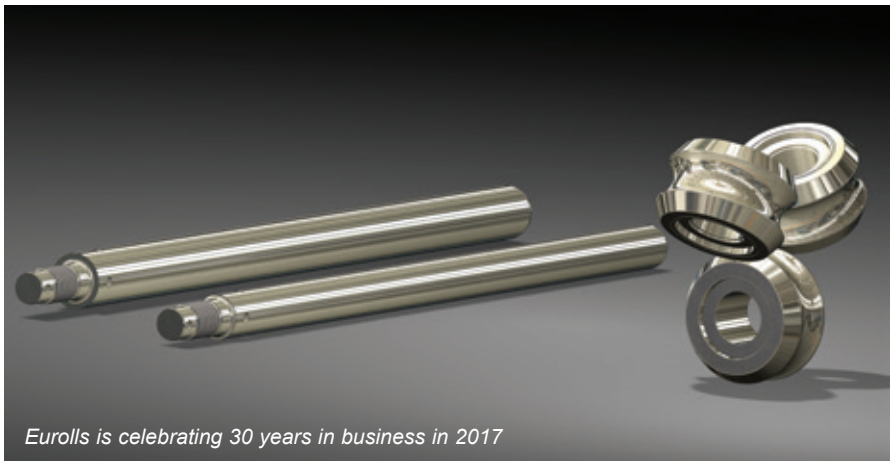
30 years of steel and tungsten roll tooling

EUROLLS is celebrating its 30th anniversary during 2017. Over the last three decades, the company has built its reputation on the production of steel and tungsten carbide roll tooling for various industries, mostly focusing on welded pipe/tube, straightening, wire and continuous casting.

The more recent introduction of rolls for seamless pipe/tube to the company's products range, as well as rollers for special applications (eg rolls for tank head manufacturing), has given further impetus to the activities of the company.

Eurolls continues to grow in an effort to provide its customer base with quality products and service. In addition to the innovation of its own in-house heat treatment facility, recent investments include the acquisition of new equipment that provides the ability to produce larger and longer tooling, shafts and various wear parts.

Eurolls SpA – Italy
Fax: +39 0432 796501
Website: www.eurolls.com



Eurolls is celebrating 30 years in business in 2017

India awaits OTO hollow shape forming mills

APL Apollo, a tube manufacturer in India, has contracted Fives to produce two OTO hollow shape universal forming mills (OTO HSU) for its manufacturing facilities in Raipur (Chhattisgarh State) and Murbad (Maharashtra State).

The OTO HSU tube mill has been specifically designed to produce square and rectangular tubes for the construction industry. The mill produces hollow structural section tubes by direct forming, skipping the traditional step of constructing round tubes and then squaring them.

The range of products can vary from a minimum size of 20x20mm to a maximum size of 120x120mm within a range of four mills, with a maximum production speed of 120m/min. The main benefits of OTO HSU technology include frequent and fast production changeovers due to the universal design (no rolls change); covering of a wide range of dimensions and thicknesses; fast set-up time due to the high automation level and technology; reduced production cost; and average material saving of around 3 to 4 per cent.

Fives OTO HSU mill

At Fives, the tube and pipe business line designs and supplies complete tube making facilities as well as custom-engineered machines under the historical brands of Abbey, Bronx, OTO and Taylor-Wilson, for a wide range of seamless and welded products. The company supplies industrial groups in sectors such as aluminium, steel, glass, automotive, logistics, aerospace, cement and energy in both developing and developed countries.

Fives – France
Fax: +33 1 4523 7571
Website: www.fivesgroup.com

Inventive solutions from ASED in Italy

OBTAINING the right mix between experience and innovation is the main aim proposed by ASED, an Italian brand dedicated to steel tube finishing solutions.

The company has developed a new method to meet the needs of those who want to focus on their business without hassle and annoyances.

Maximum efficiency of mills means not only minimum waste and an important reduction of the total cost of ownership, but also good organisation of working time.

This is possible in a concrete and immediate way, guaranteeing customised solutions.

Among the highlights of ASED's range are modularity for easy adaptability to different kinds of production, delicacy of movement and absence of crawling on tubes already put into the bundle, good functioning and maintenance optimisation.

Space saving, attention to procedures and strong output targets can become reality with a suitable project plan and a wide and efficient range of accessories to help employees.

The company offers a fully automated grooving solution that does not need specialist facilities to be used. Any location with a smooth, strong floor is enough.

The machine is also simple to use, is totally automatic, diameter change is easy and detailed length specifications are not required, granting optimised performances.

A wide range of pipes are easily worked both in length and diameter, achieving the highest possible flexibility.

ASED – Italy
Email: info@asedtubes.com
Website: www.asedtubes.com

DIARY of Tube Events

2017

18-23 September
EMO
(Hanover, Germany)
International Exhibition
www.emo-hannover.de

19-21 September
Tube Southeast Asia
(Bangkok, Thailand)
International Exhibition
www.tube-southeastasia.com

3-5 October
Tubotech
(São Paulo, Brazil)
International Exhibition
www.tubotech-online.com

6-9 November
FABTECH
(Chicago, USA)
International Exhibition
www.fabtech-expo.com

28-30 November
Stainless Steel World
(Maastricht, Netherlands)
Conference & Exhibition
www.stainless-steel-world.net

2018

15-18 January
SteelFab
(Sharjah, Dubai, UAE)
International Exhibition
www.steelfabme.com

27-30 March
TOLexpo
(Paris, France)
International Exhibition
www.tolexpo.com

16-20 April
Tube Düsseldorf
(Düsseldorf, Germany)
International Exhibition
www.tube.de

Grand opening of new manufacturing plant

INDUCTOTHERM Group India held an official dedication ceremony and grand opening of its new manufacturing plant in Ahmedabad, India, earlier this year.

The campus, with a 100,000m² building that contains a 54,000m² manufacturing area, will provide ample space to fully support all of the company's customers in India.

The new Inductotherm Group India plant

It contains modern amenities with automation tools, new machines and equipment and a fully air-conditioned shop floor. The facility includes departments such as electronic assembly, capacitor manufacturing, equipment testing and a customer experience centre.

"We are so proud of our new space, and the opportunity it gives us to better support our community of customers," said Jagat Shah, president of Inductotherm Group India. "We're also able to provide a comfortable work environment for our more than 570 employees, with room to grow as we continue to expand within the Indian market."

Inductotherm Group CEO Gary Doyon commented, "This new world-class facility was constructed and designed to provide state-of-the-art manufacturing and testing capabilities and workflow, so we're making the highest quality products for our customers in this geographical area. In addition, a manufacturing zone for circuit board and capacitor production has been added to this campus allowing Inductotherm Group India to provide Inductotherm Group companies around the world with highly engineered control and power engineering components."

Inductotherm Group India
Email: sales@inductothermindia.com
Website: www.inductothermindia.com

Inductotherm Heating & Welding Ltd – UK
Fax: +44 1256 467 224
Email: info@inductothermhw.co.uk
Website: www.inductothermhw.com

Tube and pipe fair in Colombia

ANDINAFAIRS SAS is a tube and wire event hosted in Barranquilla, Colombia. Its organisers have ten years of experience in fairs and exhibitions based in Latin America.

There are a vast number of companies working with cables, wires, tubes and valves in the local area, making it possible to create a successful commercial fair focused on these products.

The AndinaTube & Wire 2017 show will be highly focused and aims to be a direct and effective way for those attending to find a complete variety of products such as machinery and raw materials related to tube and wire as well as tube and wire products. It will cater for those working in manufacturing, importing, wholesaling or retailing wires, cables, tubes and valves.

If your company purchases or uses these products it will offer a perfect commercial platform.

AndinaTube & Wire Colombia 2017
Website: www.andinatubewire.com

McElroy and Netafim to grow HDPE business

PIPE fusion machine manufacturer McElroy and irrigation company Netafim have joined forces to meet the demand for HDPE pipeline solutions serving the irrigation industry and the growing opportunities in potable water and natural gas.

"There are many similarities in the history of our companies – the team-based reward systems our organisations have and the passion we each share to do our part to make the world a better place," said McElroy president Chip McElroy.

McElroy was the featured equipment manufacturer at Netafim's open house recently, which debuted the expansion of Netafim's HDPE fusion equipment business. Netafim also sent representatives to McElroy's headquarters in Tulsa, Oklahoma, USA, to take fusion operator courses at McElroy University, which also offers training in troubleshooting, maintenance and inspection.

"We are excited about the many benefits McElroy machines will bring to our growing operation," said Netafim water infrastructure manager Ido Goldsman. "They are well-engineered and easy to operate, plus they will enhance our productivity in the field with the added assurance of technical support."

Marwan Ali, owner of Northern Arc, took fusion training for medium- and large-diameter pipe in preparation for several jobs in the water industry and what he expects will be many more jobs in Israel and South Africa. "I've been around different countries, but what we saw here made a big impression on us," Mr Ali said. "It's a good machine and the training is very professional." He also drew attention to the machines' productivity and safety features.

McElroy – USA
Fax: +1 918 831 9285
Email: fusion@mcelroy.com
Website: www.mcelroy.com

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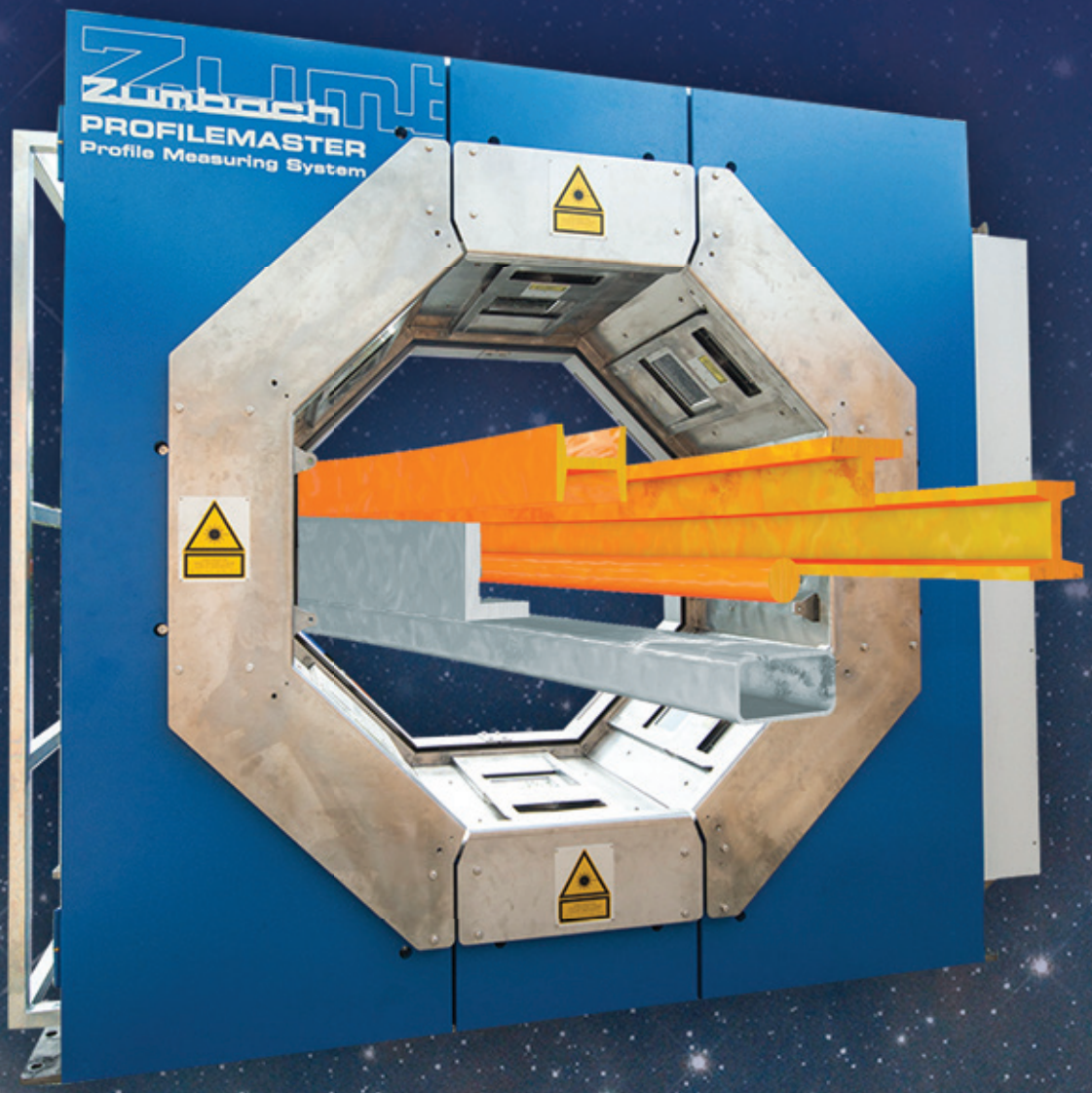

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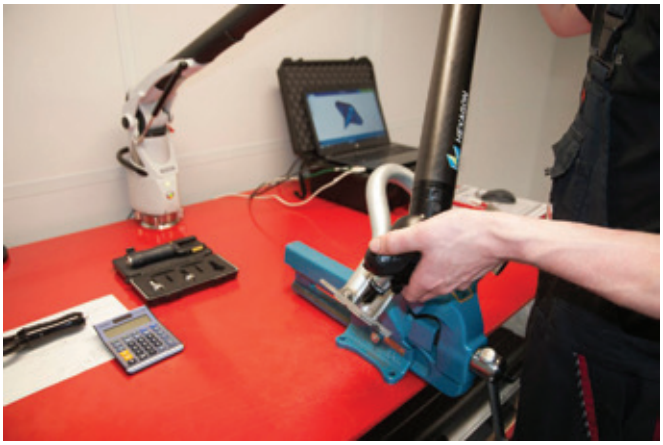
60 YEARS
1957-2017

Introduction of TubeShaper has made tube inspection easier



WHEN a global hydraulics expert needed to bring tube production to a new site, Hexagon's Tube Inspection System was a key part of the solution.

Hansa-Flex is a global expert in hydraulics with subsidiaries all over the world. The business's Dutch operation at Hansa-Flex Hydraulic Solutions in Deventer, Netherlands, provides its customers with full fluid technology solutions covering everything from initial consultancy to the production and installation of complete hydraulic power units.

As well as a wide internal expertise in several technical areas such as hydraulics, electrics and mechanics, Hansa-Flex has an expansive network of partner companies capable of meeting a wide range of customer requirements.

According to Erik-Jan Klomps, technical manager of Hansa-Flex Nederland BV, this approach, which allows for a single point of contact for each project, is very important for end customers.

As part of its core business, Hansa-Flex Nederland BV has to supply its customers with a huge variety of tubes, running to thousands of different models.

A fast reaction and delivery time is among the main needs of Hansa-Flex's customers. In the past these tubes were manufactured and checked at a Hansa-Flex site in Germany, but as the number of customers requiring finished tubes within one to two days grew, Hansa-Flex Nederland BV in 2015 made the decision to invest in its own CNC tube bending machine in order to manufacture tubes itself.

This new tube production operation would require a way to check the finished tubes prior to delivery. With Hexagon Manufacturing Intelligence's Tube Inspection System – a Romer Absolute Arm paired with specialised tube probes and TubeShaper software – Hansa-Flex was able to not only check its tube production runs, but also widen its service, offering tube reverse engineering and on-site measurements to its clients as well.

"Several features of the Romer Absolute Arm and TubeShaper software made it an easy choice in the end: its portability, the plug-and-play hardware, the automatic and repeatable probe recognition, the easy-to-use tube probes and the direct-CNC bender interface met all our needs," pointed out Mr Klomps.

Feedback from other Hexagon customers also influenced the evaluation process at Hansa-Flex as it sought out a best-fit tube inspection solution.

"We contacted other Romer Absolute Arm and TubeShaper customers as a reference," said Mr Klomps. "The Hexagon customers' feedback was entirely positive, which was the crucial point for us.

"Individual customer requirements make an adaptable measurement solution very important," he added. One customer recently needed a tube to fit exactly between two flanges, with critical tolerances at each end. Using the Tube Inspection System, Hansa-Flex was easily able to digitise the details of the flanges and create a new tube geometry to fit the dimensional constraints.

In the past this kind of task created a significant amount of scrap, as the tube needed to be produced and adjusted up to 20 times before an acceptable fit was achieved. Reducing needless production waste in this way has resulted in huge cost savings, both in terms of material and manpower.

The possibilities of the Romer Absolute Arm and TubeShaper have not been lost on Mr Klomp and his team and they have plans to go even further to make the most of the technology. "We're about to integrate the interface between TubeShaper and the bending machine. This will save even more time and reduce human errors due to incorrect bending data input into the bender computer."

Hexagon Manufacturing Intelligence – UK
Website: www.hexagonmi.com

WIN Eurasia Metalworking Fair 2018

TWO events for the manufacturing industry – WIN Eurasia Metalworking and WIN Eurasia Automation – organised by Hannover Fairs Turkey Fuarcılık, are to be combined in 2018 under the name WIN Eurasia – World of Industry, from 15 to 18 March. WIN Eurasia is able to bring together six fairs, 3,000 exhibitors and 150,000 visitors under one roof thanks to the increasing capacity of TUYAP fairground. Visitors will have the chance to see more product groups and exhibitors will reach more national and international trade visitors.

Hannover Fairs Turkey Fuarcılık AŞ – Turkey
Website: www.hfturkey.com

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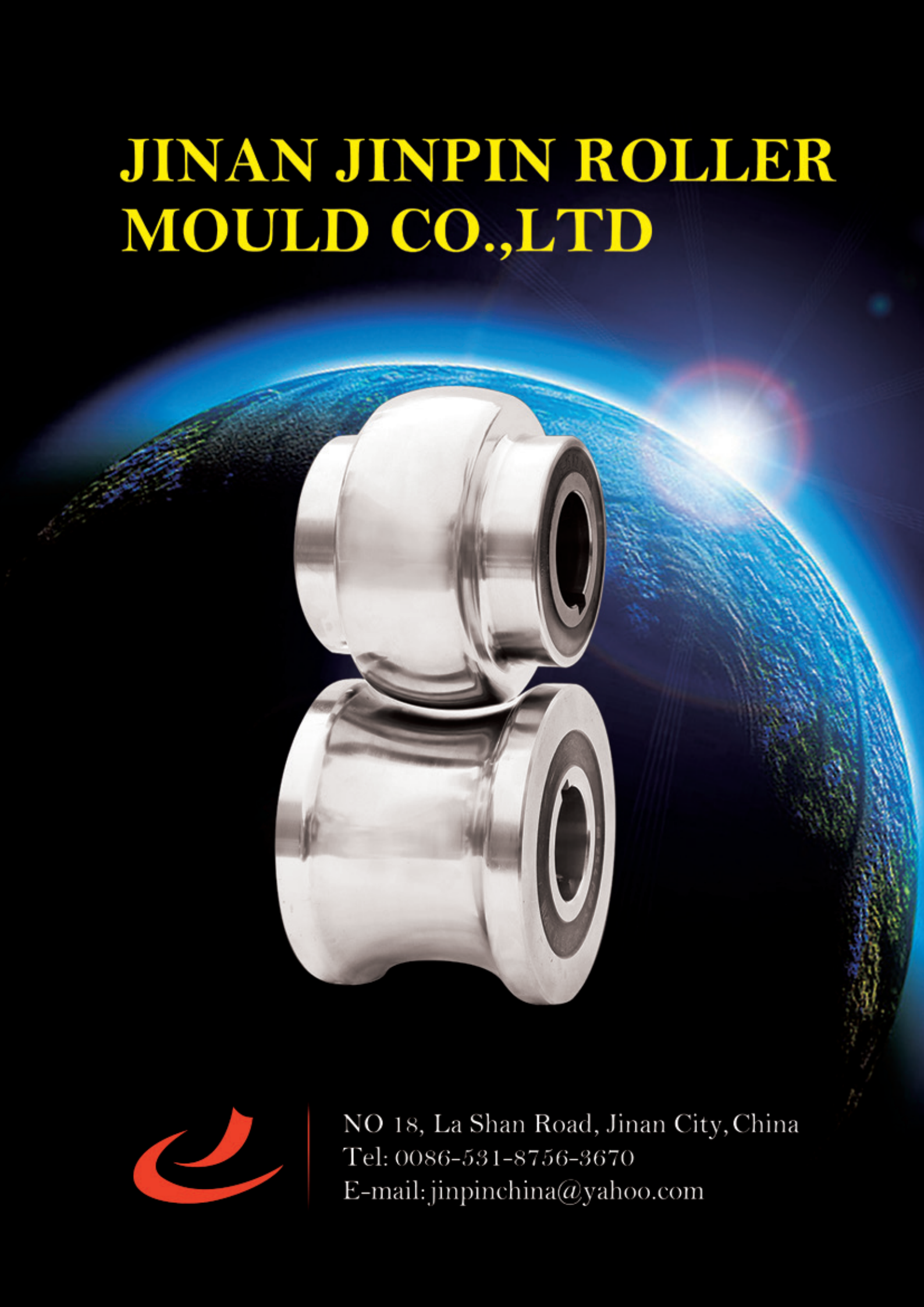

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Tel: 0086-531-8756-3670
E-mail: jinpinchina@yahoo.com

Tube Southeast Asia 2017 returns to Bangkok

TUBE Southeast Asia 2017 returns to the Bangkok Trade & Exhibition Centre (BITEC), Bangkok, Thailand from 19 to 21 September.

The Asian Development Bank (ADB) estimates that through to 2020 energy and transport sectors will form 62.6 per cent of the total ASEAN infrastructure investment needs. This is in tandem with Goldman Sachs' projection on infrastructure spending in power and transport of four ASEAN countries (Thailand, Malaysia, Indonesia and Philippines), which will amount to US$524bn by 2020.

Another major ASEAN infrastructure initiative is the ASEAN Power Grid (APG), which will see investment requirement of US$5.9bn, as well as the Singapore-Kuala Lumpur high speed rail, which will span 350km and is expected to start operations in 2026.

On the manufacturing front, should ASEAN implement the ASEAN Economic Community's integration strategy fully and be able to capture a larger share of global manufacturing, the region could gain up to US$625bn in annual GDP by 2030 as stated in a recent report by the McKinsey Global Institute.

At the last event in 2015, the co-staged exhibitions were presented by 411 internationally prominent companies from 33 countries including seven national pavilions and country groups from Austria, China, Germany, Italy, Taiwan, the UK and USA. The three-day exhibition welcomed 7,144 international trade visitors from 56 countries in total.

Almost 33 per cent of these visitors came from outside Thailand, from countries such as Bangladesh, India, Malaysia, Singapore, Taiwan, Indonesia, Myanmar and Pakistan as well as visiting delegations from China, Japan, Korea and Vietnam, manifesting wire and Tube Southeast Asia 2015 as the regional platform for the wire and tube industries.

The trade fairs also received visits by 73 local factories from Bangkok Steel Wire, Bangkok Cable, Kulthorn Materials & Control and Thai Wire Products, among others.

Tube Southeast Asia 2017 – Thailand
Website: www.tube-southeastasia.com

Jobs secured as Liberty House takes control of Tata Speciality Steels business

INTERNATIONAL industrials and metals group Liberty House announced in May that it would be creating around 300 new steel jobs and making multi-million pound investments to secure the future of five sites across the UK.

The news came as Liberty formally completed the £100mn deal to acquire the Speciality Steels division of Tata Steel UK, protecting the jobs of 1,700 existing staff at three major sites at Rotherham, Stocksbridge and Brinsworth in South Yorkshire, smaller sites in Bolton, Lancashire and Wednesbury in the West Midlands, and two distribution centres in China. It also announced expansion plans expected to generate an additional 300 production jobs in the business.

The company claims to now have the largest arc furnace capacity in the UK

Speciality Steels produces a range of high-value steels used in the manufacture of vehicles, aircraft, industrial machinery and equipment for the oil and gas industry. Liberty said it would invest up to £20mn in new plant and equipment in the first year alone to boost competitiveness and secure international market leadership for the business, which is being re-launched as Liberty Speciality Steels. The business will increase output substantially at the electric arc furnaces, casting shop and bar mill in Rotherham, with larger plans across the wider Speciality business in the years ahead.

Precision components are made at Liberty's advanced machining centre

Production from the arc furnaces is expected to rise to over one million tonnes per annum, and there are plans for the bar mill to roll over 400,000 tonnes per year. In addition, the business will grow its position in the aerospace markets, utilising recent capital investments at Stocksbridge and investing in additional capacity and new technology.

The acquisition marks a major step forward for Liberty's Greensteel strategy as it gives the group the largest arc furnace capacity in the UK, a key component in its plan to increase low-carbon steel production based on recycling metal in furnaces powered by renewable energy. As part of the Greensteel strategy, sister company SIMEC is actively considering investment in bio-diesel power generation at Speciality Steel sites.

Liberty House Group – UK
Website: www.libertyhousegroup.com

Supplying ERW mill lines

NAKATA Mfg Co, together with Mitsubishi Corporation, has been selected as the supplier of two ERW mill lines to Vyksa Steel Works (VSW), a Russian steel top pipe maker, for maximum outer diameters of 177.8mm (7") and 245mm (10").

The project covers the setting up of all equipment from entry section to finishing section of the ERW pipe plant, including the Nakata patented FFX Mill system. Start-up of the 7" mill line is scheduled for the end of 2018, and the 10" line by the end of 2019.

Vyksa's new pipe lines are aimed at increasing productivity, and improving product quality and energy efficiency. Nakata believes it was awarded the supply contract because of its record of supplying a number of ERW pipe lines for diverse projects around the world, as well as its technical features with highly evaluated pipes and reliable weld quality. 50 sets of FFX Mill lines have been installed in the last ten years.

Nakata expects the carrying out of this project to strengthen its position in Russia.

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

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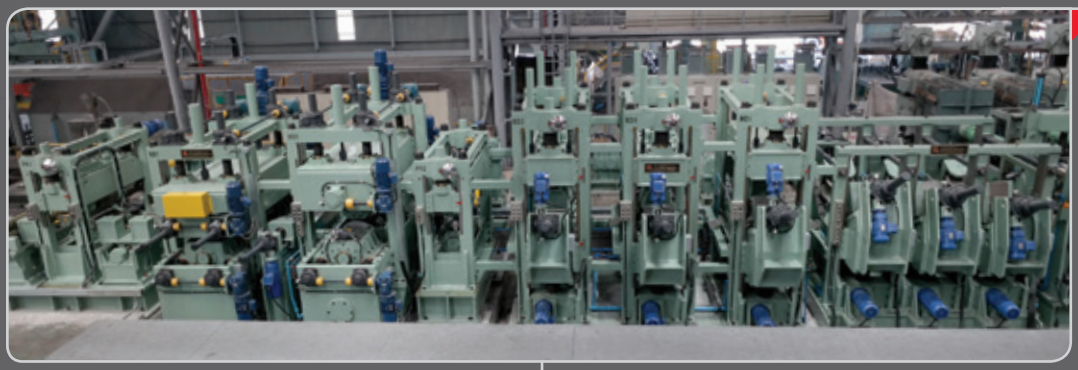
Tel: +82 31 313 7151~3 Fax: +82 31 313 2305

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 : 4"~12" x 14t, API X70
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)

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- Related Equipment and Facilities to Comply with API Standard

NDC Technologies announces investment in technology centre

NDC TECHNOLOGIES, a global provider of precision measurement and process control solutions, has announced that it will be consolidating its California-based production and administration functions into its Dayton, Ohio, facility, which will subsequently become the new company headquarters.

Significant investment will then be made in the Irwindale facility, which will undergo major infrastructure improvements to become the new web process solutions technical centre of excellence.

This is part of an ongoing strategy to drive simplification in business processes to become more agile, further improve global execution and place even greater focus on serving customers and developing new products to satisfy their evolving needs. The company's advanced manufacturing programme will continue in partnership with key global suppliers to maintain maximum business flexibility, while focusing on key technologies to drive the company's future.

The R&D team will continue to focus on the development of new sensor technology and advanced software for control and analytics aimed at the extrusion and converting industries.

"We are rolling out a phased plan to ease the transition and to ensure continuity of good customer service," said Dave Roland, president of NDC Technologies.

Mr Roland emphasised: "We are focused on the long-term future of NDC and are taking strategic actions now to further improve the company's overall operations and enhance our competitive position for future growth. It is important we stay aligned with our customers who rely on NDC's products and services. A large investment will also be made at the Dayton facility to accommodate the increased operation size and to handle advanced sensor build capability being put in place."

NDC Technologies is made up of four different business groups, serving the film extrusion and converting markets; food, tobacco and bulk materials markets; metals market; and cable and tube markets.

The company has technical centres of excellence for each of these market focus areas and invests heavily in R&D activity to retain its position in measurement and control technology.

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http://www.nakata-mfg.com

T-Drill to demonstrate tube and pipe fabrication solutions at Schweissen & Schneiden

T-DRILL, the global provider of tube and pipe fabrication machinery for butt-welded T-joints, chipless tube cutting and tube end processing, will be showing its latest solutions at the world's leading trade fair for joining, cutting and coating, Schweissen & Schneiden, in September in Düsseldorf, Germany.

One of the latest T-Drill innovations is a new collaring machine, S-80, for butt welded branching of tubes. The S-80 machine has fully automatic collaring cycle: pilot hole milling, collar forming and finally trimming of the collar. The machine has been developed for thin-walled tubes to make collars between 10 and 80mm faster than before, which makes it a good solution for high-volume applications, while the traditional collaring machines are able to make collars on heavy-wall tubes.

Another release is the second generation of the flanging machine F-170. This machine is easy to move from one place to another and suits job sites or pipe fabrication shops. The working cycle is fully automatic without any tool changes. The F-170 is suitable for pipe diameters 26.9-168.3mm, PN16 Sch10.

The TEC-150 pipe collaring machine with tube measuring table for butt-welded pipe branching was introduced in 2001 and has since proven its efficiency. The machine has been ordered more than 180 times by customers. The TEC-150 offers an operator-friendly interface to produce collars up to 219.1mm. At the fair T-Drill will demonstrate a TEC-150 with pipe measuring table that makes positioning very easy.

Another effective collaring machine is the automatic S-54 for producing collars up 54mm for brazed and welded joints. Typical applications include automotive engine cooling tubes.

Other applications are house and industrial air-conditioning tube joining. Both straight and bent tubes can be processed. At the fair T-Drill will present an S-54 making collars on bent tubes, which is one of the best applications for this machine, especially in automotive engine cooling and exhaust recycling applications.

The highly automated and accurate cut-off system TCC-25 is for chipless cutting of thin-walled tubes. The machine is especially suitable for automotive brake and fuel tube cutting. Other applications are aluminium and copper tube cutting within automotive and house/industrial air-conditioning applications.

The HFT (hand feed table) is used in conjunction with the portable T-Drill T-65 SS collaring machine, which is manually moved by the operator after each produced collar. Featuring easy pin-to-hole positioning, the unit is highly productive in standard manifold production.

This system is capable of producing collars of 17-51mm in run tubes of 32-114mm. With this collaring unit the user can produce five 51mm collars in less than ten minutes without moving the tube. The HFT-2000 SS is designed for stainless steel manifold production, but can be used for copper tubes just by changing the tooling.

T-Drill's stand will be located at H06, Hall 14.

T-Drill Oy – Finland
Email: sales@t-drill.fi
Website: www.t-drill.com

Iran Wire 2017 will feature tube and pipe

IRAN Wire will be held in Tehran from 5 to 8 December 2017 and is the only exhibition in Iran covering the entire spectrum of wires, cables, tubes, pipes, profiles and related industries.

All international companies from the respective industries that would like to showcase and sell their products will find a unique platform at Iran Wire as an attractive entry point into the emerging Iranian market.

Around 200 exhibitors are expected to present their innovative technical products in the areas of wires, cables, tubes, pipes and profiles.

The four-day trade fair is organised by the Iranian Aria Group Conference and Exhibition Development Company in Tehran.

Messe Düsseldorf is the exclusive overseas associate and will be responsible for the canvassing and handling of international exhibitors. Furthermore, Messe Düsseldorf serves in a wide range of organisational areas, including international exhibitor registration, stand design and a smooth onsite operation at the Tehran International Permanent Fairground.

Messe Düsseldorf – Germany
Email: ryfischd@messe-duesseldorf.de
Website: www.messe-duesseldorf.com

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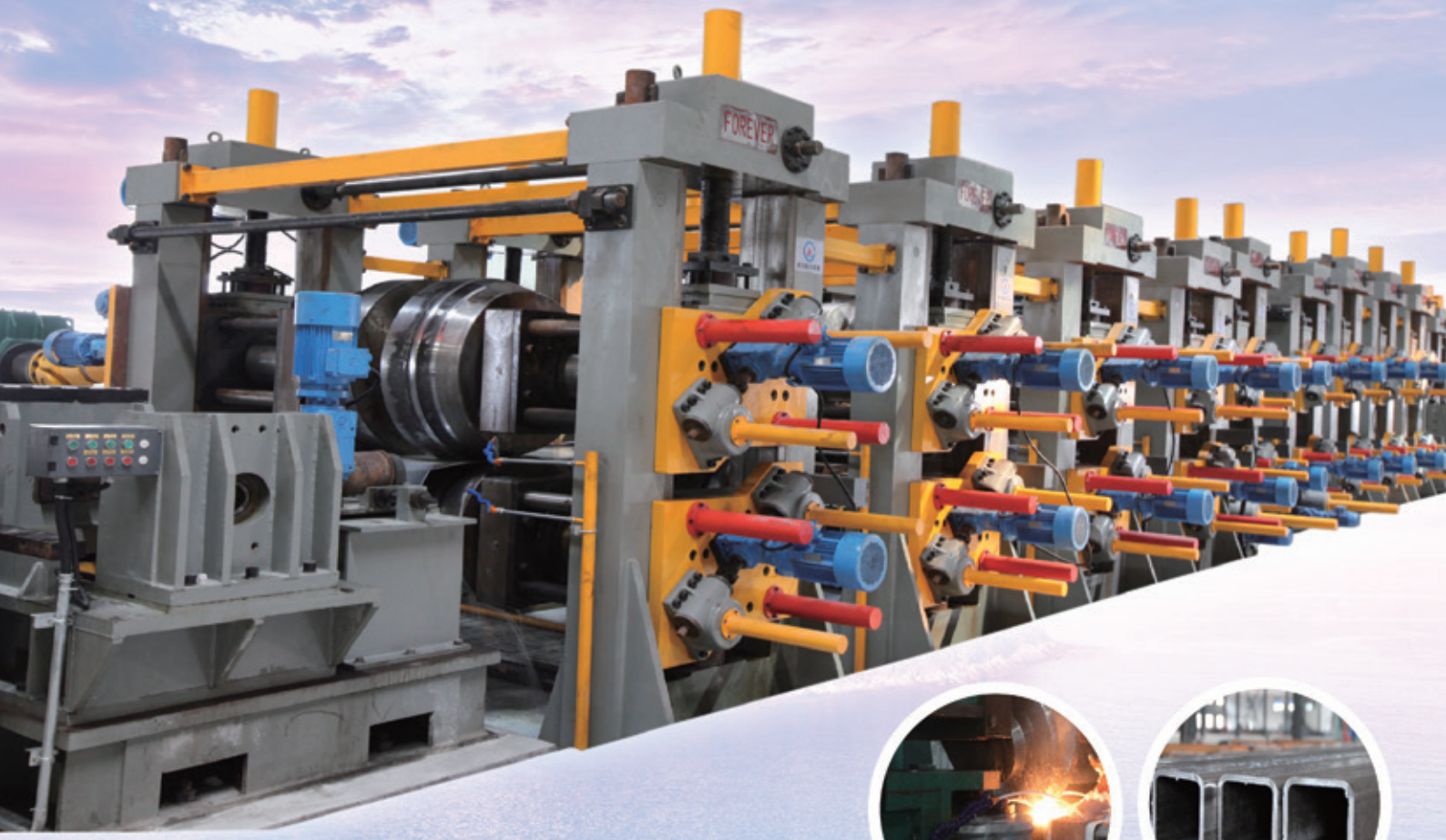

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New start for Ingenia thanks to ASMAG as joint projects are announced

THE ASMAG Group, based in Austria, and Ingenia, a specialist for crane and handling technology from the same country, have been working closely together since 2016. This has helped to ensure the continuation of Ingenia as a business. Earlier in 2017, ASMAG acquired the shares of Ingenia and the first joint projects are in the pipeline.

"I am excited by the quality of its crane and handling technology, professional approach and the commitment at Ingenia. It was quickly clear to me that there was a great deal of potential in combining our efforts," said Johann Vielhaber, owner of the ASMAG Group, on its acquisition of Ingenia.

"Right from the beginning, we saw so many synergies, in areas of technology and planning, plant engineering and machinery manufacturing that are advantageous for both companies," added Rudolf Geiersberger, founder of Ingenia, on the merger and continuation of operations.

Starting from the beginning of February, the management has been strengthened with the addition of Ms Andrea Möslinger.

The combination of the two companies expands the service offerings and product portfolios of both, representing added value for the customer.

On the one hand, ASMAG benefits from Ingenia's high-end materials handling technology.

On the other hand, Ingenia gains access to ASMAG's manufacturing, purchasing and sales structures, which will enable it to expand its international marketing activities.

ASMAG GmbH – Austria
Email: sales@asmag.at
Website: www.asmag.at

Online building information modelling design and CAD library goes live

THERMOPLASTIC fluid flow technologies company Asahi/America, Inc now offers building information modelling (BIM) design files through its website.

Engineers, estimators and designers can download BIM and CAD files through the company's online catalogue at cad.asahi-america.com.

The new library contains approximately 1,000 BIM files for Asahi/America's most popular manual valves, including the Type-57 butterfly and Type-21 ball valves. BIM files for the company's AirPro® compressed air piping system are also available.

To access files through the new interface, the user simply chooses the desired part and file type, and then downloads, prints or emails the files. 32 formats are supported. BIM software platforms include Revit® MEP, AutoCAD® MEP and CADmep™. Supported CAD software platforms include AutoCAD®, Pro/ENGINEER®, CATIA®, SolidWorks®, and Solid Edge®.

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

Its products are used in a variety of applications and industries including chemical processing, water and wastewater treatment, pharmaceutical and semiconductor manufacturing, aquariums, mining, landfill, and oil and gas.

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

New southern section of Messe Düsseldorf

THE supervisory board and shareholders of Messe Düsseldorf GmbH have declared their approval for one of the most ambitious construction projects in the history of the company.

The plans for a complete reconstruction of the southern entrance and the adjoining Hall 1 have been approved. "We can now implement our master plan for the complete modernisation and renovation of our premises, our home base," said Werner Dornscheidt, chairman and CEO of Messe Düsseldorf, adding: "As usual, it will all be done without subsidies."

The capital expenditure for the southern section amounts to €140mn. In total Messe Düsseldorf will invest around €636mn in its premises before 2030. The work will begin after the packaging fair interpack in May 2017 and is to be completed by summer 2019.

The new South Entrance will give Messe Düsseldorf a modern presence on the banks of the river Rhine, looking out over the city of Düsseldorf. Trade fair visitors and convention delegates will be welcomed by a new illuminated and translucent canopy, 7,800m² in size and around 20m high.

This structure will be a strong architectural landmark at this highly visible point in the exhibition centre. Jurek Slapa, managing partner at Sop Architekten, said: "The canopy will give Messe Düsseldorf a new façade and a distinctive location at this unique position between the Rhine and the Nordpark. It will also integrate the existing convention centre and thus approach the existing structures in a sensitive manner."

The canopy will be 170m long and 93m wide, thus creating a large space for the convention and trade fair delegates to enjoy before they reach the exhibition centre and event spaces.

The façade of the South Entrance is to open onto the forecourt via a façade constructed entirely of glass, 93m in length.

Required services such as cash desks and cloakrooms will be found in this 2,000m² space. The first floor is to contain a glass-walled meeting room coming out into the foyer, affording a view of the entrance and the forecourt. In addition, the entire foyer will be available as an event location. The forecourt will also contain the entrance to the underground car park with 300 spaces as well as bus stops and a taxi rank.

The scope of the renovation of the South Entrance also includes the reconstruction of Hall 1. To this end, Messe Düsseldorf plans to demolish the current Halls 1 and 2, which are smaller, and replace them with a new build after interpack 2017.

Hall 1, measuring 158m by 77m, with over 12,000m² of floor space, will then be around the same size as Halls 8a and 8b. It will be accessible via seven gates, with suspensions from the hall ceiling being as easy to configure as it is to set up stands using the hall floor.

Pedestrians can use the bridge on the first floor to cross between the hall and the Congress Center Düsseldorf (CCD). As well as being connected to Halls 3 and 4, there will be a main route leading from the South Entrance to the rest of the premises.

Messe Düsseldorf – Germany
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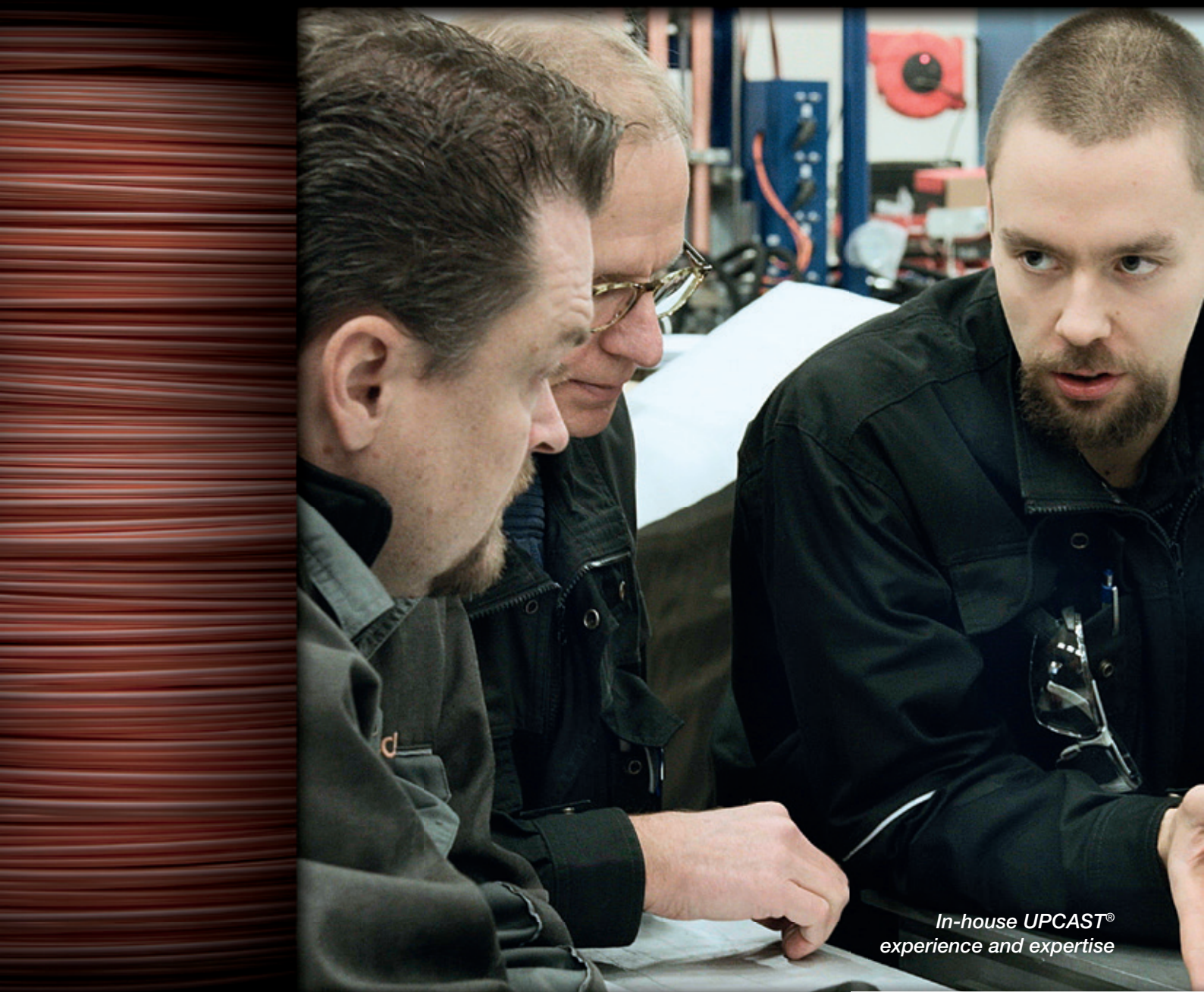

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Transformation from manufacturer to full-service supplier

FOLLOWING its long-term vision and strategy, the Tubacex Group has confirmed that it is experiencing a transformation that allows it to establish an even closer and more cooperative relationship with its customers, with the goal of developing and providing comprehensive solutions to their specific needs.

In recent years, a training and adaptation process has taken place that consists of reinforcement and increased use of technology in the sales area; strong development of R&D abilities; inorganic growth to complete the product portfolio; and development of new products and processes for high-demand applications.

The innovation strategy has been adapted to offer new products and comprehensive solutions resulting from internal R&D activities.

This has led to the inclusion of two new key concepts: alliances with partners or suppliers of technology and complementary products; and development of new added-value services, based on the needs of the customer.

In order to develop innovative solutions, it has been necessary to collaborate with the customers in all of the phases of the lifecycle, from its design to the operation of the service itself.

Innovation management at Tubacex is done under 'open innovation' principles, which allows for the integration of capacity and know-how from a network of companies, including customers, suppliers, research centres and partners in general.

Most of the innovation projects that are currently under development at Tubacex were born from alliances with other companies. Tubacex has proprietary capacity for the design of components and even subsystems in collaboration with external engineering firms. This design capacity is complemented by a deep knowledge of the materials and their manufacturing processes.

The company is offering certain customers a growing portfolio of added-value services, including finishing operations (cut to measure, bevelling); advanced surface treatments (shot peening, coatings); logistics (project delivery management, immediate delivery from the warehouse); and pre-manufacturing (curving, welding, grooving and finning).

Tubacex Group – Spain
Website: www.tubacex.com

On the way to the smart factory of the future

IN the plants of Ravenna and Casalmaggiore, Italy, 'Industry 4.0' is a reality, with robot works improving the supply chain and reducing human errors.

R&D, product and cutting-edge process technology are some of the keywords driving the development of Marcegaglia. The Italian industrial group in the steel processing sector has a yearly output of 5.6 million tons (2016), and 39 manufacturing plants covering six million square metres.

Through the adoption of a unified network for company and plants, capable of enabling the re-engineering of processes in a perspective of 'Internet of Things', Marcegaglia, supported by Cisco, is on the way to smart factories, along a totally digitalised supply chain.

In the plants for the processing of flat products (Marcegaglia Ravenna) and welded steel tubes (Marcegaglia Casalmaggiore), important technological investments were brought forward, on the path of connected factories, in the creation of a fully interconnected and automated production system, improving the controlled supply chain that reduces the human error on certification and safety. Marcegaglia Ravenna is the company's largest steel metallurgy plant, specialising in the treatment and finishing of coils, plates and pre-painted steel, as well being the centre for integrated logistics to supply each production and distribution facility of the group. Technological innovation has led to the creation of a fleet of automated guided vehicles for the transport of materials between the processing plant and the points for final shipment.

Marcegaglia's Ravenna plant uses automated guided vehicles to transport materials

Marcegaglia is also a supplier for carmakers and OEM manufacturers of structural parts, components and interior details and, in the plant of Casalmaggiore, specialises in machining welded pipes with diameters up to 406.4mm.

With dedicated production for the automotive sector, Marcegaglia has developed an intelligent and automated crane system that handles storage of the collected bundles of tubes, directly from the production plants, moving them to the area for loading onto transport vehicles.

Marcegaglia – Italy
Email: info@marcegaglia.com
Website: www.marcegaglia.com

Roll-Kraft expands financial team in preparation for increased growth

ROLL-KRAFT, which specialises in manufacturing roll tooling for tube and pipe and roll forming companies globally, has announced the appointment of two key financial positions that will help to facilitate future growth.

Frank Mercuri will join Roll-Kraft as chief financial officer.

Mr Mercuri comes to the company with more than 20 years' experience in various accounting and finance positions, including financial officer and controller for Ericson Manufacturing, Vocon Design, and Brulant, Inc.

He holds a Bachelor of Business Administration degree and a degree in accounting from Cleveland State University, and is a member of the Ohio Society of Certified Public Accountants (OSCPA). He was awarded "CFO of the Year" by Crain's Cleveland Business in 2009. He also serves as treasurer of the Chesterland, Ohio, chapter of the Lions Clubs International.


Frank Mercuri, Roll-Kraft's chief financial officer

Richard Lazar, former chief financial officer, has moved into the position of director of finance – special projects. Mr Lazar will be deeply involved in the company's future growth initiatives, as well as related commercial and process improvements.

He has been with Roll-Kraft for 35 years and has provided steady and consistent guidance over the years. His expertise will be a valuable asset as the company continues to grow.

Roll-Kraft has its headquarters in Mentor, Ohio, USA, and maintains other facilities in the states of Illinois and Texas as well as in Canada.

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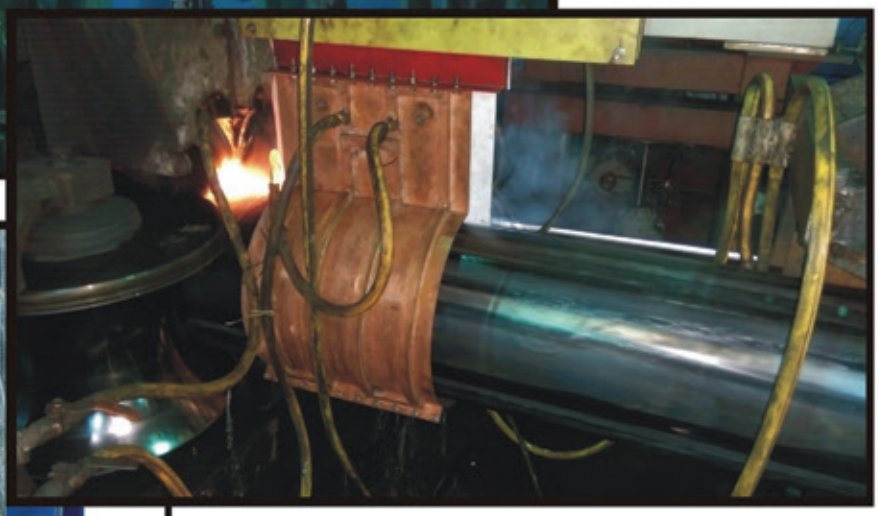

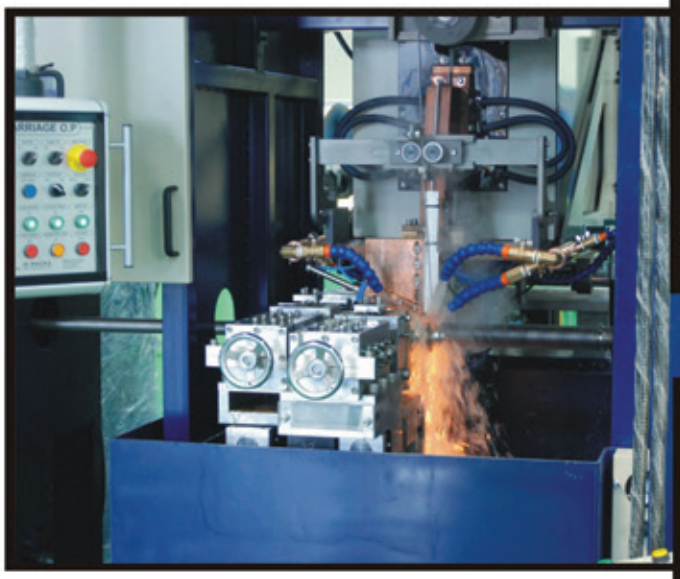

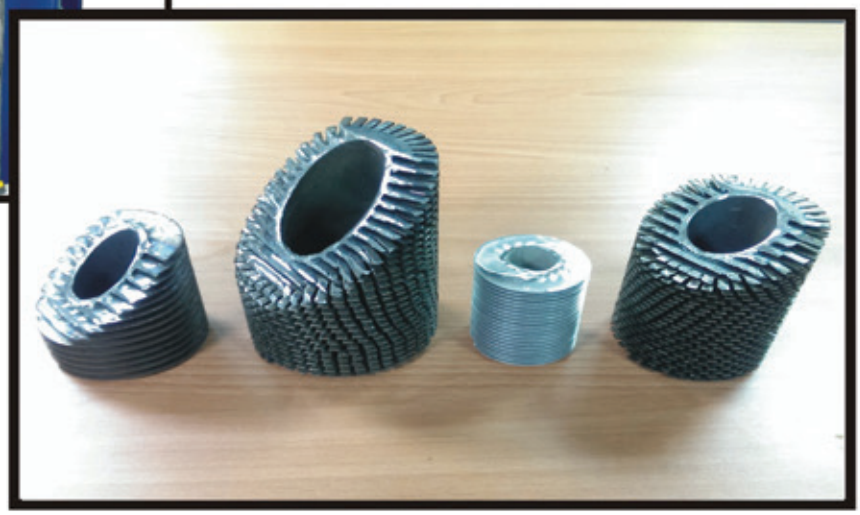

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Even if the demand for this kind of material is still a niche in the whole steel and stainless steel market, it is growing significantly year by year. Consumption of strong structural steel in the construction field has grown from 18 to 33 per cent in ten years.

The main reason this kind of steel is so widely used is its high resistance to yielding. This primary feature produces a great advantage, as the high resistance allows the use of reduced thicknesses, resulting in a lower weight of construction while granting the same performance of the steel or stainless steel, and allowing a larger capacity. The toughness together with good workability, weldability and lightness make this type of steel suitable for many uses.

In order to preserve the features of the materials, Viganò International has designed a dedicated levelling process that keeps the strip in continuous tension while passing in tandem through several single units featuring large mechanical dimensions, and dedicated tensioning devices.

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Website: www.vigano.international

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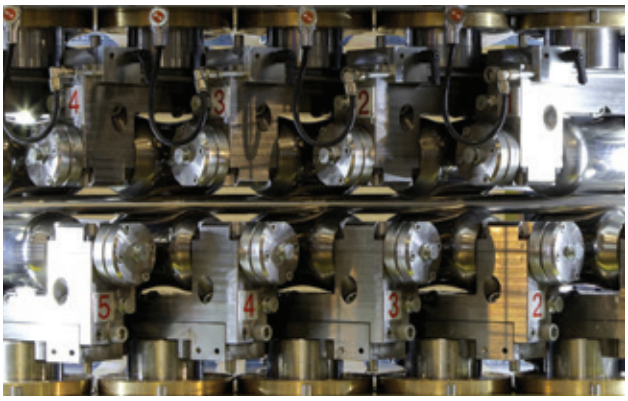

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Applied technology operation inaugurated at new UK manufacturing facility

A ribbon-cutting ceremony officially opened the new facility

TRELLEBORG'S applied technologies operation has inaugurated its new purpose-built facility in Retford, UK.

The facility will be a centre of excellence for the company's diversified polyurethane component manufacturing, bringing together experience, innovation and technology under one roof.

Trelleborg Group CFO Ulf Berghult and Councillor Jim Anderson of Bassetlaw District Council took part in a ribbon-cutting ceremony to officially open the facility.

Cllr Anderson commented, "The council's regeneration and investment team have worked closely with Trelleborg prior to and during the planning stages to ensure that this centre of excellence is based in Bassetlaw and, as industry leaders in a number of different fields, including polyurethane manufacturing, we wish Trelleborg continued success."

Mr Berghult said, "By combining our local expertise from several Trelleborg facilities in the area into one, we will reduce our footprint and environmental impact on the local area. Our investment into this facility demonstrates our long-standing commitment to accelerating performance for our customers both locally and globally."

The facility in Retford consolidates four sites, one in Retford, two in Coventry and one in Knaresborough, into a single facility. Constructed using lean manufacturing principles and with a focus on environmental efficiency, the 7,225m^2 facility will manufacture the current product portfolio of Trelleborg's applied technologies operation.

Trelleborg AB – Sweden
Email:
appliedtechnologies@trelleborg.com
Website: www.trelleborg.com

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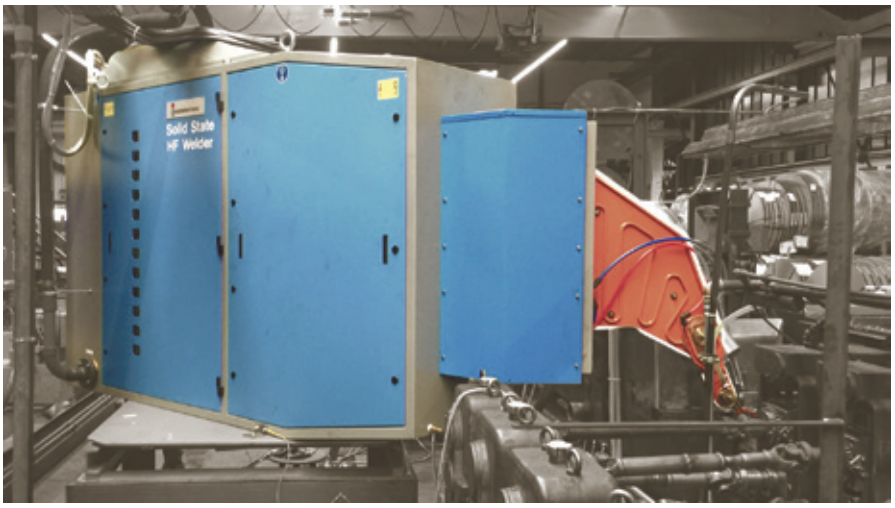
SMS group

MESU acquires another welder from Thermatool Heating & Welding UK

METALLWERK Sundern Otto Brumberg GmbH & Co, based in Germany, has installed another 350kW HF welder with HAZControl technology from Thermatool. The independent, high quality steel tube manufacturer is said to be "delighted" with the purchase, as Metallwerk is "a key part of a series of strategic investments being made at MESU".

MESU's family-orientated company has more than a century's worth of expertise in tube product technology and solutions. Automotive, leisure, furniture, medical and lighting are some of the key industries it supplies, working on DIN EN 10305-3 and DIN EN 10305-5 standards with precision always at the core of its plans.

A spokesman from MESU said: "We produce longitudinally welded precision steel tubes on our state-of-the-art pipe welding machines linked to other production processes such as CNC cutting tools, which strictly adhere to the tightest of tolerances. Our advanced processing and quality assurance ensure optimal components and timely delivery during manufacturing. Individual requirements are in the best of hands with us. These include applications that require high tube strength at low weight, such as tubes made of multi-phase steel with high deformation properties or micro-alloyed special grades. MESU makes a decisive contribution to finding environmentally friendly and energy-efficient solutions for customers' end products.



"Therefore, we have to work with high-quality partners. We enjoy the fast and professional know-how of Mr Hasan Simsek and his team from Thermatool."

Mr Simsek of Thermatool added: "From having purchased yet another welder from us, we can clearly see MESU are happy with Thermatool's products and support. We look forward to our continued relationship and our ambition to always strive in supplying the highest calibre welding solutions on the market."

Inductotherm Heating & Welding Ltd – UK
Fax: +44 1256 467 224
Email: info@inductothermhw.co.uk
Website: www.inductothermhw.com

Global gas and LNG conference concludes

THE Gastech gas and LNG conference and exhibition welcomed more than 20,000 attendees over four days. The conference was attended by 2,500 delegates from around the world, and hosted 200 international speakers, across both commercial and technical disciplines. The in-depth sessions and panel discussions focused on topics that are currently of importance to the industry, and explored how gas suppliers are adapting to the changing global market, and key trends influencing the sector.

The proceedings commenced with a welcome address by Yosuke Takagi, Japan's State Minister of Economy, Trade and Industry, followed by a ribbon-cutting ceremony with members of the Japan Gastech Consortium.

Christopher Hudson, president of energy, DMG Events Global Energy, commented, "It was the first time for Gastech in Japan, and it didn't disappoint. A major milestone in history was made in the world's largest LNG market of Japan, where the country's biggest energy companies came together as one consortium to collaborate for Gastech. The conference has played host to a unique alliance between Japan's most influential companies and has brought together hundreds of businesses from the up-, mid- and downstream sectors of the supply chain."

Business leaders from companies such as Shell, Chevron, ExxonMobil, Total and ConocoPhillips were among those who took to the stage to address the delegation. Specialist conference streams focused on driving diversity in the workforce, and attracting young talent to the industry.

The Gastech exhibition spanned six halls and featured 600 companies from 50 countries, multiple networking lounges and product showcase theatres.

Returning to Europe, following three editions in Asia, Gastech 2018 is scheduled to take place in Barcelona, Spain (17-20 September 2018). The move to Spain reflects the resurgence of gas and LNG in Europe. The event will be hosted by Enagás, Repsol, Gas Natural Fenosa, Tecnicas Reunidas and Sedigas.

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Milling and bevelling of stainless steel

SEVERAL series of Linsinger PFM plate edge milling machines and RFM pipe end bevelling machines – designed exclusively for stainless steel – are currently operating successfully under tough conditions.

Underlining this growing trend, additional newly ordered machines are now being manufactured in Linsinger's factory in Austria ready for delivery.

Combined orders for sets of PFM plate edge milling machines and RFM pipe end bevelling machines for stainless steel tubes are proving especially popular, according to the company.

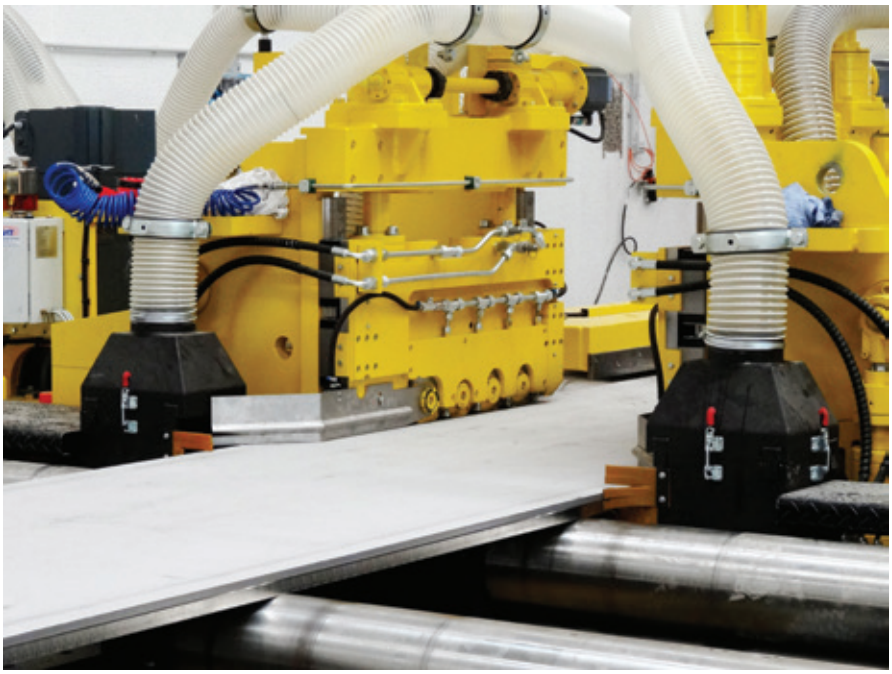
Stainless steel requires specially designed cutting tools to avoid clogging. The widely varying chemical compositions and mechanical properties of stainless steel have radically differing cutting parameters compared to carbon steels. The maximum processing speed is correspondingly lower with stainless steel.

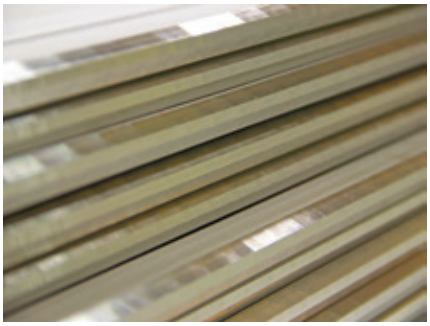
Linsinger PFM plate edge milling machines ensure efficient preparation of welding seams on the two long sides of stainless steel plates. The machine has a vertical plate waviness tracking function for a constant bevel profile. This allows the whole milling profile to be milled in a single working pass on both long sides simultaneously, with high precision. This is important for perfect welding profiles, which should ideally be prepared in one pass. The cutter head should only be replaced when changing to a different profile – a function that is also available fully automated.

Another advantage of Linsinger machines is their flexibility. All cutting parameters are digitally adjustable to the different types of stainless steel. As the machine measures each plate separately, even the smallest batch sizes can be produced efficiently. Linsinger has also developed specific, multi-layer coated and particularly resistant carbide inserts with special cutting geometries for a wide range of stainless steels.

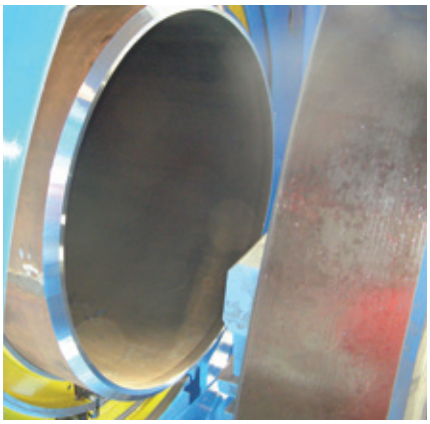
There is high demand for customisable solutions in the pipe industry.

Linsinger PFM stainless steel edge miller





Edge profiles milled by Linsinger PFM



Pipe ends bevelled by Linsinger RFM

For example, seam preparation for longitudinal pipe welding and pipe end chamfering both demand highest standards of precision, speed and productivity.

The Linsinger RFM pipe end bevelling machine enables simultaneous chamfering of both pipe ends by a single operator. The chamfered pipe surpasses, among others, API and ASME specifications. The moveable bevelling units chamfer a range of pipe lengths, and the integral profile copying system provides consistent chamfer geometries, even with pipe deformations.

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Advanced inspection and sorting from Sikora

WITH the presentation of the Purity Scanner for inspection and sorting of plastic material at the K 2013 show, the attention of the Sikora research and development department was directed to application areas that had not been a focus during the initial development of the system in 2011.

Originally aimed at requirements of the cable industry – especially for the manufacturing of high-voltage cables, where cross-linkable PE is mostly used – it became clear at K 2013 that requirements regarding purity also exist in other industries.

The company subsequently held numerous discussions with plastic manufacturers, compounders and consumers from different industrial branches, and several tons of plastics were tested in Sikora's own clean room laboratories under near-production conditions.

Materials including PE, PA and XLPE, among others, have been tested with the optical and X-ray camera system of the Purity Scanner. Customers from more than 50 countries visited the Sikora headquarters in Bremen, Germany, to accompany these tests as well as to support the set-up of the catalogues of requirements.

Next to the detectability and sorting of contamination, the documentation of results as images or statistical data was equally important. Discussions with an experienced and demanding customer base led to the idea of the Purity Scanner Advanced.

The concept of the Purity Scanner, with its optical and X-ray pellet inspection as well as automatic sorting, opened new possibilities and is now operating successfully worldwide. The Purity Scanner Advanced, with a flexible camera system that is concentrated on special applications, was initially presented at K 2016. The Purity Scanner Advanced is optionally equipped with high-speed optical cameras as well as X-ray, colour and infrared cameras.

For the detection of contamination inside the pellets, the X-ray camera as standard reliably detects, for example, metallic contamination from 50µm, while the optical cameras detect discolourations, scorches and other contamination on the pellet surface.

By using a colour camera in the Purity Scanner Advanced, the device is able to sort out unfamiliar pellets of a different colour, as well as colour deviations. In plants where different materials with similar external characteristics are processed, the use of an infrared camera is useful. The hyperspectral camera irradiates the pellet flow with a broadband light to subsequently analyse the results of certain frequencies and detect cross-contamination.

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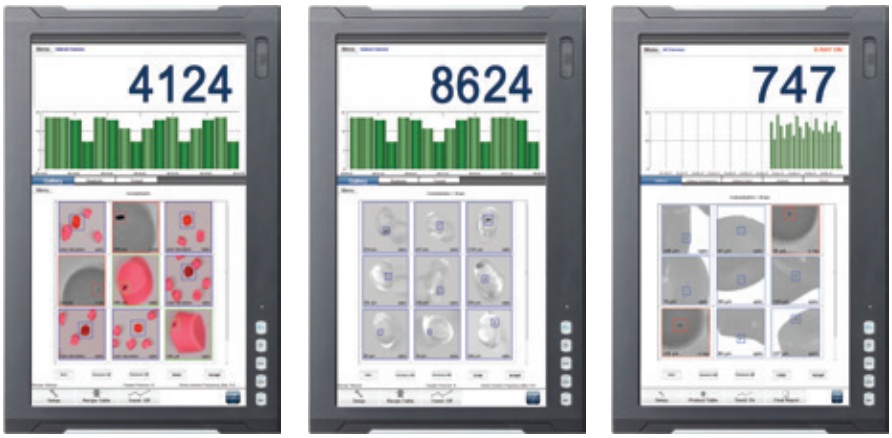
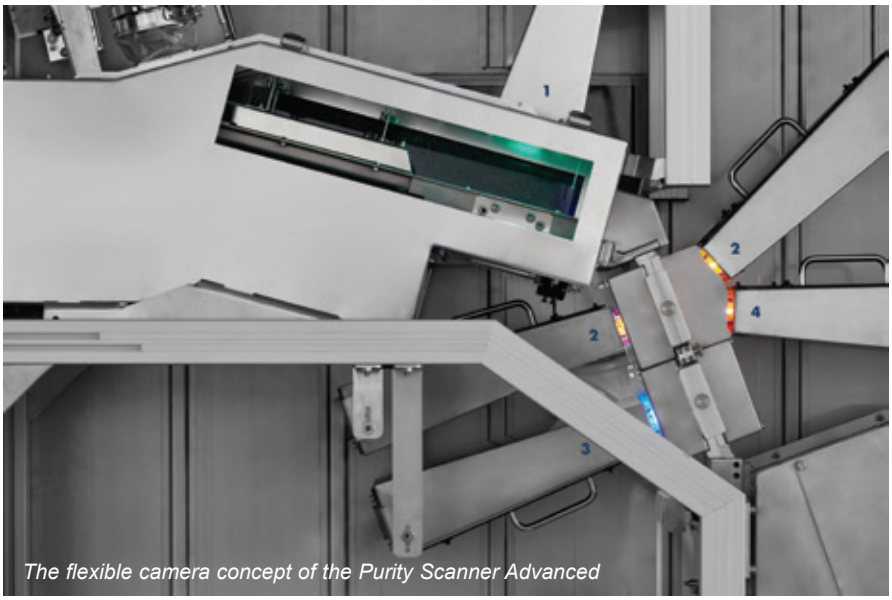


Visualisation, on the Ecocontrol 6000, of detected colour deviations; contamination inside transparent pellets; and contamination inside the pellets and on their surface

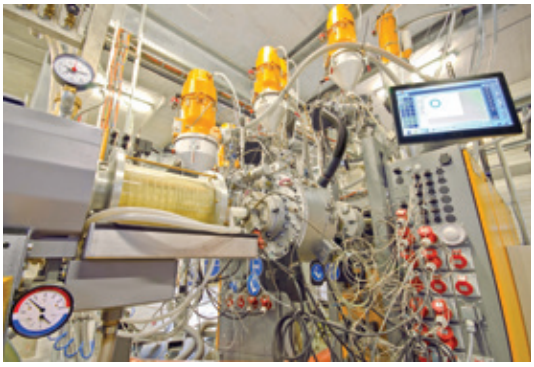


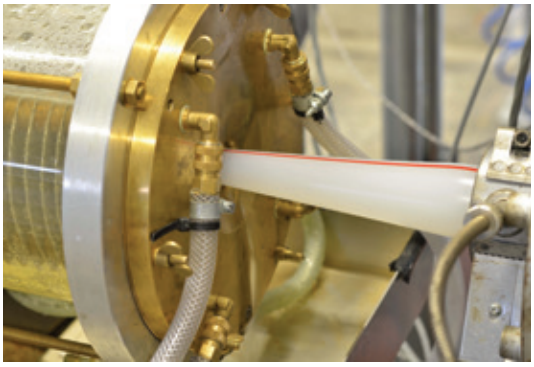
The flexible camera concept of the Purity Scanner Advanced

Follow-up order for complete system for production of multi-layered PE-RT pipes

ENETEC Plastics GmbH, Germany, has invested in its third complete extrusion line for manufacturing five-layered PE-RT pipes for heat exchanger systems. The company, which was founded in 2014, chose solutions from KraussMaffei Berstorff. Two identical systems have already been producing heating pipe systems with a diameter between 8 and 32mm for several years. The recently ordered system will be commissioned by the end of this year.

"It was especially important to me to have a partner offering an integrative, customised concept, so to speak, a turn-key system enabling us to manufacture more than just me-too products," said Enetec's managing director, Michael Frenzel, explaining his decision in favour of KraussMaffei Berstorff. The mechanical engineering company was able to fulfil the requirements in such a way that the pipe manufacturer ordered its second line just nine months after the initial installation, and now has ordered its third.





KraussMaffei Berstorff multi-layer extrusion system for production of five-layered PE-RT pipes at Enetec's production plant

The highlight of the systems is the KM 5L-RKW 01-40 five-layer pipe head, which KraussMaffei Berstorff says is unique within the industry. Andreas Kessler, KraussMaffei Berstorff's general sales manager at its Munich location, commented, "We have succeeded in designing a pipe head that combines multiple spiral distributor principles. Using the pipe head, manufacturing multi-layered pipes with perfect layer thickness distribution becomes possible at high line speeds."

The inner layer is led over an axial spiral, while the layers of EVOH bonding material are distributed over three spiral distributors, and a conical spiral has been selected for the outer layer.

The main advantage of this design is the exact distribution of the layers, which allows for a reduction of the material costs in pipe production.

The pipe head is fed by six single-screw extruders, each of which is equipped with its own gravimetric material metering so that different layer thicknesses can be configured. In detail, the extruders are the KME 45-36 B/R main extruder for the PE-RT inner layer and the KME 30-30 B coextruder for the PE-RT outer layer.

Two further coextruders of the KME 30-25 D/C type each plasticise the raw material for the layers of bonding material, into which the EVOH oxygen barrier layer is embedded. For these, a KME 30-25 is installed as a piggyback on the main extruder. The sixth extruder, a KME 20-25 D/C, also installed as a piggyback solution on top of one of the coextruders, takes over appliance of the strips.

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High-end tube cutting series extended

DUTCH saw blade manufacturer Kinkelder has extended its range of TCT Champion saw blades for high-performance tube cutting. Applying a new carbide grade, PVD coating, body design and tooth geometry, the Champion TL saw blade series contains the company's latest innovations for TCT tube cutting.

Over the past few years, the number of heavy-duty tube cutting applications has increased. Following performance feedback from the market and the demand for a new high-end TCT saw blade, the Champion series has been extended with two new blade types. The Champion TL saw blade has been designed to cut tubes with tensile strength up to 850N/mm^2 on high output/high quality stationary sawing machines. Due to a new carbide grade, a new PVD coating to obtain a very smooth surface finish, and a new tooth geometry and body design for better chip evacuation, this Champion saw blade has an improved blade life of typically 50 per cent and more compared to CX 3.

A dedicated Champion TL Multi saw blade has been developed for multiple tube cutting with a tensile strength of 400 to 800N/mm^2. This blade type is specifically suited for Rattunde Twin machines, but also for other applications where multiple tubes are cut, such as Bewo, RSA and Sinico machines. Kinkelder's cutting experts can advise on the parameters for the application.

Kinkelder Champion TL saw blades are available in diameters from 225 to 560mm with a pitch of 9mm, 11mm and 13mm.

Kinkelder BV – Netherlands
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Tube end forming machines for sizes up to 82mm from Soco Machinery in Taiwan

THE Soco TF tube end former series is used in numerous end forming applications and industries, such as automotive exhausts, furniture and air conditioning. The machines differ to conventional end formers, due to their low setup, high flexibility, precision and compact design.

The machines go up to 82mm in size, and incorporate hydraulic operation and touchscreen control. They can be fitted with one or two operating stations to process operations on tube ends and are suitable for both straight and bent tubular parts.

The C type machines are designed for common end forming applications including tube expansion, reduction and slotting. The C machines use segmented tooling consisting of expanding segments and reducing jaws, with quick setup (drop down tools). With similar capabilities to the C type, the E type adds a ram and vice forming feature that allows it to form more complex shapes, such as various types of beading and flaring processes, among other kinds of end forming.

The I/O type is used for precision sizing of tubes, and uses a combination of expanding segments and reducing jaws for accurate control of the inside and outside diameters.

TF-80-E tube end former from Soco

These can be sequenced in any order for improved accuracy and reduced ovality. The I/O also incorporates a touchscreen control for quick setup. Unlike tooling systems used in the C and E type, the I/O type tooling comprises a set of inside expanding fingers and outside reducing jaws.

The IOE type combines the flexibility and features of both the IO and E types for maximum production possibilities.

Soco is solely represented in the UK and Ireland by Langbow Ltd.

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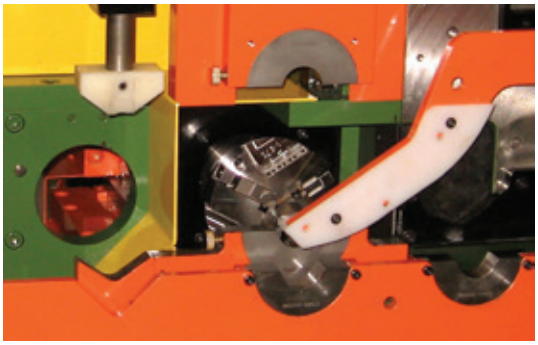
Integrated double end finishing and length inspection



IN the world of zero-defect requirements, visual inspection is not adequate. Even 100 per cent visual inspection is only 80 per cent effective. Automotive suppliers must incorporate reliable methods that will ensure their products consistently meet the rigorous demands of the industry.

Modern electronics allow companies such as Haven Manufacturing to be imaginative in solving quality issues in tube manufacturing. In a particular application, Haven was asked to develop an integrated length inspection module directly after double end finishing.

Adding length inspection sounds simple, but the standard machine drops out the finished part immediately after machining. In order to incorporate length measuring, the tube must be reorientated into a stable position. This requires additional handling equipment and a separate length inspection machine, which adds cost and consumes more floor space.

The answer to this challenge was the integration of two processes into a single frame and controls, so the tube does not lose its orientation from machining to inspection. Haven engineers designed a walking beam style transfer system for this purpose.

Tubes are positioned precisely in the machining station, where opposed precision bearing spindles perform ID and OD chamfers and end face to a very close and repeatable length tolerance. From there, the part is walked to a chip blowout station, followed by the length inspection station. Good parts are released and escape the machine, while rejected parts are automatically diverted to a holding bin beneath the machine. If the machine experiences three rejects in a row, it stops and signals the operator to investigate.

Combining double end finishing with length inspection

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Process monitoring 4.0 from Germany

PRECISION, economic efficiency and plant availability are the criteria that characterise Bültmann equipment. In order to control and to permanently ensure the fulfilment of these criteria, the machines are provided with testing and measuring equipment, and specifically tailored to the customer's requirements.

Diameter measuring and surface inspection systems are used with peeling machines; straightness and straightening force is measured on straightening machines; and drawing lines are equipped with measuring devices for drawing force and wall thickness. This combination of mechanical and electronic components forms the basis for controlling production processes. However, it only partly represents contemporary process monitoring.

In the context of advancing industrial digitisation and the associated versatile applications, process monitoring systems are increasingly used to meet the requirements of 'Industry 4.0'. Consequently they ensure a holistic process control, including not only quality assurance but also further process evaluations.

Further room for improving plant availability is, among others, a consequence for increasing production or for applying intelligent, preventive maintenance and service strategies.

These measures are combined with accessible and user-friendly visualisation systems, offering usability and quick fault diagnosis.

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Weld box with two-minute changeover

RICK Olson, RMTS president and COO, has announced the success of the RMTS weld box. Partnered with operator education with on-site training to the mill operators, RMTS has seen growth in the number of RMTS weld boxes being installed on tube mills around the world.

RMTS employs a staff of tubing experts who know the challenges faced by operators. Being able to demonstrate the equipment to the operator provides a learning balance to create top quality tube with a decrease in scrapped material.

The RMTS weld box offers a two-minute changeover with no overlap, and a reduction in weld splitting. Designed with the operator in mind, the unit features a one-wrench adjustment to open and close the rolls.

Mr Olson stated that keeping the unit simple to use and having its engineering started from the operator's eyes makes it a successful product for the customer. RMTS installed four new weld boxes in Q1 2017 and is looking to continue to roll these out to new customers, with several training dates scheduled in the second quarter.

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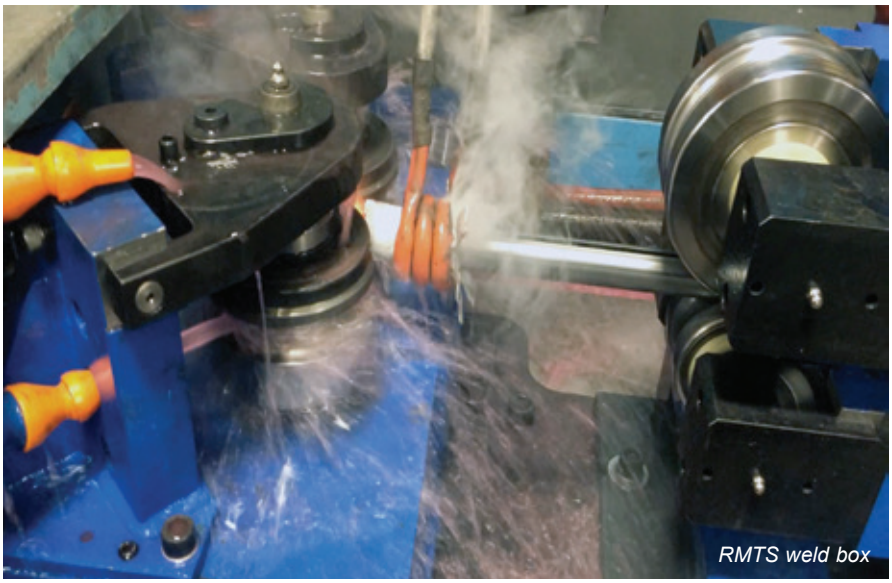

RMTS weld box

Quick-change mill technology

RAFTER Equipment Corporation now offers the new patented Mill-Flip® quick-change technology for tube mill and roll forming machines, to allow part-to-part changeovers in 15 minutes or less.

The new system requires no special mill stands or roll tooling, and no complicated mill drive connections or electrical control systems. No special operator or maintenance training is necessary, and there is no need for overhead cranes or special raft handling equipment.

The system has the ability to quickly break into a production run and then quickly go back to the previous product. It has built-in redundancy for increased line up-time capability, and there is no infringement on the operator's side of the mill during changeovers.

The company also manufactures tube mills, pipe mills, roll forming machines, flying cut-offs and other related mill machinery. A significant part of the company's business includes the retrofit and replacement of common tube mill components, including driven roll stands, idle side roll stands, weld squeeze boxes, weld upset bead removal equipment (ie OD bead trimmers), and turkshead-type straighteners.

Rafter Equipment Corp – USA
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Heavy wall, direct forming tube mill passes acceptance

FD Machinery has finished a new, fully automatic direct forming tube mill. A second mill is also being assembled and will be delivered in the next three months. The two mills can handle the heaviest wall among CNC direct forming square tube mills.

The time taken to change the size of tube has been reduced to ten minutes, with no tooling change necessary. No test runs are required after size changes so there is no scrap. This is important for a large size tube mill. The mill can produce accurate tubes over a wide size range. With an automatic entry section and automated bundler, the whole mill requires only three operators.

FD Machinery is the original developer of the 'whole shaft' flexible forming square tube mill. The major advantage of this design is its ability to handle heavy wall.

The new mill is more energy efficient than previous generations, and has longer tooling life. It can change sizes with strip threaded in the mill. Because the mill uses a super-strength design, it produces accurate tubes and avoids further adjustment, increasing productivity.

FD Machinery – USA
Email: sales@fdmachinery.com
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The direct forming tube mill from FD Machinery

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Powerful digital connection is key for modern tube machining

Safe and automated processing from transfluid

THE increasingly powerful digital connection for tube machining processes is a big factor in recent technical progress within the industry. For hydraulics in particular, solutions are required that ensure safe tube machining as well as automated processes where required.

Powerful automation is even possible with very low unit quantities, for example with the technical machining of hydraulic connection elements.

As such, transfluid – with its axial forming machines of type REB and tool-independent rolling forming with systems of type SRM – offers the solution for hose connections or DKOL connections directly on the tube, for example. These enable sharp-edged contours for sealing elements and optimum surfaces. The production of flanges between 20° and 90° with short clamping lengths can be realised with transfluid forming machines of type UMR, for optimum sealing surfaces and in a single process.

"In the future, greater flexibility will be required for even better processes. I think, for example, of the online connection between design and our bending software t project. And also of systems that measure both at the building and the finished tube. Such a system must of course be simple to use. That is sure to deliver greater bending freedom," said Stefanie Flaeper, managing director of transfluid, outlining the demands and developments that are required.

This was the objective of the engineers at transfluid when they developed the mandrel bending machine of type t bend DB 40220-3A-CNC. With this machine, it is possible to bend thick- and thin-walled tubes with diameters from 40 to 220mm. The stable design ensures a long service life, and simple, rapid tool changes enable diverse applications and improved efficiency.

The right/left-bending machine t bend DB 642 CNC R/L VE with rotating head delivers a strong performance when producing extremely demanding geometries, even when structural obstacles are present. With this servo-electrically driven concept for tube diameters up to 42mm, each bending head has two tool levels as standard. Process assurance is provided by the complete visualisation of production processes on the freely programmable CNC touch panel control.

transfluid offers flexibility together with simple and effective technology for bending directly on site in the building, with its latest generation of the mobile bending machine t bend MB 642. With this machine, hydraulic lines can be laid at the installation site.

If additional equipment is required, customers can also choose from the internal and external de-burrer, a saw, an assembly device for all conventional connection systems (flanging and cutting ring fittings), as well as metal circular saws.

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Website: www.transfluid.net

Hydraulic butt fusion machine for underground/construction market

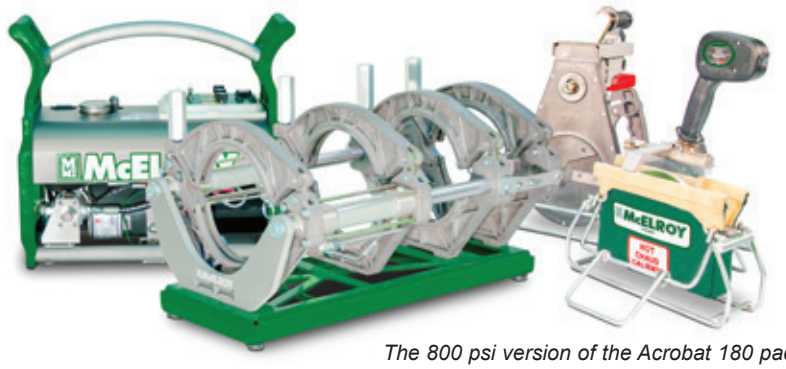
THE McElroy Acrobat hydraulic butt fusion machine, originally designed for the plumbing and mechanical industry, is now available for the underground/ construction market.

The Acrobat 180 is suitable for those interested in a reliable, easy-to-use machine. It butt fuses 63 to 180mm (2" IPS to 6" DIPS) HDPE pipe and fittings with a variety of pressure ratings. The lightweight machine can be carried from joint to joint but still maintains rugged reliability.

It is also a suitable tool for in-ditch work and tie-in fusions, and provides an alternative to electrofusion, which requires the purchase of additional fittings. It functions in tight workspaces by removing the base and converting the carriage from four to three jaws. The top jaws can also be removed for easier manipulation around pipe and fittings.

Jason Lawrence, director of product development, said: "While the capabilities of the machine are impressive, it is not intimidating. It was engineered from the user's perspective and what they need to meet the demands of their job."

Two hydraulic power unit (HPU) options are available to provide fusion pressures up to 800 psi or 1,500 psi. Both HPUs allow the operator to easily pre-set the carriage, facer and heater pressures, eliminating repetitive adjustments between operations. Both the heater and facer plug into the HPU, allowing the entire machine to draw power from only one receptacle.



The 800 psi version of the Acrobat 180 package

McElroy – USA
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Website: www.mcelroy.com

Innovations in sample preparation and hardness testing

AT Control 2017, held in May in Stuttgart, Germany, Buehler ITW Test & Measurement presented products from its extensive portfolio of equipment and consumables for hardness testing, covering all stages from sample preparation to actual hardness measurement.

A major point of interest was the new IsoMet™ High Speed bench-top precision cutters. Equipped with abrasive or diamond blades, the cutters section virtually any material, from brittle or ductile metals, through composites, ceramics and plastics, to electronic components and biomaterials. Their features are high efficiency, a powerful motor and a consistent, precise and repeatable cutting action, even for delicate samples.

The SmartCut™ automatic cutter feed minimises damage to the sample and to the cutter, resulting in an optimised sectioning process for all materials. Users also benefit from a clearly structured interface and quick sample fastening. IsoMet™ High Speed models are therefore particularly suited to busy laboratories requiring high quality standards.

Some of the products displayed at Control 2017 by Buehler ITW Test & Measurement

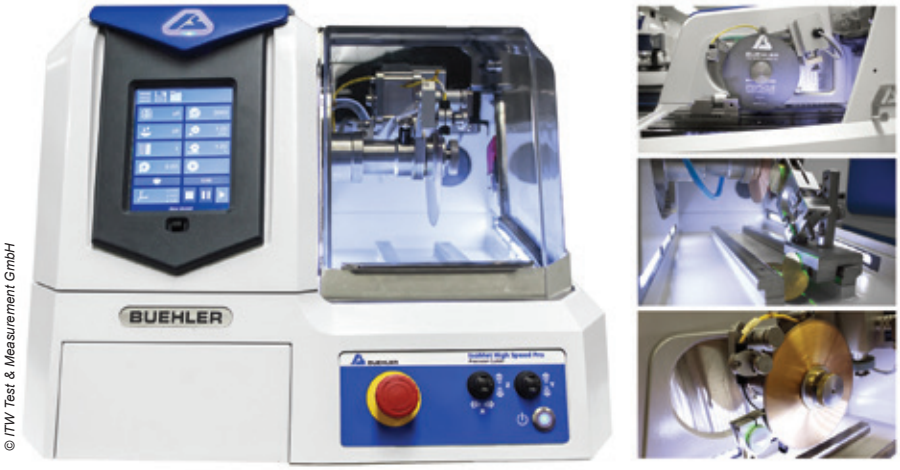
Further exhibits included the ergonomically optimised Series VH1100 hardness testers, available with varying levels of automation, and the DiaMet™ universal hardness testing software. Like the Series VH1100, the Wilson® VH3300 micro-hardness testers provide for high degrees of automation.

In addition, Buehler showcased its fast and reliable SimpliMet™ 4000 mounting press for mounting of samples prior to grinding and polishing, designed specifically for demanding industrial applications.

The EpoKwick™ FC mounting compound, developed by Buehler to provide maximum quality in the preparation of materialographic samples, cures within just two hours without needing a furnace, ensuring that mounted samples are available for the next step in the process in the shortest possible time.

Buehler's product range covers a variety of sectioning and precision sectioning machines adapted to specific applications, mounting presses with the associated epoxy and acrylic mounting compounds, grinding and polishing machines, and Rockwell, Vickers/Knoop, Brinell and universal hardness testing systems.

Buehler ITW Test & Measurement GmbH – Germany
Website: www.buehler.com



One of the highlights was the IsoMet™ High Speed bench-top precision cutter

Solution for tube, hose and pipe cleaning

NEW tubes are often dirtier than might be expected, and can cause contamination of the product circulating in them as well as the malfunction of the connected components. In regular maintenance, dirty tubes represent a serious problem in the industry: they are the cause of system inefficiency and sudden halts in production.

Alka provides a tube-cleaning solution that operates by shooting a special projectile with compressed air. The system can be applied to tubes measuring in internal diameter from 2mm up to a few hundred, and lengths of 10 to 1,000m (depending on air capacity), and can also be applied in the presence of 90° curves, 'T' or 'Y' couplings or ball valves.

Alka Srl – Italy
Website: www.alka-srl.com

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Pipe and profile manufacturing with mineral oil-free cooling lubricants

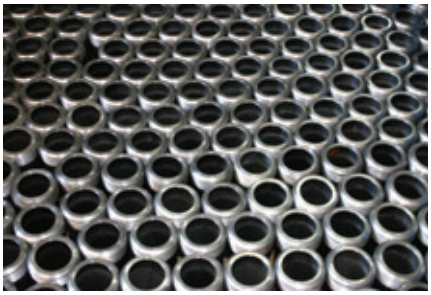
IN most cases, pipes and profiles made of steel, galvanised steel, stainless steel, and lightweight or non-ferrous alloys are produced with cooling lubricants mixed with water.

Only pipes and profiles with thin walls can also be manufactured 'dry' or with minimal amounts of cooling lubricants. Many different requirements apply for water-miscible cooling lubricants.

The suitable products must feature the following characteristics: cooling and lubrication of the roll material and the transport and forming rollers; flushing of the transport rollers and forming rollers to remove metal abrasions; corrosion protection for system parts and workpieces; high resistance against microbial contamination; no unpleasant odour development, especially during the welding of the ends of the roll; low-foam solutions or emulsions; and good demulsifying of third party oils. In the past, mostly mineral oil-containing cooling lubricants were utilised during pipe and profile manufacturing. Today, mineral oil-free qualities, so-called fully synthetic cooling lubricants, are gaining ground.

There are good reasons for that. A switch from mineral oil-containing to mineral oil-free products bears the following advantages: significant reduction of cooling lubricant consumption (up to 30 per cent); excellent third-party oil emulsification; due to the transparent solution, it is easy to observe the entire production process; and residue of the cooling lubricant is fully water-soluble and can easily be removed with water-based industrial cleaning products.

Modern Hakuform cooling lubricants for the pipe and profile production of Chemische Werke Kluthe GmbH do not contain mineral oil or critical ingredients such as boron derivatives or formaldehyde materials. Chemische Werke Kluthe GmbH has more than 40 years of experience with the development, production, and sale of fully synthetic cooling lubricants for forming processes. This extensive expertise is evident in the current product qualities.



Stainless steel tubes

Chemische Werke Kluthe GmbH – Germany
Website: www.kluthe.com

Selection of filler metals for use with new Rebel multi-process portable welder

ESAB is making it easier for customers to identify and purchase filler metals that are compatible with its recently launched Rebel multi-process welding machine. Customers are reporting that the machine's smart MIG welding function gives a stable arc and the innovative user interface, with its colour screen, makes set-ups easy. To help customers maximise their productivity without compromising quality ESAB has published a list of Rebel-compatible filler metals.

Four MIG wires (including two for stainless steel), two flux-cored wires and three MMA welding electrodes (one for stainless steel) are included on the list. In addition, customers can use their own choice of filler metal when TIG welding with the Rebel. A new web page has been added to the Rebel section of the ESAB website so customers can see at a glance which filler metals should be used with the Rebel. For each filler metal a link is provided for access to more detailed product information. A further user-friendly feature of the new web page is that customers can click on a 'where to buy' button to find the nearest distributor.

Rebel's sMIG function produces a smooth arc so ESAB recommends its smooth-feeding OK AristoRod 12.50 non-copper-coated wire with advanced surface characteristics. In addition to benefiting from exceptionally smooth feeding, this wire also promotes longer torch life, reduces spatter, ensures excellent arc ignition and emits low levels of fumes.

ESAB's OK Autrod 12.51 is a copper-coated wire that provides a more fluid puddle and smoother bed profile. A superior finish on the wire reduces copper flaking compared to lower-quality wires.

For fabricating austentic stainless steel ESAB recommends using the Rebel's inductance function and running OK Autrod 308LSi to further enhance wetting, reduce weld crown and improve tie-in. Low carbon reduces the risk of intergranular corrosion and higher silicon improves the welding properties. For applications where enhanced corrosion resistance is required the Rebel can be paired with higher alloyed ESAB filler metals such as OK Autrod 316LSi.

When galvanised and thin sheet steel (0.8-5mm) are being fabricated, ESAB's Coreshield 15 flux-cored wire is suitable for all-positional, single-pass welding. In addition to producing a smooth arc, Coreshield 15 ensures full slag coverage, easy slag removal and low spatter. Light rust and mill scale are tolerated and this wire needs no shielding gas – which is a further benefit where portability is important.

For mild- and medium-tensile structural steel applications, ESAB's Rebel provides good results when using spray transfer mode with OK Tubrod 15.14 (E71T-1) flux-cored wire and either Argon/CO_2 or 100 per cent CO_2. OK Tubrod 15.14 is an all-position that is universally approved to grade 3 by all major authorities. When it comes to MMA 'stick' welding, the Rebel offer excellent welding performance considering its portability and operation from a single-phase supply. To make the most of this capability, ESAB recommends OK 48.00. This next-generation E7018-H4R formulation has been engineered to decrease moisture pick-up in high-humidity conditions that helps prevent hydrogen cracking and non-porous welds to be produced even in demanding environmental conditions.

ESAB believes its OK 46.00 is its best all-round rutile electrode and this filler metal works very well with the Rebel. OK 46.00 is an E6013 electrode that is relatively insensitive to rust or other surface impurities, producing smooth weld beads in all positions, including vertical down and with DC+ for Rebel. Easy to strike, restrike and remove slag, this electrode is excellent for short welds, root runs and tacking.

ESAB – UK
Website: www.esab.co.uk

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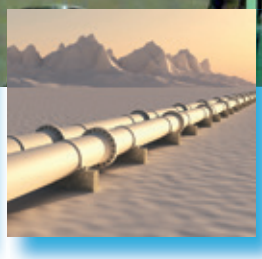

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Sales Metal Forming

'Armoured' heat exchangers from IT Tech Swiss

TRADITIONAL SiC heat exchangers offer the advantage of the high heat exchange coefficient typical of silicon carbide. The weak point of the system is the sealing between the separation plates and the tubes. At 100°C, PTFE loses tensive stress, hindering the proper sealing between plates and tubes. Leaks from traditional heat exchangers are due to fluid leakage near the plates.

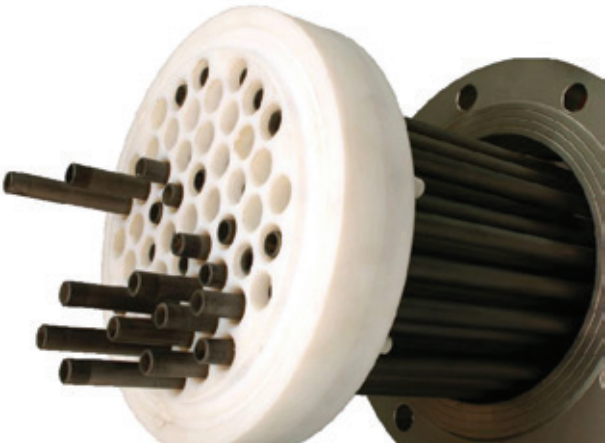
The IT Tech Swiss research and development department has worked during the last three years to optimise a new technology for the manufacturing of heat exchangers: the Guardian™ armoured PTFE exchanger. The special 'armoured' plates are made from stainless steel with an outer PTFE lining of suitable thickness.

While the stainless steel armour guarantees rigidity of the separation plates, the PTFE lining ensures chemical inertia.

Splitting the tasks of providing structural rigidity and resistance to chemical aggression enhances reliability and life cycle duration.

Guardian heat exchangers are provided with a sealing system realised through Guaflon™ (modified filler PTFE) threaded bushings, which couple to the threading of the PTFE plate, blocking the tubes. The seal is provided by elastomeric O-rings that allow the tubes to expand without compromising the seal tightness. The O-rings are made of Kaflon™ 79P, for the highest degree of elasticity, softness and thermal resistance.

IT Tech Swiss SA – Switzerland
Email: info@ptfe.ch
Website: www.ptfe.ch



The plates are made from stainless steel with an outer PTFE lining

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New generation of extraction and filtration systems

ULT AG has redesigned its ULT 200 product range and introduced a new generation of extraction and filtration devices. With space-saving and modular construction, these systems efficiently remove soldering fume and dust as well as gases, odours and vapours. The extraction system's modularity allows for high flexibility and adaptation to changing process conditions.

The newly designed devices have been engineered to result in simple and intuitive handling, providing even more functionalities, low-noise operation and increased customer benefits. Thanks to the specially developed integrated vacuum stabilisation, the filtration systems adjust the extraction performance automatically and flexibly to the necessary contaminant-capturing rate. In particular, this enables pollutant capturing at several workplaces, which may help to save costs to a significant degree. Depending on applications, the new air purification systems will be provided with a specially configured multi-stage filtration concept, including HEPA filters. The cost-efficient, separately exchangeable pre-filters increase the main filters' durability and significantly minimise replacement and expendable part costs.

The main filters' separation rates of more than 99 per cent include the filtration of nanoparticles. Activated carbon or chemisorption stages for gas filtration may be added.

The utilisation of Z-Line filters as cardboard boxes allows for simple filter handling and low contamination filter exchange. The systems provide a filter exchange pre-warning at 80 per cent filter saturation. That enables sufficient time to plan the safe and convenient replacement of filters, resulting in shorter down-times and, hence, time and cost savings. An M12 interface for device connection is also integrated. The new system range can be equipped with flexible capturing solutions to adapt to changing process conditions or local conditions.

The ULT 200

ULT AG – Germany
Website: www.ult.de

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Tube drawing machines

WHETHER for steel, stainless steel, copper, aluminium or other materials, Bültmann tube drawing machines are suitable for many different applications and are tailored to the demands of the customer.

Depending on the application, straight drawing machines, drum-type drawing machines or spinner blocks are used. In the case of drawing machines, the Bültmann design is based on the principle of 'individual lines' – each drawing machine offers an individual solution for the particular application by using standard components from Bültmann.

The drive systems of the straight drawing machines are, depending on use, executed with toothed rack, drawing chain or hydraulic cylinder. In addition, the machines can be equipped with external and/or internal clamping systems for the tubes to be drawn.

The number of drawing stations of the straight drawing machines (from single to quadruple) depends on the output required.

The die stands can be designed as stationary or travelling units (eg for lack of space).

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New features on T-Drill collaring machine S-54

T-DRILL has added several new features to its S-54 collaring machine, making it more flexible to use in automotive, air conditioning, refrigeration or cooling applications.

With the addition of integrated tooling and new programming, the machine can do three different operations in one set-up with one tool: drilling only; pulling a collar for making brazed tube joints; and pulling and trimming a collar suitable for making butt-welded tube joints.

The latest innovation from T-Drill is the redesigned versions of manual and automatic feed tables (MFT/AFT). These feed table options are modular in construction and can be adapted to existing S-54 collaring machines. As production requirements increase, the manual version can be upgraded to an automatic version just by adding the necessary modules and automation components.

The manual feed table is simple, safe and easy to operate. Standard modules are available for 1,500, 2,500, 3,500, 4,500, 6,000 and 8,000mm long tubes. In some cases, it is possible to handle complex bent tube with the MFT system.

With the standard MFT it is possible to make the positioning of collars on the whole tube length by using three selectable pre-drilled templates or using the pneumatic brake by foot pedal. As an option there is a digital positioning device with a display. This is convenient when manufacturing a wide variety of manifolds instead of long series of similar items. It is also possible to use the most typical method, namely marking locations on the tube. For this purpose there is a laser pointer that can be obtained as an option.

In addition to the accurate location of collars along the length of the tube, the tube can be rotated to any radian degree through the use of ready-made templates.

Since chips are generated during the collaring process, a chip tray has been incorporated into the system for the easy removal of material, which can then be recycled. A clean work area improves the safety of the working environment.

The new automatic feed table (AFT) has been designed around two concepts: high production capacity as well as a system that is easy to understand, efficient to operate, ergonomic and safe.

This fully automatic servo-controlled system is also equipped with new Weintek HMI for an elegant programming solution. Using a touchscreen for input, the Weintek HMI provides on-screen prompts to guide the operator through the programming process. Even complicated manifolds can be programmed in minutes, and can be stored as templates to be modified later or completely re-written.

AFT uses USB memory cards for storing the programs, which gives unlimited space for different programs just by changing USB cards.

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X-ray measurement technology from Zumbach

IN order for a manufacturer to select a measurement and control solution with the best price/performance ratio, suitable technology must be chosen.

After many years of experience in using eccentricity gauges with X-rays and ultrasonic, laser diameter and inductive measurement devices for different products and materials, Zumbach has expanded the X-Ray family for dedicated tube and hose applications.

Zumbach's static X-ray system Rayex® S has been specially developed for use with any kind of foamed pipe, vulcanised products and hydraulic hoses. Rayex® S measures and controls diameter, ovality, wall thickness and eccentricity of single and multi-layer products with up to four layers. It provides precise measuring values and high reliability for pipe and hoses with an outside diameter of up to 80mm. The system features the latest X-ray technology and software solutions.

In combination with the data acquisition and processor system, automatic control of the line is possible. By controlling line speed or extruder speed the parameters are controlled to the nominal value. The display shows all measurement values numerically and graphically, as well as trends and statistical data. A line presentation with pictograms of the connected devices provides a clear overview to the operator. At the same time the system reduces the wall thickness to a minimum value. Quality assurance and the reduction of material lead to a significant increase in productivity.

Zumbach Electronic AG – Switzerland
Email: sales@zumbach.ch
Website: www.zumbach.com

Rust stopper for tubes and pipes

HINDERRUST is a solution to common problems in the tube and pipe industries, including flash rust. It is a solvent-free, all-in-one, rust-stopping, rust-inhibiting and lubricating product that aggressively wets and spreads across application surfaces.

Uses for HinderRust include protecting newly machined parts and equipment against flash rust, protecting chains, wire rope cables, tools and weapons, and potentially acting both as a mould release agent and as a protection agent against corrosion on moulds and dies. The lubricating agent in HinderRust not only attacks corrosion, but also frees up frozen joints and fasteners.

Fluoramics, Inc – USA
Website: www.fluoramics.com

Portable arc/spark OES metals analyser

SPECTRO Analytical Instruments has introduced the Spectroport portable arc/spark optical emission spectrometry (OES) metals analyser. Spectroport delivers many of the features of Spectro's flagship mobile Spectrotest OES analyser in a smaller, lighter unit with point-and-shoot performance for fast, ready response; flexible portability; intuitive ease of use; and minimal standardisation efforts.

Spectroport is as fast as a handheld XRF, with many analyses taking only a few seconds, but it also accurately analyses elements such as carbon, sulphur, phosphorus, boron, lithium, beryllium, calcium, silicon, magnesium, and aluminium at low and critical levels. Its new optical system covers a wide range of elemental wavelengths, displaying precision, stability and robustness without additional heating.

The analyser's flexible options maximise mobility, including large/small transport trolleys and portable batteries. For testing in difficult-to-reach places, such as analysis of installed or small parts, thin wires, curved surfaces or concealed welding seams, or for infrastructure control tasks, Spectroport can be used cordlessly with a rechargeable battery pack.

Data management with Spectroport is flexible and comprehensive. Advanced tools accurately and definitively verify, record and document complete testing results. Data can be delivered to a wide variety of devices via WebApp and PC connections from WLAN/LAN to USB.

Spectro's Spark Analyzer Pro software enables Spectroport users to quickly and easily define different testing modes and sample identification fields. New preset applets perform much of the work, and eliminate most errors. Simplified, predefined operator views eliminate unnecessary selections, and users are presented with clear choices for tasks such as pass/fail sorting and grade identification via dedicated toolbar buttons.

There is no need for repeated calibration, thanks to predefined calibration packages and the new Spectro-exclusive iCAL 2.0 calibration logic system, which also helps maintain the same standardisation regardless of most temperature shifts.

Amecare services, available to Spectroport users, help ensure uninterrupted performance; and optional machine-to-machine support allows proactive alerts, backed up by client connection with a remote Spectro service expert's PC.

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Condition monitoring kit

PARKER Kittiwake, a manufacturer of condition monitoring and fluid analysis technology, has launched the Condition Monitoring Starter Kit, which combines the Parker Kittiwake DigiCell combined kit, the Holroyd MHC-Bearing Checker, and a PC tablet with a pre-loaded condition monitoring routine and log book to help guide the user in using the products.

Created with the aim of introducing condition monitoring to those owners and operators less familiar with it, the Condition Monitoring Starter Kit combines tools that protect vulnerable equipment and prevent failure. It utilises modern condition monitoring technology to simplify everyday maintenance observations and provide advance warning of possible maintenance requirements. Using deskilled, intuitive technology, the starter kit empowers crew members with data that enables them to take corrective action and safeguard against potentially catastrophic damage in the worst case, and allows them to prioritise everyday maintenance to maximise operational efficiency.

The Parker Kittiwake DigiCell is an analysis tool that gives engineers a rapid indication of the levels of water in oil as well as an indication of the lubricant's residual base number (BN). It is a popular method for on-board testing, providing fast, accurate results in real time, enabling easy monitoring of vital trends.

The Holroyd MHC-Bearing Checker is a hand-held instrument that provides engineers with a quick and easy-to-operate analysis of bearing condition using unique Holroyd acoustic emissions monitoring technology. By monitoring the high frequency acoustic emissions signals naturally generated by deterioration in rotating machinery, the checker is able to identify developing machinery faults and provide engineers with condition-related information.

Parker Kittiwake – UK
Website: www.parker.com

Water-based rust preventatives

FOR the last three years, Metalube has been attempting to change the way people think about tube forming and metal protection. The launch of the company's tube and pipe range introduced the use of water-based rust preventatives that are compatible with specialist forming coolants (Cool-Tek), giving improvements such as higher levels of cleanliness, lower incidences of roll skid, greater consistency in performance and higher levels of corrosion control. The range is currently being used by companies in India, the Middle East, Poland, Portugal, Spain and the UK, with trials taking place even further afield.

Metalube Ltd – UK
Website: www.metalube.co.uk

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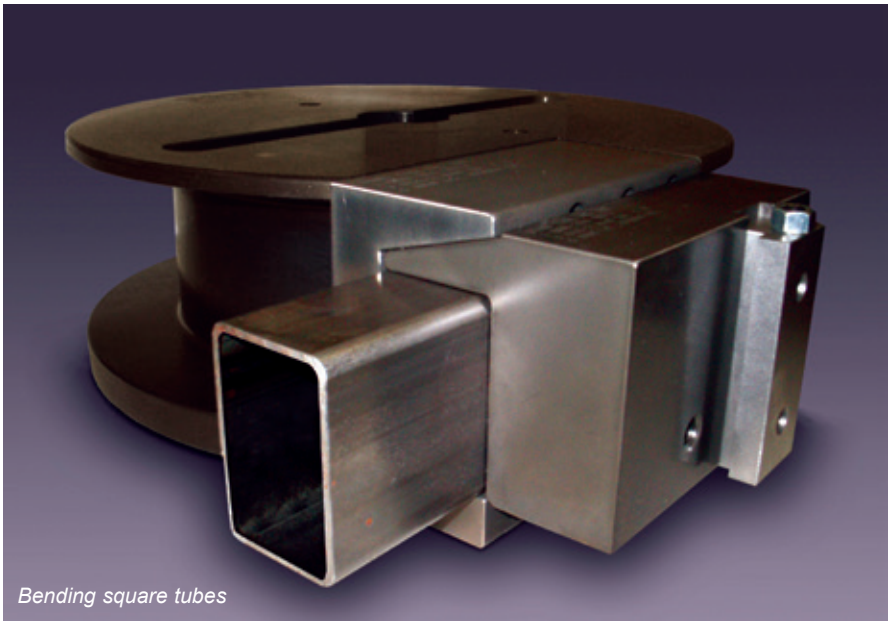
Non-round is no problem for Bend Tooling

TAKING on a rotary draw bending project involving square or rectangular (non-round) tubing has often been considered a risky proposition, but by following a few simple guidelines and using the correct tooling, favourable results can be obtained. To ensure that the CNC or NC tube bender has the power to take on the required forces, it is best to add one inch to the major width of the material and choose a machine with a capacity of that value or greater. For example 2" x 3" rectangular x 0.12" WT tubing would require a bender that has a capacity to bend 4" diameter x 0.12" WT round tubing.



Bending square tubes

Furthermore, to avoid committing to a dangerously tight bend radius, it is usually wise to make sure the inside radius (ISR) is not less than 1.5x the tube's horizontal width.

The use of a special bend die actuator is a common deterrent when approaching non-round tubing applications, but with the availability of 'tapered leaf'-style tooling, such actuators are no longer a requirement. If necessary, mandrel and wiper tooling may also be used in conjunction with tapered-leaf tooling.

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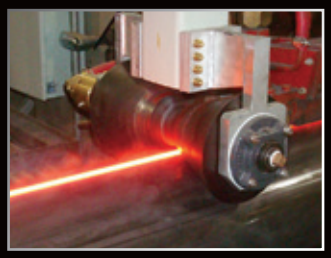

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Measuring ten tubes in 85 seconds

FROM a sketch through to the finished product, from a single source – that is the business idea of Sweden-based Proton Engineering company. The company is a one-stop supplier of tube and sheet metal structures: air/fuel lines, struts and covers for lorries.

The company's core business is based on bent tubes in a wide variety of different shapes and sizes, made from steel, stainless steel, aluminium and brass, with diameters of between 6 and 150mm. The company offers its customers complete solutions that include all the necessary processes: tube bending, end shaping, sheet metal work, welding with high levels of automation, and complete assembly of components. It consolidates the areas of design, prototype development, initial sample inspection, series production, surface treatment, inspection and logistics in one location.

The main aim is to provide customers with the best possible quality. This means that reliable quality control at all stages of the production process is vital. The company has been using AICON's TubeInspect P16 tube and wire measuring system since 2015.

The main tasks of the TubeInspect P16 are initial sample inspection and in-process sample measurement. The inspected parts are then further processed in the assembly or welding department, or are dispatched directly to the customer. If there are any deviations from the CAD specification, TubeInspect provides support in analysing faults.

Proton Engineering was one of the first customers to purchase a TubeInspect P16 tube and wire measuring system. For the first time, Proton set up a measuring system next to the production line on the shop floor rather than in a measuring room. TubeInspect is insensitive to vibrations, which meant that it was possible to integrate it directly into the production process. The company was soon able to report positive results from the new testing process. The measurements that are carried out using TubeInspect P16 are faster than earlier methods, some of which were mechanical. This saves time and costs, since it minimises machine down-times. The new system is also more precise, and provides more comprehensive results. Proton uses TubeInspect to measure the majority of its bent tubes and, using adapters, even measures complete components with attachment parts.

Photo credit: Proton Group

AICON 3D Systems GmbH – Germany
Fax: +49 531 58 000 60
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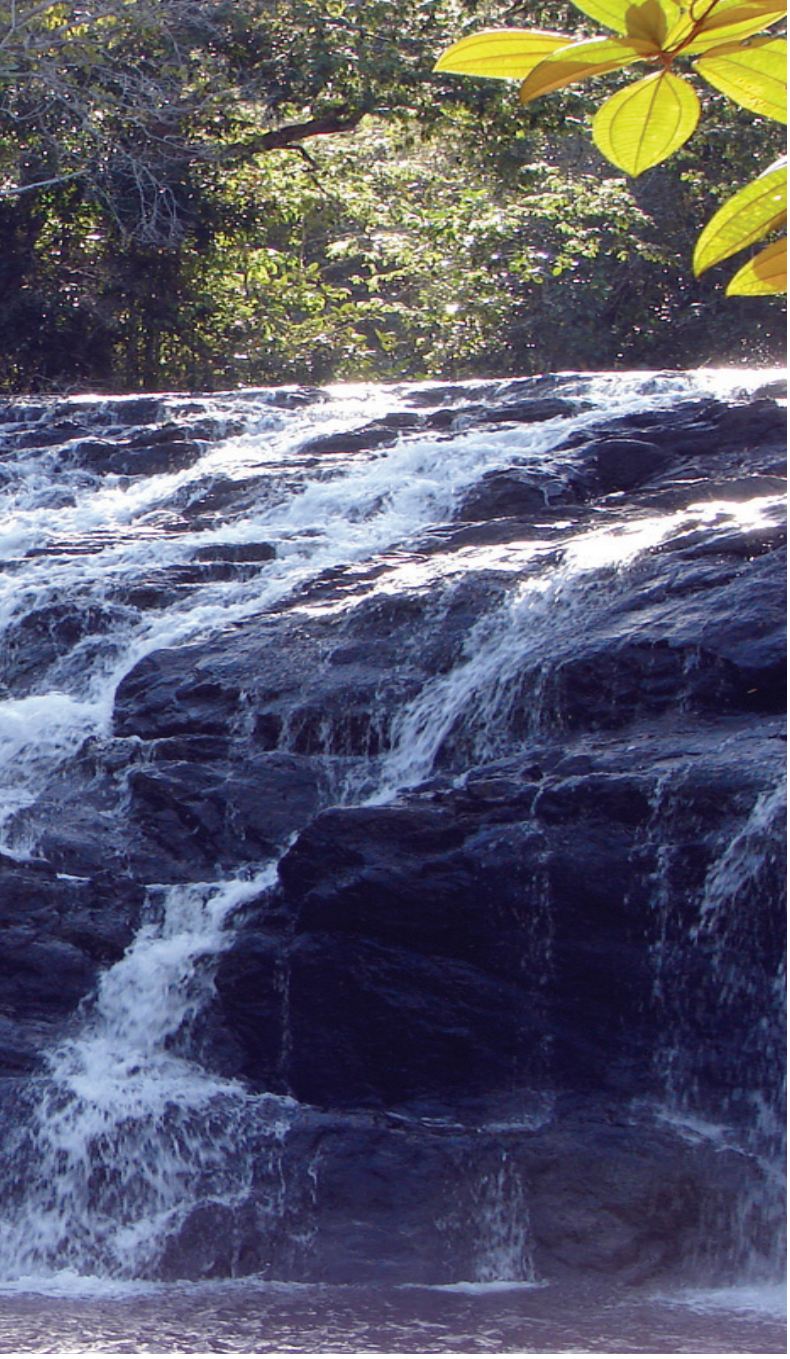
Website: www.aicon3d.com



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Oil and gas

A deadly explosion in western US calls renewed attention to the potential for leakage of older vertical gas wells

An investigation into a 17 April accident in Colorado, USA, centres on a natural gas and oil well just 178ft from a house that exploded in a fireball and killed two men working on a hot water heater. On 19 April, well owner Anadarko Petroleum, the state's largest oil and gas producer, shut down 3,000 wells throughout northern Colorado, including seven near the blast site. The company said it was acting out of an abundance of caution.

"Colorado residents must feel safe in their own homes," Anadarko senior vice-president Brad Holly declared in a prepared statement. But according to David Kelly of the *Los Angeles Times*, to those living in the Oak Meadows subdivision, about 25 miles north of Denver, their proximity to old and potentially leaky gas wells has them feeling anything but safe.

Despite assurances from the Colorado Oil and Gas Conservation Commission, the exploration regulator, one resident told Mr Kelly that she would not reactivate a pilot light for fear of an explosion. Others disclosed worries about turning on the gas stove or going into the basement. A common anxiety is that the soil of the neighbourhood is soaked in combustibles.

Mr Kelly reported that the suspect well was drilled in 1993 and changed hands several times before acquisition by Anadarko in 2014. It primarily produces gas, with a little oil. Like all of the shut wells, it is of the older vertical construction, in contrast to newer horizontal wells that allow for exploration in various directions. Commission director Matthew Lepore said there are 54,000 active oil and gas wells in Colorado, of which 48,000 are vertical. ("Anadarko Petroleum Shuts Down 3,000 Wells After a Deadly House Explosion," 28 April)

Industry expert Mark McDonald of Boston-based NatGas Consulting has spent 25 years investigating gas explosions. He believes that the lines that move gas and oil from wellheads to processing plants are under-regulated. If not properly maintained, he told the *LA Times*, corrosion and leaks can occur.

"Hopefully, it will dissipate through the soil into the air but sometimes it will travel along a previous trench or sideways or underground into someone's home and then you have a time bomb," Mr McDonald said.

At this writing, Anadarko inspectors were focused on underground lines associated with each wellhead, especially those near housing and commercial developments. An apartment complex is going up just behind the house that exploded. The local fire protection district was also gathering and analysing evidence to determine the origin and cause of the fatal explosion. While the well in the vicinity was an aspect of its probe, the district said in a statement, "This is a complex investigation and the origin and cause of the fire have not been determined."

Corroded flowlines are identified as the source of the majority of production-related spills in Colorado

In related news of Colorado, ten days before the accident described in the previous item ("A deadly explosion") it was reported that an audit of oil and gas flowlines in the state found that about half of all spills from such lines can be traced to corrosion. According to Dennis Webb, who covers energy and natural resource issues for the Grand Junction (Colorado) *Sentinel*, that means that as much as a quarter of the spills reported to the Colorado Oil and Gas Conservation Commission involve flowline corrosion.

Flowlines are pipelines running directly from wells, typically to the point of gas metering or where tanks collect produced oil. Flowlines also may carry water associated with oil and gas development. The flowline audit programme conducted by the commission's Engineering Integrity Group has, since the start of 2016, carried out 30 audits, mostly focused on larger companies. The examiners have audited more than 2,800 wells, reviewed more than 3,800 pressure tests, and done more than 400 flowline-related inspections.

Mark Schlagenhauf, engineering integrity supervisor for the commission, confirmed to Mr Webb that flowlines account for 40 to 50 per cent of all spills that energy companies report to the agency. ("Corrosion Causes Half of Oil, Gas Flowline Spills," 7 April)

Underlining the importance to Colorado of the findings, the US Energy Information Administration (EIA) has reported that, with oil production from the Niobrara Shale increasing, more pipelines are being built or repurposed to move Colorado crude oil to refineries out of state. Besides commanding the Wattenberg field, the nation's fourth-largest oilfield ranked by proved reserves, Colorado is also among the major natural gas-producing states in the US.

Mr Schlagenhauf said that the Engineering Integrity Group's audit of spills reported from September 2016 to February

2017 – showing that 48 per cent resulted from corrosion – is consistent with other evaluations by the group since its founding in late 2015. He told the *Sentinel*, "There's a lot of old metal pipe out there."

Colorado requires that flowlines be pressure tested before being put in service, and then annually. Mr Schlagenhauf said that, while the Engineering Integrity Group audit has resulted in some notices of violations, the focus has been on helping companies improve their prevention efforts. Recommended preventative measures include more frequent addition of corrosion inhibitors to pipes, replacement of older pipes, and burying pipes below the underground freeze-line.

Preventing spills, or keeping them small, apparently can spare companies the cost of a major cleanup. Mr Schlagenhauf said that one compliant company has seen its spill numbers drop from 20 in 2015 to about six last year and only one through the first quarter of this year.

Automotive

A bullish outlook on electric vehicles from an unexpected source: French oil major Total SA

"That's big. That's by far the most aggressive we've seen by any of the majors." Colin McKerracher, head of advanced transport analysis at Bloomberg New Energy Finance (BNEF), was referring to the prediction by France's Total SA, one of the world's largest oil producers, of a sharp increase in sales of electric vehicles by the end of the next decade. By that time, Total believes, EVs will make up 15 per cent to 30 per cent of new vehicles sold worldwide.

Reporting in *Bloomberg News,* Tom Randall noted that Total is more bullish on EVs than most forecasters. But, with EVs beginning to compete with gasoline models on both price and performance, their advance is closely monitored in the executive suites of the oil industry. ("The Electric Car Boom Is So Real Even Oil Companies Say It's Coming," 25 April)

Speaking on 25 April at a BNEF conference in New York, Total chief energy economist Joel Couse declared his conviction that the surge in battery powered vehicles will cause demand for oil-based fuels to peak in the 2030s. In this scenario, EVs will account for one-third of car sales by 2030, after which "[fuel] demand will flatten out." Mr Couse added, "Maybe even decline."

While Mr Couse's projection for electric cars is the highest to date by a major oil company – and exceeds BNEF's own forecast – Mr Randall observed that other oil companies have been trimming their long-term forecasts for oil demand. Chief executive officer Ben van Beurden of Royal Dutch Shell said in March that oil demand may peak in the late 2020s. The company has set up a business unit to identify the clean technologies where it could be most profitable.

The EV has got to be a strong contender. According to BNEF the most expensive part of an electric car is the battery, which can make up half the total cost. The first electric cars to be competitive on price have been in the luxury class, led by the Model S from Tesla, now the best-selling large luxury car in the US.

But *Bloomberg* pointed out that battery prices are dropping by about 20 per cent a year, and automakers have been spending billions to electrify their fleets. Volkswagen is consigning 25 per cent of its sales to electric by 2025. Toyota Motor plans to phase out fossil fuels altogether by 2050. Electric cars currently make up about one per cent of global vehicle sales, but traditional carmakers are preparing for "the avalanche" *Bloomberg* expects to break in 2020. Volkswagen gets into electrification next year with an Audi SUV and the first high-speed US charging network to rival Tesla's. Distinguished names among the dozens of new models then to be released include Jaguar, Volvo and Mercedes-Benz.

"By 2020 there will be over 120 different models of EV across the spectrum," Michael Liebreich, founder of BNEF, told Mr Randall. "These are great cars. They will make the internal combustion equivalent look old-fashioned."

Elsewhere in automotive . . .

Sweden's Volvo Cars, a separate company from the Volvo Group, has confirmed that it will introduce its first all-electric vehicle to the market in 2019. The announcement was made at the 2017 Shanghai auto show in April.

Green Car Reports (26 April) observed that the venue was an appropriate one, as the Chinese-owned company plans on having the model produced at its Luqiao plant in China, enabling it to tap into the world's largest market for electric cars. Volvo Cars has set a target of increasing its sales in China to 200,000 units by 2020, and to 800,000 globally. It expects the electric model to help it get to that number.

As noted by *Green Car Reports*, the Volvo Cars announcement followed on some of the worst episodes of smog in China's history, and stemmed from a belief that the country has a shot at dominating global production of lithium-ion battery cells and electric vehicles. Expected to be priced under $40,000 in the US, the new car could potentially offer an electric range of 200 to 250 miles. This would make it a likely rival to the Chevy Bolt EV and Tesla Model 3.

Last year, Volvo Cars became the first Western manufacturer to export a premium product out of China. Production of its new, all-electric series will be concentrated at the Chengdu plant, but the cars will also be turned out by a plant under construction in the US – the company's first-ever North American assembly site.

Boeing and Airbus

As a decade-long jetliner shopping spree winds down, how are the two big planemakers adapting to slower sales?

The newest and largest 737 Max from Boeing Co took its maiden flight on 11 April, during a week that marked the 50th anniversary of the first 737 flight. As reported by Julie Johnsson of *Bloomberg*, the debut is the latest in a year crammed with new planes produced by manufacturers from Brazil to Ukraine.

Boeing's largest Dreamliner, the 787-10, took its first flight on 31 March – the same day that Airbus's A319neo and Antonov's An-132D turboprop aircraft made their maiden flights. ("Boeing's Largest 737 Max Takes Flight," 13 April)

But Ms Johnsson observed that sputtering airplane sales raise concerns that the new aircraft are entering the market as the aerospace industry heads into a downturn after a period of unprecedented growth. She wrote, "That could make it tougher for manufacturers to recapture the billions of dollars poured into engineering, tooling and factories."

Nothing daunted, in the spirit of their traditional rivalry Boeing introduced the single-aisle Max 9 into a market dominated by Airbus SE, with its longer A321neo. And, with a comparatively encouraging outlook for larger narrow-bodies, Boeing is also marketing a larger model, the Max 10X. Randy Tinseth, a Boeing vice president of marketing, told *Bloomberg* that the company expects the two stretched jets to eventually account for about a quarter of its narrow-body sales.

But Ms Johnsson pointed out that potential customers like Air Lease Corp (Los Angeles) fret that the new model will get to market too late. According to aerospace analyst Richard Aboulafia, its 2020 debut will come a year after Airbus introduces an A321neo model configured to seat as many as 240 passengers. The Boeing Max 9 seats 204 in its single-class cabin.

Chicago-based Boeing Co vs Airbus Group SE, headquartered in the Netherlands. Some things never change, except in the particulars. The next phase of the competition will likely centre on the workhorse planes favoured by budget carriers. Ms Johnsson predicted that Boeing will probably have to discount heavily to cut into Airbus's lead. But both companies are cushioned by record backlogs for their upgraded narrow-bodies: 3,703 orders for the 737 Max and 5,056 sales for the A320neo lineup. Said Mr Aboulafia, referring to Boeing and Airbus, "This is why we have a duopoly."

Steel

Eurofer: EU steelmakers are poised to capitalise on expected growth in demand

The European Steel Association (Eurofer) looks for steel demand in the European Union to rise more than 1 per cent this year and again next year, extending the strong gains of 2016. Apparent EU steel demand, including inventory changes, will rise 1.3 per cent in 2017 and 1.2 per cent in 2018, Eurofer said in a 25 April statement.

With sales of some $185 billion a year, the European steel industry is a bellwether of regional economic health. Steel demand in the bloc grew 3.2 per cent last year, Eurofer said. But London-based Maytaal Angel, of Reuters, noted (25 April) that EU steelmakers largely failed to benefit as importers gained market share at their expense. Eurofer does not expect a repetition of this in 2017.

"Finally we are seeing evidence of EU steel companies also gaining from improving domestic steel demand," said Eurofer's director general Axel Eggert. "However, we must not get ahead of ourselves."

While acknowledging the temporary "solace" provided by anti-dumping duties, Mr Eggert warned of the danger of circumvention and stepped-up deliveries by outside suppliers, "particularly as protectionism spreads in response to global oversupply pressures."

In the week before Eurofer published its forecast, the United States announced an investigation into whether imports of steel from China and elsewhere pose a national security risk. Ms Angel observed that the move increases the risk that surplus steel will be diverted from the US to Europe. Still, shares of Europe's steelmakers rose strongly in the year through April. The EU has its own anti-dumping measures in place. And Reuters noted that China, source of much of the world's surplus supply, appears to be making good on its pledge to cut from 100 million to 150 million metric tons of steel capacity by 2020.

On another optimistic note, Eurofer said it expects a weaker euro to support European steel exports, at least for the time being. It sees exports picking up along with improving international trade conditions, which in turn suggest an upswing in the global economy.

The US president's plan for shielding American steel from imports would exemplify the doctrine of unintended consequences

The *Economist* was moved to comment on the US investigation into steel imports, referenced above: "As an example of all that is wrong with Donald Trump's view of trade, the probe he has ordered into the steel industry is particularly hard to beat. If it results, as seems to be the plan, in blanket punitive tariffs

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slapped on steel imports, the consequences would be dire." ("Striking When The Iron Is Cold," 27 April)

The principal consequences enumerated by the London-based business and world affairs weekly are: the American economy would be hurt by a rise in the price of an essential material; it would invite retaliation that would cost American jobs, not save them; and the underlying problem – massive global steel overcapacity – would persist.

Abridged and lightly edited, these are some of the supportive arguments marshalled by the *Economist*:

- Cheap steel is a boon to many producers as well as to consumers. Higher prices would impact American firms, notably carmakers, that use the metal. The tariffs of up to 30 per cent imposed in 2002 by President George W Bush are estimated to have cost 200,000 jobs in these industries – more than the 145,000 Americans employed in steelmaking today.

- Moreover, the big threat to steelmakers' jobs comes not from trade but from technology. According to the American Iron and Steel Institute, technological advances and cheaper electricity have enabled labour productivity in steelmaking to increase fivefold since the 1980s. Tariffs will not bring lost jobs back.

- Nor would tariffs solve the underlying problem in global steel markets: the huge excess steel capacity in China. Indeed, they could be counterproductive.

Existing trade-protection measures have successfully diverted Chinese steel to other markets. In 2016, Chinese steel made up just 4 per cent of American steel imports, compared with 23 per cent from the European Union and 27 per cent from Mexico and Canada combined. An across-the-board tariff imposed on imports would risk splitting a potential alliance between America and the rest of the world vis-à-vis China.

After many lean years, the US steel industry is at last again becoming competitive abroad. According to the *Economist* editors, if a blanket tariff were to spark a wider trade war, the irony is that the biggest losers would include modern American steelmakers. They wrote, "If Mr Trump really wants to boost American steel, free trade would be a much better bet."

Immigration

Once again, Canada as haven: this time, for legal immigrants living and working in the United States

Canada has represented a bolthole for disaffected Americans at various points, notably for draft-avoiders during the Vietnam War. The government department Immigration, Refugees and Citizenship Canada is reliably stormed by American voters disappointed with results at the polls. Now, a new category of urgent prospective Canadian citizen is emerging: the holder of an H-1B visa, the temporary US work visa for speciality occupations.

Jonathan Blitzer of *The New Yorker* recently profiled Canada by Choice – a small, family-run immigration consultancy in Windsor, Ontario, across the bridge from Detroit – that gives legal advice to people interested in moving to Canada and helps them fill out the necessary paperwork. According to the marketing director, Hussein Zarif, since 8 November (election day in the US) the firm has been flooded with calls from Americans. The heavy traffic has crashed its website a few times.

Mr Zarif, who is 24, and whose father runs the business, credits the explosion of interest to some ads he put out on Facebook and Google using as a tagline a quote from Canadian Prime Minister Justin Trudeau: "Canadians will welcome you, regardless of your faith. Diversity is our strength." As noted by Mr Blitzer, the response has made the younger Mr Zarif "an unlikely expert in the anxiety currently plaguing immigrants in America." ("Canadian Immigration Firm Sees a Boom In the Trump Era," 27 April)

That anxiety has a single locus: the H-1B visa, a temporary US work visa for certain occupations in engineering, medicine and tech. On the campaign trail, candidate Donald J Trump attacked the H-1B programme, which admits 85,000 people a year, claiming that companies were using it to undercut American workers. When Mr Trump won the presidency, many expected him to take steps to curb the programme.

America's loss/Canada's gain

For some, the uncertainty has proved intolerable. As of late April, H-1B visa holders who live in the US account for half of the Canada by Choice clients seeking permanent residency and 80 per cent of clients seeking a Canadian work visa – about 70 people altogether. Foreign-exchange students, who also figure among the clients of Canada by Choice, have been reacting to the Trump ascendancy, too. *The New Yorker* noted that, in a recent survey of 250 American colleges and universities, 40 per cent of the institutions reported a decline in applications from international students for the autumn of 2017. And the number of H-1B applications has begun to dip.

Canada, meanwhile, is becoming more attractive to high-skilled job seekers. The country is projected to create more than 200,000 new jobs in the tech sector by 2020, and Canadian firms have been aggressively recruiting foreigners. In the past, Canadian companies have struggled to match the salaries offered by their American counterparts; but now, wrote Mr Blitzer, "Canadian tech CEOs are reporting an uptick in interest from immigrants who are uncomfortable staying in the US."

On 16 April, the White House issued a new executive order, "Buy American, Hire American," which calls on government agencies to crack down on "fraud and abuse" in the H-1B visa programe. On the day it was announced Mr Blitzer texted Hussein Zarif for comment. Already there had been a fresh wave of calls, and the traffic to the Canada by Choice website was spiking once again. "[The executive order] is pretty vague," said Mr Zarif. "But it will play into the fears of the visa holders."

Dorothy Fabian, Features Editor (USA)

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BENDING, FORMING & SWAGING

Photo: transfluid

What may the customer of a state-of-the-art tube mill confidently expect of these specialities?

At the very least: bending without kinking; end forming with minimal material loss; and no distortion of outside and inside diameters during swaging.

In many industries, that degree of finesse would be associated with customised craftsmanship – even hand-finishing. But it is regularly achieved by companies such as those whose names appear in this section of Tube & Pipe Technology.

Without sacrificing in the smallest degree the benefits won by computerisation, they have effectively erased the distinction between high-volume output and product that suggests the presence of an artisan.

Vertical or horizontal angle roll machine

ERCOLINA® has introduced the CE60H3 angle roll. Capable of bending a wide range of tubes, pipes and profiles, the CE60H3 angle roll model is designed to operate in either the vertical or horizontal position, with a maximum bending capacity of 3" schedule 10.

The included control tower with low voltage controls has a foot pedal for hands-free operation, and programmable touchpad controls with digital centre roll positioning on a remote pendant for increased repeatability. Memory storage offers eight individual programs and unlimited passes. A universal tool set is included for multiple profiles, and this model uses the same tooling as Ercolina's CE50. The machine has a heavy-duty structure and rigid components for high section modulus ratings and reinforced engineered mainframe design.

The CE60H3 features individual tie bar supports for each shaft to increase roll shaft rigidity and radii accuracy. The design increases distance between lower shafts and interaxes to accommodate a wider range of profiles. A larger hydraulic cylinder increases machine capacity.

Ercolina's CE60H3 angle roll machine

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Bending and cutting in a single step

SCHWARZE-Robitec has expanded its cutting tool and has combined the bending and the final cutting of short bent tube components for large diameters of up to 76mm (3") in a single working step. To do this, the cutting tool is integrated into the bending tool.

This makes the whole process more efficient, but was previously only possible for smaller diameters. The user benefits from a decrease in scrap material (up to 90 per cent) and reduced production times.

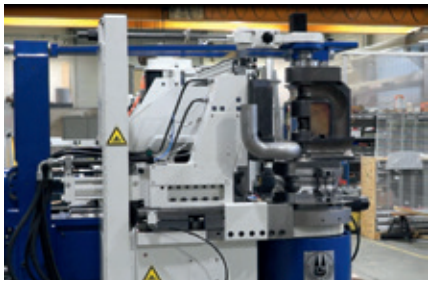
The integrated cutting tool system is suited to the production of parts in large quantities, due to the material and time savings. Users in the automotive sector or the supplier industry are already using the system. To enable the advantages to be used with tube diameters of up to 76mm, Schwarze-Robitec has optimised the cutting tool. The tools can process these precise cuts in a short time.

At the same time, the material savings can be high: previously, up to 100mm scrap accumulated for each part produced, depending on the bending system used. This high cost factor is reduced with the integrated cutting tool. Machining of longer pipe units instead of cut-off pipe sections is also possible thanks to the integrated cutting process. This also reduces the time required for loading and unloading the machine.

With the new cutting technology, all components receive a clean cutting edge and can be immediately processed further.

Therefore, this technology is particularly suitable for series production, for example, in the automotive sector or the supplier industry. This is where the savings of resources and time play an important role.

The controlled chip removal process keeps most of the chips produced during the cutting process away from the machine. A prerequisite for integrating the technology into



Bending machines from Schwarze-Robitec

all-electric machines of the high-performance series is the use of the CNC control NxG. The new controlling system enables cutting at any bending angle between 0 and 90° and is simply integrated into the bending program. The cutting tool processes all common materials – including aluminised steels or hard-to-cut materials such as chrome-nickel steels.

Schwarze-Robitec, founded in 1903, is an international expert in the sector of tube bending machines. The company's product range includes, in addition to tube bending machines and bending tools, tube perforating machines, measuring stations, and solutions in the area of special machinery construction.

Schwarze-Robitec GmbH – Germany
Email: sales@schwarze-robitec.com
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Simulating the bending process

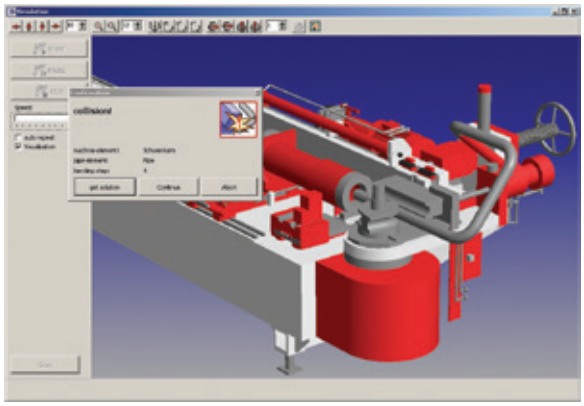
DEPENDING on the application, bending can be a faster and cheaper alternative to welding, which makes the investment in a pipe-bending machine attractive for many companies. Beyond the savings in fabricating time and material costs, additional savings on NDT and QC can lead to increased efficiency and productivity in fabrication.

There are additional ways to maximise the benefits of a pipe-bending machine, however, and this is where the right software application is of importance.

With the right software, the operator can easily generate or import pipe geometries and simulate the bending sequence, which allows for the detection of potential collisions or other problems (eg bends that are too close together) before the pipe is scheduled to go into fabrication.

In the case of a collision, the software will attempt to find an alternative bending sequence, which can vary depending on the complexity of the spool and the capability of the machine. From a simple reversal of the bending order (last point first) or the rotation direction to a change of the bending direction on multi-stack machines, RONIKolli7 from 3R solutions will test a number of scenarios for feasibility.

In addition to simply checking for collision, RONIKolli7 can generate the required CNC data, so the operator at the machine knows exactly what to enter. In many cases this data can be provided in a format that the machine can process, so the operator only has to confirm the data on the screen.



Among other features, RONIKolli7 can detect potential collisions

Since the pipe retains a certain amount of elasticity, it will try to return to its original shape after bending. Therefore, in order to achieve a specific angle, the actual bending angle at the machine has to be slightly larger, so that after springback the pipe has the desired shape. In addition, rotary draw bending results in a certain amount of stretching, so the last segment of the pipe spool is a little longer.

In RONIKolli7, the operator can create and manage a record of all materials and dimensions that are processed on each machine.

By making test bends, measuring them and tracking the results, it is possible to create a material master file that enables the software to calculate the required adjustment to bending angles and cutting length, so the bending result matches the drawing.

3R solutions states that a pipe-shop that integrates RONIKolli7 into its processes can achieve increases in efficiency, as the software can be used to: reduce the danger of collisions; confirm that a pipe is bendable without the need to create a wire model; compensate for material factors; provide CNC data for the bending process; prepare freely customisable work sheets/reports for the operator; simulate a bending process for flanged pipes and calculation of flange rotation; and calculate potentially required extensions.

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Heating a tube prior to swaging with induction from Ambrell

A COMPANY turned to the lab at Ambrell when it needed to heat a tube prior to swaging in a faster, more efficient manner.

The stainless steel tubing had an outside diameter of 1.5mm (0.06") and needed to be heated to 1,066°C (1,950°F) in around five seconds.

Ambrell's applications laboratory determined that an Easyheat 2.4kW induction heating system with a multiple-turn helical coil would be optimal for this application. With the process designed by Ambrell's applications engineers, the tube heated to temperature within the targeted time of five seconds.

Induction heating power supplies convert AC line power to a higher frequency alternating current, delivering it to a work coil and creating an electromagnetic field within the coil. The work piece, in this case the stainless steel tube, is placed in that field, which induces eddy currents in the workpiece. The friction from these currents generates precise, clean, non-contact heat.

Repeatability is one advantage of induction, as users see the same result time after time. Induction also offers targeted heating that is more energy efficient than an oven or open flame, and is also generally faster. Induction systems have work heads that can be placed a distance from the power supply, which means induction requires a minimal footprint.

Along with heating prior to swaging, induction is often used for tube and pipe coating curing, pre- and post-weld heating, and drill pipe heating treatment, among many other important applications.

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A partner in metal bending

FOR over 50 years Faccin SpA has assisted manufacturers around the world to solve challenging bending problems.

The company produces and sells a wide range of bending machines, including three models for bending thin plates: HCU two-roll bending roll with high speed and productivity; ASI three-roll initial pinch bending roll; and 3HEL electronic three-roll pyramid bending roll with double pinch. For rolling thicker plates, two different models are available: 4HEL, a four-roll pyramid electronic bending roll; and HAV, a three-roll variable geometry bending roll.

Faccin also constructs and markets various types of angle rolls that ensure bending quality and productivity over time: RCMI, specifically designed for bending profiles with high flexion strength modulus; and Taurus for bending aluminium profiles and heavy metal fabrication work.

The company's dished heads production lines include technologically advanced presses, flanging machines and manipulators that offer reliability in terms of achieving tolerances and lamination reduction. Hydraulic presses (PPM) ensure forming accuracy, and automatic manipulator (MA) handling systems allow processing of several plates at the same time. Flanging machines (BF) offer high productivity and quality of the final product, and the hydroforming machines (PPH) are used in the production of dished heads for truck tanks.

Faccin has also developed a range of special machines for specific needs in the fields of pipe production, shipbuilding and aerospace. These include the long three-roll bending rolls of the HAV-2F range, suitable for use in pipe mills; FB angle rolls for bending bulbs and various profiles; PPS Shipbuilding presses for metal forming, levelling, bending, curving and 3D modelling; large-sized RP bending rolls that combine the speed of a bending roll with the versatility of a press brake; and the R line levellers for processing plates of any length up to 4m wide and up to 70mm thick.

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Portable measurement system expands opportunities for bending tubes

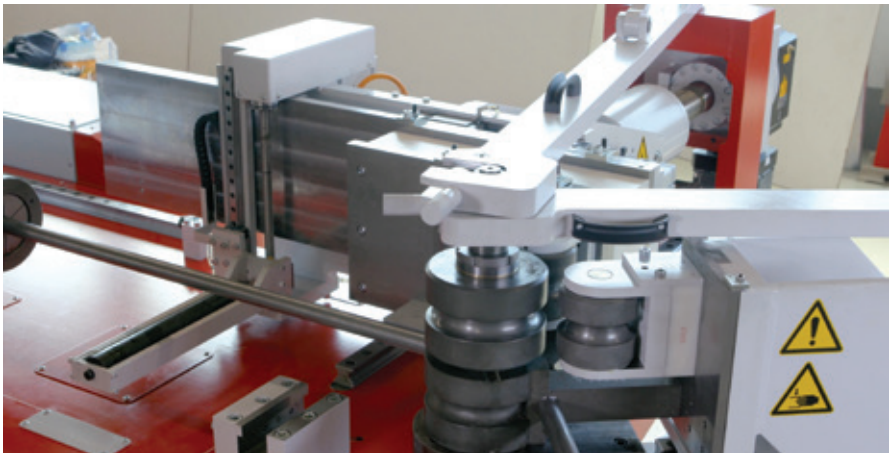
OBTAINING exact measurement data for component production, reverse engineering or component inspection is especially particularly useful for creating valuable results during tube bending. For this reason transfluid Maschinenbau GmbH has developed 't control', together with a partner.

The wireless system for measuring tubes and connection elements such as flanges does not need arms, joints or laser beams and measures via an exactly defined light pattern, which is observed by one or more cameras that determine the position and orientation of the light pattern in space. This enables the desired raw data to be recorded.

Corresponding interfaces allow exchange of data with CAD and transfluid's 't project' bending program, and direct integration of the tube bending machine in the process. The overall system therefore increases flexibility.

t control is portable, ensures a high level of precision in the measuring space (directly at the object), and is suitable for use on construction sites.

No calibration is necessary and t control is ready to start within five minutes, with up to 20m of measurement power. Depending on the requirements, this is implemented via tactile measurement



with standard measurement sensors or tube measuring calipers.

In addition to control measurements for components, material correction values for transfluid 't bend' tube bending machines can be recorded. In the area of reverse engineering, simple existing geometries can be measured in order to reproduce them precisely.

Data for component production is recorded by drawing a fictional tube shape using 'air points' between the connection pieces. This enables simple and exactly matching tube construction directly at the installation location. Connections like flanges and screw connections can be recorded and processed digitally. This also includes detection and bypassing of possible projecting edges. The data exchange with CAD and the connection with the transfluid bending program enable the geometry to be optimised, including the bending collision test.

Over-bending values for the bending machine can be recorded within the scope of the component inspection.

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Tube Southeast Asia

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19-21 September 2017

Tube Southeast Asia returns to The Bangkok International Trade & Exhibition Centre (BITEC) from 19 to 21 September 2017 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.

VENUE

Halls 102, 103 and 104
BITEC – Bangkok International Trade & Exhibition Centre
Bangkok, Thailand

ORGANISERS

Messe Düsseldorf Asia Pte Ltd
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OPENING TIMES

19 to 20 September: 10:00am – 6:00pm
21 September: 10:00am – 5:00pm

www.tube-southeastasia.com

MEASURING & MARKING

Photo: Prodim

There is no aspect of tubemaking that is not governed by precision: the correspondence between the workpiece and the requirements it is meant to satisfy.

While the specialist tasks considered here are not more precision-centred than others in tubemaking practice, measuring and marking do bear responsibility for communicating the most basic information in all of commerce: What is this? How much of it are we talking about? Only after scrupulously accurate measurement – and with the markings that are the pledge of traceability – is a production run of first-quality tubing ready for the next step, whether that be further processing or clearance for delivery to the customer.

Dual element thickness gauge transducers

DESIGNED for use with the Olympus 27MG, 45MG and 38DL Plus® thickness gauges, the new D7912 and D7913 10 MHz dual element transducers meet the European EN15317 centre frequency standard for thickness gauge transducers.

The 10 MHz transducers offer inspection performance for small diameter and thin material thickness measurement for corrosion thickness applications.

For added flexibility, the D7912 transducer has a straight integral cable and the D7913 has a right-angle integral cable.

Both the straight and right-angle probes are easier and more comfortable to hold, helping relieve strain on a user's hand.

For greater wear resistance and a longer use life, both 10 MHz transducers are designed with a new stainless steel case.

The transducers have a small 7.5mm (0.295") diameter tip and can be used on materials as hot as 51°C (125°F).

The D7912 and D7913 transducers, along with the recently released D7910, are part of a new generation of Olympus ultrasonic transducers designed to be flexible, ergonomic and rugged.

The D7912 and D7913 are not compatible with legacy thickness gauges such as the 37DL Plus, MG2 series and 26MG.

Olympus Corporation operates in industrial, medical and consumer markets, specialising in optics, electronics and precision engineering.

The company manufactures test and measurement solutions that are used in industrial and research applications ranging from aerospace, power generation, petrochemical, civil infrastructure and automotive to consumer products.

Olympus Corp – USA
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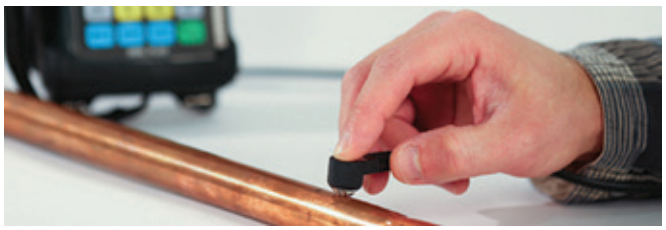
D7912 10 MHz dual element transducer

The D7913 probe has a right-angle integral cable



AlphaGage+ joins range of gauges

AS part of its extended thickness gauge product range, Sonatest has introduced the complete AlphaGage+ series.

For inspectors, maintenance operators and quality engineers looking to measure thickness for applications in multiple industries, the AlphaGage+ offers all the functionalities of a performance ultrasonic thickness gauge to measure different materials, including true thickness under coating, data logger (B-Scan) for corrosion mapping, live waveform (A-Scan) and oxide scale for boiler tubes.

Upgradable in the field, the AlphaGage+ is also a flexible solution as it can be 'fully loaded' from the start or upgraded later by easily activating its software options when required.

Packaged in an ergonomic and rugged handheld enclosure, the AlphaGage+ can precisely measure the remaining wall thickness of structures subject to corrosion, such as metal pipe works, pressure vessels, structural parts or storage tanks. The corrosion version of AlphaGage+ is a tool for ageing asset management and to solve or prevent production issues in the oil and gas or petrochemicals industries, for example.

In precision mode, the AlphaGage+ achieves higher accuracy performance than standard corrosion gauges to meet very strict quality control requirements, such as those in the aerospace and automotive industries.

It is a key asset instrument to address specific manufacturing thickness control and applications for steel, aluminium, glass, ceramic, rubber or plastic parts.

The AlphaGage+ can be delivered with both corrosion and precision modes in one instrument. This makes AlphaGage+ an attractive choice for demanding service companies that invest time and money to train their technicians on one instrument that is fully capable to efficiently measure the thickness of any kind of engineering works on the market into one simple workflow.

Sonatest Ltd – UK
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Website: www.sonatest.com

The corrosion version of AlphaGage+ is suitable for management teams responsible for ageing assets

Pipe and tube marking and measuring

By Walter N Arth, Jr, director of automation and engineering, InfoSight Corporation, USA

THERE are many different needs for marking and measuring pipes and tubes for the OCTG industry. These needs continue to grow as API, customer and internal requirements become more demanding for proper identification, tracking and improved quality.

Fortunately, the various technologies implemented to meet these changing needs also continue to evolve and can be used to reduce initial investment as well as downtime and maintenance costs. Specifically, advancements in lasers, robotics, sensors, machinery and automated stencil equipment as well as barcode marking and reading can improve accuracy and simplify implementation.

To save on equipment cost, in-line equipment can be used. Length measurement and stencil marking are easily accomplished 'on the fly' (Figure 1), while weight can be measured on approaching 'roll-by' gravity transfer rails. Alternatively, if conveyor space is limited and/or cycle time is critical, cross-transfer equipment can be implemented to perform various functions simultaneously in a small footprint (Figure 2).

The above are only examples. In either case, the equipment is used to first measure the pipe, and then perform tolerance checks, followed by marking as needed, and then finally to report the information on a per-pipe or per-order basis.

Measurements include both length and weight, followed with associated tolerance checks and calculations to meet various API or customer-driven requirements.

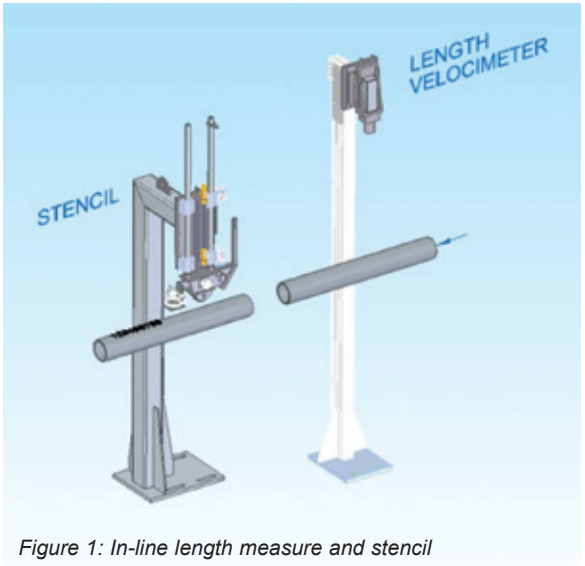

Figure 1: In-line length measure and stencil

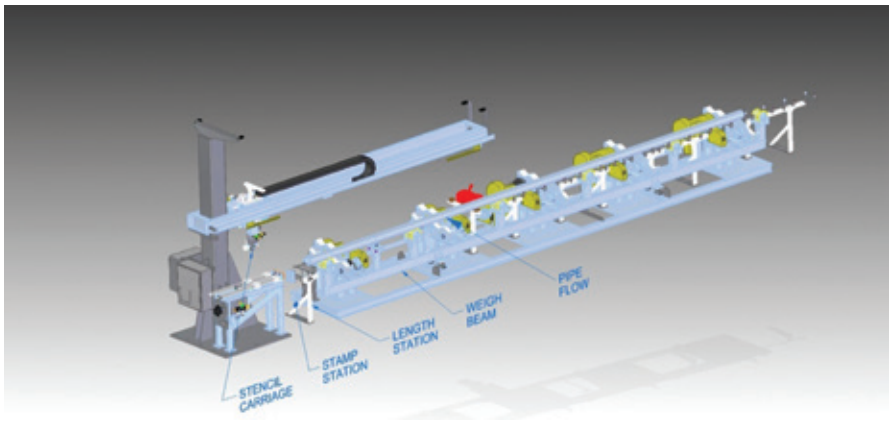

Figure 2: Cross-transfer weigh, measure, stamp and stencil

Length measuring methods including lasers, photo-eyes, proximity sensors, encoders, etc easily meet the API required ±0.1 foot accuracy, with typical actual length accuracies approaching ±0.03 foot (0.375"), and can be accomplished with contact or non-contact distance measuring devices.

Accurate weight measurement can be performed via lift-and-weigh devices, cross-transfer equipment or even roll-by methods by installing the load cells beneath the support structure. The measurements are then used to validate, and report (tally) each specific pipe by performing weight-to-length calculations and comparing those to the API acceptable tolerances.

Once the specific pipe measurement information is gathered and combined with the remaining message that has been downloaded from the host, the markings can be applied to a large variety of locations via numerous methods. The two most common methods are OD stencil and/or OD stamp marking of man-readable text and/or logos, followed by the need for OD colour bands.

Additionally, barcodes (either 1D or 2D) can be utilised, not just to meet customer or end-user requirements, but also for manufacturers' own internal tracking and traceability needs. Beyond that, interest in defect marking and thread engagement verification ($^3/_8$" triangle) is also growing.

The specific marking processes can be performed in a number of automatic or manual methods, including stencilling, stamping, application of labels/tags, and line/band spraying.

OD and ID stencilling can be on just one end of the pipe, both ends or even full-length, and can be achieved with in-line, cross transfer or overhead beam equipment.

Variations of the above methods and requirements can often be combined into a single integrated machine commonly referred to as weigh measure stencil (WMS) equipment that utilises a multi-station cross-transfer machine to process multiple pipes at once. For example, the first station can process weigh and length measure functions, the second station can stamp, and the third station can stencil.

The specific designs generated vary greatly based on needs and plant geometry. For example, equipment can include cross-transfer walking beams to move the pipe from station to station, or robots may be better suited for the variability of pipe dimensions associated with both ID and OD marking needs of stationary pipes. Individual requirements along with ingenuity and technology will drive the specific solution.

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Measuring automotive shock absorber tubing and OCTG

MAGNETIC Analysis Corp (MAC) has supplied a combined ultrasonic/eddy current test system to inspect cold drawn welded tube to be used in manufacturing shock absorbers at a new plant in Monterrey, Mexico, built by Prosankin, formerly known as A-4C-Sankin.

A-4C-Sankin was formed in 2015 as a joint venture of Grupo Prolamsa, a steel pipe manufacturer in Mexico; the Sankin Corporation, a manufacturer of cold drawn steel tube; and JFE Shoji Trade Corporation, the trading arm of Japan's second largest steel company.

The new plant's focus is production and sales of cold drawn tubes primarily for automotive use, although the test system is also designed to provide the future capability of meeting API 5CT testing requirement for oil country tubular goods.

Shock absorbers are a critical component of automotive chassis. While they are commonly called 'shock' absorbers, their function is actually not to absorb shock but to reduce and decelerate the vibrations of vehicle springs that are contained within the shock absorber tube – in effect, acting as a vibration dampener. Working together, the springs and the shock absorbers provide the link between wheel suspension and car body, compensating for uneven road surfaces. Most cars currently in mass production feature gas-filled shock absorbers. Accurate and thorough testing of the tube during its production is essential in order to prevent leaking gas.

The test system supplied by Magnetic Analysis Corp to the tube producer utilises two technologies for inspecting the cold drawn welded tubes during production – ultrasonic and eddy current.

The 100mm Echomac® rotary ultrasonic system uses four test channels to detect transverse defects, four channels for longitudinal defects, and four for measuring wall thickness. In addition, a MultiMac® eddy current encircling coil test fulfils the API requirement for detecting a through wall drilled hole, representing a transverse defect, required for some grades.

The system is designed to run in an automatic mode, performing both the ultrasonic and eddy current tests, marking any defects and creating a record (chart, defect list, test parameters, etc) of each tube and batch, while keeping pace with the production line. Data from the tests is stored locally and can be transferred to the customer's network.

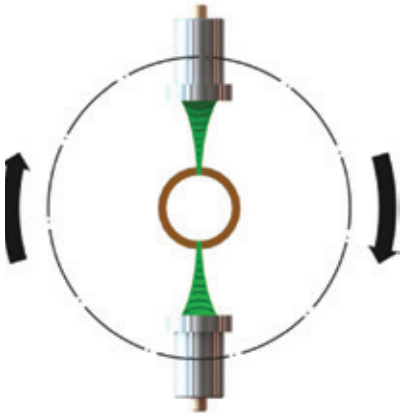
The tubes range from 12 to 100mm diameter with wall thickness of 1.5 to 7mm. A new Water Package, designed by MAC, features a counter weight that allows the water box cover, including the attached heavy copper heat exchanger coil, to be easily raised and remain in the open position for access during maintenance.

The system includes automated drive mechanisms on a V-roll bench and a demagnetiser for any residual magnetism created by the eddy current test saturation coil.

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

Ultrasonic wall and concentricity measurement system

BASED on its RotoUTscan ultrasonic rotating head, Contrôle Mesure Systèmes has proposed the RotoUTDim system for the dimensional measurement of tubes and cables from 4 to 250mm diameter, in the production line. Measurements include wall thickness all around the product, OD, ID, ovality, concentricity and eccentricity.



Measurement of a tube

The system is designed for the measurement for all types of material, including steel, plastic, fibre and glass.

Measurements are made by two ultrasonic transducers that rotate around the product.

Data is collected in real time over the entire outside edge, with a step up to 0.1mm, and all along the product (whatever the length) with a step of 1mm. Accuracy of the measurements is ±0.002mm.

Data is collected in a supervisor, visualised and saved. Gates for alarms are available, and input of the encoder allows positioning of the data. RotoUTDim covers a wide range of industrial applications, including nuclear, automotive, precision tubes and cables, medical, and multilayer coating.

RotoUTDim from Contrôle Mesure Systèmes

Contrôle Mesure Systèmes – France
Fax: +33 385 941415
Email: contactcms@cmseddyscan.com
Website: www.cmseddyscan.com

Laser marking for industrial production from Rofin

WITH the EasyMark, Rofin offers a compact tabletop laser marking system that is also suitable for engraving and cutting of thin metal.

The range of application covers single part production with manual part loading as well as automated manufacturing of small to medium lot sizes. For both types of application Rofin now offers additional options.

The AutoLock option automatically locks the door during the marking process. This avoids unintentional interruptions, and is a prerequisite for security-related marking tasks such as product ident code or security code marking. In batch manufacturing of medical devices, automobile or aerospace parts, an incomplete marking process will almost certainly cause the entire batch to be lost.

The optional available Mini-SPS interface allows for closer integration into automated production lines. The Mini-SPS interface adds actively generated signals, eg for part identification, to the standard interface.

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Website: www.rofin.com

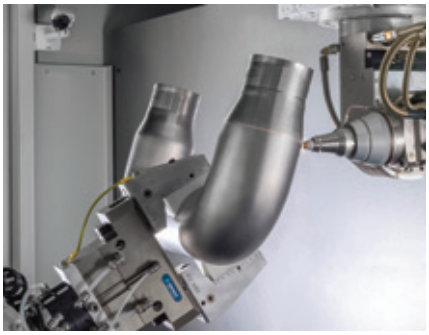
中文综合

产品在单个操作里完成

LT-FREE是BLM集团开发的五轴激光切割机，能灵活简单地激光切割弯管、扁平管、型材、液压成型件、可收缩件以及焊接件。在很多配置中，LT-Free机能够轻松的完成一个完整的工作周期。从简单的离线编程开始，LT-Free切割机减少了半成品数量，可在很短的时间内完成成品制造。该系统考虑到了汽车、航空航天、摩托车、家用电器、暖通空调、家具和钢结构等行业从原型到成批生产的各种应用。

为满足个体客户的需求，有四种配置可选。Entry Level设计用于原型和车间生产，用于加工质量和操作简单性远比生产时间重要的小批量生产。该装置配有单独底座，元配件都固定在上面用于加工。

BLM的LT-Free五轴激光切割系统



Piece Value用于汽车行业典型的批量生产。该配置带旋转底座，适用于需频繁更换仪器以及高产能应用。

Mid-Flex适用于需额外加工要求的小元配件生产。两个移动的底座在分开的工作区域作业，可通过快速装/卸优化生产周期。

High Flex是最全面的选择，它有两个独立的机器人底座，可提供最大的灵活性。除了板材和机械组件，该系统能精确高效地加工弯管和液压成型管道，机器人使机器可在加工过程中定位，不需要使用复杂的工具。

1到2千瓦功率纤维激光器的应用使LT-Free切割机能够切割广泛的材料，同时节约了能源和维护成本。

有效的冲孔功能使编程孔气割容易，不用担心材料厚度，在LT-Free装置上加工的很多元件通常各区域厚度是不同的。该功能还可以在最短的时间里控制孔的切割，不会损坏加工管壁。

计划和模拟软件可以轻松地导入3D项目，以便快速地识别和区分待加工的部件，自动生成工作程序并以图形方式模拟程序，以便检查和纠正可能存在的不符合项。这些都是在进入机器前离线完成的。软件包还包括用于设计辅助工具的模块，可用LT-Free装置本身快速完成。

High Flex和Value可选项还包括装箱装置，一个强大的自动装卸站，为LT-Free装置提供完全独立的操作。

可通过精密监控系统检测容器内将要加工的元件，并用外部机器手收集起来，再将他们放置到LT-Free装置底座上进行加工。最后将加工好的元件从工作机座收集起来并放到成品容器内，整个循环周期结束。

外部装载机器人的存在为LT-Free装置定制加载/卸载装置提供了可能性，其自动解决方案包括可以加载到BLM集团其他装置上。比如，在进料输送机上的机器人可以收集部件并将其自动放置到弯管机上或喂入LT-Free装置内。

BLM Group – 意大利
电子邮件: blm@blm.it
网址: www.blmgroup.com

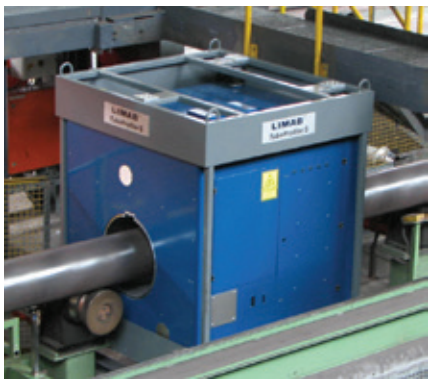
更高的油价带来更多订单

由于油价上涨，LIMAB TubeProfiler S正面临来自全球管道直线度在线测量越来越高的要求。

总部位于瑞典的LIMAB公司成立于1979年，以生产金属行业用激光测量系统而著名，公司开发了一些创新的测量解决方案，如平直度、直径、椭圆度、长度、厚度以及宽度测量。

TubeProfiler S系统在全球享有声誉，早在2011年推出，用于平直度、长度、直径和椭圆度/形状测量，该系统不仅对石油和天然气行业管道供应商，而且对精密液压管道供应商来说都是一个受到高度赞赏的过程和质量控制装置。

主要的测量系统包括端部、局部和整体管道平直度扫描。独特的技术使用户可以用非常紧凑的系统测量以上所有特性。LIMAB直线度测量系统有助于减少很多大的关于弓形和椭圆形管道，车螺纹、手动测量以及弯曲管道的问题。



该在线测量系统能100%记录和储存所有成品管道数据，包括最终用户证书。这在遇到索赔时是一个非常重要的工具。

越来越多的最终用户要求管道制造商安装的测量系统能够保证管道生产满足他们的要求。平直度结果以趋势图实时显示，包括2D和3D图形，便于观察。数据库提供了极好的生产数据源，用于长期监测和过程改进。系统将输出整管、管端或管段平直度以及长度，如果超过公差或报警限制则会给出报警信号。所有数据结合其他信息显示，如外径、椭圆度和形状。

TubeProfiler S使用内置吊钩和快换电连接器，非常容易安装到现有生产线以及移到轧管机其他部分。

LIMAB是金属行业长型和扁平产品非接触式激光测量系统领先的公司，在尺寸和直线度测量方面有一些创新型解决方案。

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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。

来自EWM Pico 160 cel puls

EWM AG为市场带来了一款最轻便的便携式电弧焊机：Pico 160 cel puls，它仅重4.7公斤，可安全用于垂直上下移动的CEL焊接以及TIG脉冲焊，用于230V照明干线。EWM的成功产品Pico系列最近添加的新品在几个方面得到优化，集中在焊接结果、普遍可用性、用户友好操作增强以及稳健性很高。

Pico 160 cel puls还具有新的人体工学设计。由塑料和铝制成的稳定的防飞溅外壳以及新控制单元上透明的保护盖使该焊机适用于建筑工地、车间以及其他装配工程的各种应用。另一个亮点是该焊机操作简单。新控制单元易读的显示器使焊接参数能够精确地设置。这是简单的可重复性重要的先决条件，以确保实现高质量的焊接结果。EWM的单手操作概念可使用一个大按钮实现功能设置，这意味着用户不需要每次都脱下手套来更换设置。其他优点包括远程控制连接选择以及大型连接插座(50平方毫米)，使焊机能够与标准电焊夹以及带旋转气阀的标准TIG焊炬结合使用。

新型Pico 160 cel puls焊机不仅仅改善了外部特点。热启动以及电焊条防粘功能也集成到标准机型中，为各种焊接工艺提供了最好的支持。新的脉冲功能允许向下和向上焊接，无需依靠复杂的"圣诞树"技术。这使得焊接工作更容易，尤其是一些难接近区域或能见度较差的位置。Pico160焊机在使用4毫米焊条焊接时显示了其强大性，能100%安全垂直向下焊接，在使用纤维素焊条也一样。

EWM公司成熟的逆变器技术以高效率为特点。其优点包括可切换待机省电功能以及能承受10A、13A、16A和20A的230v电源保险丝。该机器-40%到+15%的高电源电压公差确保在使用发电机时的平稳操作，使焊接电源连接到100米长。该焊机还可以防止意外连接到440V

电源电压。这使得Pico 160 cel puls焊机成为工业应用和车间使用的理想焊机，能够快速维修以及连续操作。EWM公司还提供整机三年保修，变压器和整流器五年保修，不受操作时长的限制——即使是用于三班倒，每天24小时，每周七天的操作。

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来自FD Machinery公司的轧管机

FD MACHINERY公司负责生产最早的矩形和方形管灵活成型轧管机。

2000年，FD交付了第一台直接成型轧管机——CFS矩形和方形管灵活轧管机。2005年，第二代CFS轧管机投入生产。经过一段长时间的生产，发现这些轧管机有一些小的质量问题，这些方形或矩形管道的最终形状在4个角甚至没有拐角半径，2个对立面尺寸不容易对称，底部有划痕，外部清理不干净。

针对这些问题，经过4年的研究，FD推出第三代CFS方形和矩形管道直接成型轧管机CFS-X，这样以上问题都得以解决，生产质量也得到保证。

与CFS相比，对于相同规格的轧管机，CFS-X轧管机能生产的产品规格扩展了30%。

FD 的CFS-X轧管机有两种配置：标准配置和超大容量配置。超大容量轧管机是标准轧管机产出的2倍，装机功率和行距分别是标准机型的1.5倍和1.1倍，能满足客户更强劲的需求。此外，CFS-X轧管机有三种自动化选择：MNC CFS-X手动调节，ENC CFS-X机动工具自动调节，以及CNC CFS-X自动调节。CFS-X数控机型可在10分钟内更换产品规格，无需更换工具。FD公司在CFS-X轧管机上拥有多项发明专利，可确保买卖双方利益不受侵害。

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从制造商转变为提供全方位服务的供应商

追随公司愿景和战略，Tubacex Group集团表示公司正在经历一个转变，使其能与客户建立密切的合作关系，目标是为客户的具体需求开发和提供综合性解决方案。近年来，培训和适应过程已经进行，包括在销售领域加强和增加技术使用；大力发展研发能力；通过并购增长完善产品系列；以及为高要求应用开发新产品和工艺。

创新战略适应内部研发活动提供的新产品和综合解决方案。这导致两个重要的概念：与技术和互补产品合作伙伴或供应商联盟；根据客户需求开发新的增值服务。为开发创新型解决方案，有必要从设计到服务操作的整个生命周期阶段与客户合作。Tubacex的创新管理以"开放性创新"为原则，集成来自公司网络的能力和技术，通常包括客户、供应商、研发中心以及合作伙伴。目前Tubacex正在开发的创新项目都是与其他公司联盟产生的。Tubacex有能力自己设计组件以及与外部设计公司设计子系统。这个设计能力由材料和制造工艺方面的专业知识得以补充。

公司为一些客户提供了不断增长的增值服务系列，包括精加工操作(按尺寸切割、开坡口)；先进的表面处理(喷丸加工、涂料)；物流(项目交货管理，直接从仓库交货)；以及预加工(弯曲、焊接、开槽、加筋)。

Tubacex Group – 西班牙
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工具自动更换系统简化了管道加工

对于直径达127毫米的管道的弯曲要求越来越高。transfluid公司董事总经理Stefanie Flaeper表示：“不仅仅只是在生产过程中实现技术效率。最重要的是必须实现新产品提出的更高要求。不管时间效率和精度，解决方案当然应当是可控的。”

transfluid新型弯管机DB 40120-CNC-VE可自动更换工具

© transfluid

来自德国的专家开发了DB 40120-CNC-VE管道弯曲机，可以在这种薄壁管道上实现1倍直径的弯曲半径。

在当前的项目范围内，这种专业弯曲系统的设置已经实现完全电动化。所有运动轴使用专业的transfluid序列控制实现最佳同步，而且相互之间可以通过编程控制。还可以通过序列控制轻松地优化过程，有效提高特定产品的周期。所有参数都可以从CAD获取，所有成型夹都可以集成到自动序列中。transfluid工程师通过自动夹模更换系统实现了后续成本的节省。工具更换的时间范围可与半径改变相比。

这种新型DB 40120-CNC-VE弯管机有两层工具。夹模可更换8次，这样每根管道都可以弯曲，即使是很复杂的几何形状。这种工具设备形式是有效的，可将后续成本降到最低。Flaeper女士解释说：“尤其是因直径较为相似，弯曲半径非常接近1倍直径，新产品仅仅弯曲形状有变化。这意味着仅仅只需要新的夹模。”为实现较薄壁管道紧密的弯曲半径，新型弯管机增加了助推装置，可支撑短静止长度最后一个弯曲。

transfluid弯曲机可弯曲直径达127毫米的管道，弯曲半径达1倍直径，还可以将壁厚减少2到1.5毫米

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高端管道切割系列扩展

荷兰锯条制造商Kinkelder扩展了TCT Champion锯片系列，用于高性能管道切割。Champion TL系列锯片利用新等级碳钨合金，PVD涂层，锯身设计和锯齿形状等都利用了公司最新的创新。

在过去几年，重型管道切割应用数量增加。根据市场性能反馈以及对新型高端TCT锯片的需求，Champion系列扩展了两种新型锯条。Champion TL锯片用于高产出高质量固定锯切机切割管道，拉力达到850N/mm²。新等级碳钨合金，新的PVC涂层可以实现极其光滑的切割面，新的齿形以及锯身设计能更好的排出切屑，Champion锯片使用寿命提高了50%，与CX 3相比，寿命更长。

专用的Champion TL Multi锯片开发用于多重管道切割，抗拉强度为400-800 N/mm²。这种锯片非常适用于Rattunde Twin双锯切机，但也可用于其他多重管道切割应用，如Bewo、RSA和Sinico切割机。Kinkelder的切割专家们可以为各种应用提供参数建议。

Kinkelder Champion TL锯片有直径225到560毫米的，齿间距有9毫米、11毫米和13毫米。

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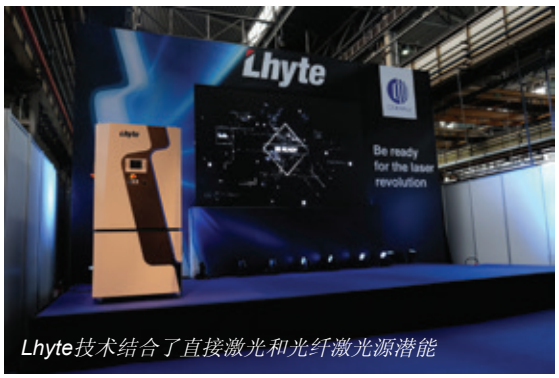
新型工业激光应用技术

一种由Comau和Prima Electro公司合作开发的用于工业激光应用的新技术在意大利都灵Comau工厂开放日活动上展出。Lhyte是一个模块化系统，可用于汽车和一般工业应用领域。它允许最终用户选择采用激光、二极管或混合激光源，来满足工业领域各种灵活的需求。



Lhyte技术结合了直接激光和光纤激光源潜能

原始设备制造商、系统集成商和伙伴公司参加了此次活动，Comau机器人和自动化产品营销主管Tobias Daniel致欢迎辞，他用视频演示介绍了Lhyte技术。

Comau市场主管Maurizio Cremonini、材料和过程技术主管Giovanni Di Stefano以及激光部Prima Electro执行副总裁Maurizio Gattiglio一起描述了该方案在工业领域的技术和应用优势。

来自Fraunhofer ILT的激光技术专家Ulrich Thombansen简单介绍了激光解决方案以及Comau的最新技术。最后Daniel先生技术展示了新解决方案的主要特点以及如何使用。

Lhyte能够结合直接激光和光纤激光源的潜能，通过模块化结构和灵活的结构。可适用于任何工业应用，使Comau能满足不断改进的市场需求，制造商们以及系统集成商们需要高性能、多功能技术。

Comau SpA – 意大利
网址: www.comau.com

永恒运动和创新

总部位于捷克共和国的Omni-x公司表示管道弯曲过程是由一系列独立的步骤组成的。

每个步骤相互依赖而且每个步骤到会带来一系列问题。随着技术的进步，客户不断寻求以最少的投入得到更多的回报。最好的结果首先是通过使用正确的工具设置以及使用恰当的润滑来实现的。润滑油是化学反应物，用于表面使用，因此对于正确的选择和应用来说是非常敏感的。

管道制作用润滑剂最重要的特点是“兼容性”。润滑油的特性必须与工具、材料、组件环境、清洗过程以及其他辅助操作等相匹配。

不使用矿物油进行制作也成为日常现实。老式的矿物油基润滑剂不仅不受欢迎，操作者也意识到市场上还有可替代的方法。市场正受到生态问题以及政治要求的驱动。矿物油产品不再有未来，情结的替代产品正受到鼓励。矿物油主导的行业也逐渐意识到环保问题，也在为操作者寻找健康的工作环境。

这正符合Omni-x公司保持简单和经济实惠的企业理念。

公司最近推出了最新的管道润滑剂，解决了上面所有问题，而且提高了用于黑色和有色金属材料的性能。

清洗也不再是问题，因为每种产品都可以用清水轻松地洗掉。而且焊接前就不再需要清洁了。

与矿物油产品相比另一个好处是可以根据客户的具体要求改变产品基质。Omni-x可在工厂为客户提供全范围产品改性，并为他们找到最好、最有效的解决方案。

BBLubricants扩大了产品范围，推出了ALC系列产品。配方中没有典型的EP添加剂，如氯和硫是非常重要的。改进的新产品综合了以上所有好处，并为客户能进一步改制的无害产品。

BBL专营的拉拔润滑油得以扩展，可生产冷却剂。我们分享了相同的理念，扩大了产品范围，可用于高速操作。多年的弯曲经验为我们生产合成冷却剂提供了背景，这些冷却剂可应对各种材料。

我们相信不仅产品本身是解决方案。用所有内部技术完成客户服务将帮助您轻松地从矿物油切换到新的标准，可以保护工人，延长工具寿命以及机器寿命。

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Sikora参加2017中国国际橡塑展

SIKORA公司将在中国广州举行的2017国际橡塑展(展位5.1 C39)上展出用于软管、管道、板材和塑料工业的测量、控制、检查、分析和分选设备。展出的技术将包括用于测量大型塑料管道的Centerwave 6000系统，以及测量塑料板材的Planowave 6000系统。两台设备都是在2016德国杜塞尔多夫展会上首次展出的。Centerwave 6000能够在挤出过程中测量大型塑料管道直径、椭圆度、壁厚和下垂度。该系统以毫米波技术为基础，可测量管径110到3200毫米的管道。Centerwave 6000系统有旋转版本，可以沿管材周围360个测量点测量壁厚。

还提供一个带传感器的多轴系统。两个系统都是绝对非接触式测量，不需要耦合介质或校准，而且不受管道材料和温度的影响。Sikora中国总裁Wanbin Chen表示：“Centerwave 6000是大型管道连续在线测量开创新系统，为超等级生产线控制和质量控制建立了新标准。将完全取代之前使用的超声波技术。”

Planowave 6000也采用毫米波技术，可精确测量塑料板材厚度，同时在挤出过程中持续扫描整个宽度。

在中国国际橡塑展上，Sikora也将推广Purity Scanner扫描仪，用于塑料材料在线检查和分选。X射线摄像机结合光学摄像机系统能可靠地检测塑料颗粒表面以及内部的污染物。污染的颗粒将被自动分选出来。

使用新的Purity Scanner Advanced改进扫描仪，Sikora公司为塑料颗粒检查和分选提供了进一步的在线系统。灵活的摄像系统可根据专业应用领域定制。根据要求，这种改进机型配有高速光学摄像机以及X射线、彩色和红外线摄像机。系统可以配备五个不同的摄相机。

对于取样分析或进料检测充分的产量小的材料以及应用，Sikora开发了Purity Concept Systems概念系统。这些分析设备可以配备X射线技术，光学摄像头或红外技术，来检测颗粒、片材、薄片/带材。Purity Concept Systems系统可用于分析Purity Scanner系统检测和分选出的污染颗粒。对于软管和钢管生产线，Sikora的产品范围包括Laser Series 2000和6000系列直径测量设备，以及X-Ray 6000系列X射线检测系统，可精确测量产品内径和外径、三层以内的壁厚、偏心度和椭圆度。

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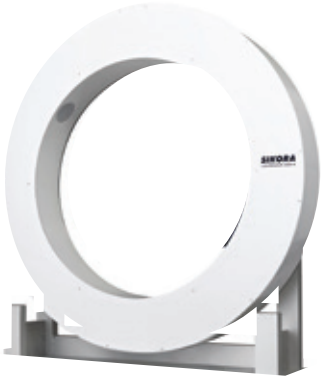


Centerwave 6000测量直径110到3200毫米的塑料管道

Purity Scanner扫描仪用于塑料颗粒在线检测和分选

X-Ray 6000测量软管和钢管内径、外径、椭圆度、壁厚和偏心度

Altering perceptions: TIG welding in the oil and gas industry

By Polysoude SAS, France

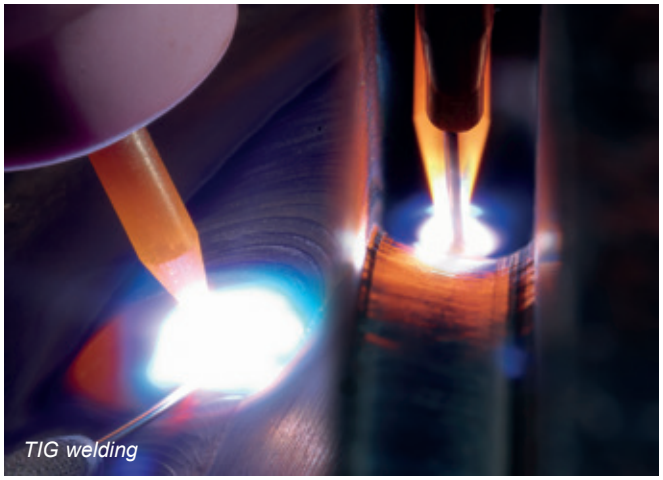
Gas tungsten arc welding (GTAW), commonly known as tungsten inert gas welding (TIG), has always been considered to be a particularly complicated joining process. The necessary equipment was expensive and subject to significant investments; shielding gas of the required purity was difficult to obtain; and, above all, only specially trained individuals with specific skills were able to complete the complex procedures.

Now, after decades of development and progress, Polysoude has mastered this aspect of the market and with technological dexterity is producing innovative, customer-focused solutions for both mechanised and automated TIG welding.

Problem solving

In responding to the ambitious demands of the oil and gas industries, Polysoude has stepped into the world of increased productivity. A world in which forward-thinking, excellent quality, competitive prices and the shortest of deadlines can transform solutions into physical reality.

The field of offshore applications can be particularly problematic. The flow lines and export lines used to transport crude or processed oil or gas fluids, are subject to tremendously adverse forces, both external and internal. During the laying process, water pressure, strong currents and extremes of temperature must be contended with, whilst internally, piping can suffer from chemical attacks caused by aggressive production fluids. Polysoude has the power to weld pipelines capable of withstanding severe mechanical stress, absorbing high dynamic loads and providing corrosion resistance.



TIG welding

Welding set on a boom end

Predictable precision

Pipes can be welded manually, or by means of mechanised or automated welding. If no equipment for automated welding is available, the root pass and the hot pass can be produced by manual TIG welding with a filler material in the form of rods. However, the welding of the root pass is extremely delicate, and deviations from the acceptable heat input can crucially alter the corrosion resistance of the pipe material. Hence, there are definite disadvantages to manual welding: the dependence on the skills and performance of the welders, a lack of sustained reproducibility, limited quality control and low productivity.

Polysoude can create the seemingly impossible, by purely technological means. Using mechanised or automated TIG welding equipment, any desired quantity of welds can be produced, with each individual joint exceeding the requirements of the strictest production objectives – the ‘zero risk/zero defects’ approach. No longer dependent on the skills of the staff entrusted with the operation of equipment, results are excellent and sustainable, and quality is predetermined.

Polysoude’s mechanised or automated TIG welding ensures that the procedure and all related parameters are optimised and approved separately in advance. Results are finally documented as welding instructions and the related programs are implemented into the machines in the workshop or on site. Manual welding skills are no longer required as proficient operators take over by running the automated TIG welding equipment.

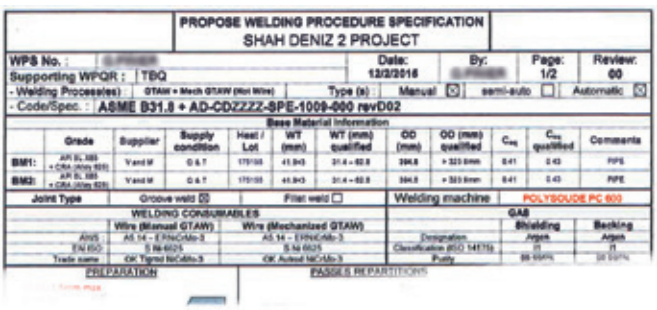
Oscillated passes appearance

Customised solutions

Polysoude's expertise in fulfilling the requirements of individual customers was evident in the Shah Deniz 2 project. A contractor needed to weld a number of 16" CRA line pipes, flanges and bends. The carrier pipes with a wall thickness of 41.9mm were made of API 5L X65 with a 3mm internal ERNICrMo-3 clad. In the workshop, the 12m-length pipes had to be joined into 24m sections.

The company decided, as is usually the case for on-shore girth welds, to use a manual TIG welding of the root and hot pass in the 5G Up position and submerged arc welding (SMAW) for the filler passes. However, during approval they discovered that the filler welds did not comply with the technical requirements. Problems were caused at the start and stop zone of a welding pass, as well as lack of fusion and related repair work. Furthermore, the important heat input of the SMAW prevented the welds from reaching certain weld metal properties, such as toughness and yield strength.

Welding procedure specification



PROPOSE WELDING PROCEDURE SPECIFICATION
SHAH DENIZ 2 PROJECT

WPS No. :		Date:	By:	Page:	Review:
Supporting WPQR : TBQ		12/2/2016		1/2	00

- Welding Process(es) : GTAW + Mech GTAW (Hot Wire) — Type (s): Manual ☒ semi-auto ☐ Automatic ☒
- Code/Spec. : ASME B31.8 + AD-CDZZZZ-SPE-1009-000 revD02

Base Material Information

	Grade	Supplier	Supply condition	Heat / Lot	WT (mm)	WT (mm) qualified	OD (mm)	OD (mm) qualified	C_{eq}	C_{eq} qualified	Comments
BM1:	API 5L X65 + CRA (Alloy 625)	Vand M	Q & T	170155	41.9+3	31.4 ~ 62.8	394.8	> 323.9mm	0.41	0.43	PIPE
BM2:	API 5L X65 + CRA (Alloy 625)	Vand M	Q & T	170155	41.9+3	31.4 ~ 62.8	394.8	> 323.9mm	0.41	0.43	PIPE

Joint Type: Groove weld ☒ Fillet weld ☐ — Welding machine: POLYSOUDE PC 600

WELDING CONSUMABLES			GAS		
	Wire (Manual GTAW)	Wire (Mechanized GTAW)		Shielding	Backing
AWS	A5.14 – ERNiCrMo-3	A5.14 – ERNiCrMo-3	Designation	Argon	Argon
EN ISO	S Ni 6625	S Ni 6625	Classification (ISO 14175)	I1	I1
Trade name	OK Tigrod NiCrMo-3	OK Autrod NiCrMo-3	Purity	99.996%	99.996%

PREPARATION — PASSES REPARTITIONS

Polysoude was able to offer the perfect solution and facilitated the change to automated hot wire TIG welding of the filler passes. A hot wire GTAW station (pipe rotating 1G) was ordered. As the pipe ends were already machined for manual welding with a 30° V-preparation, root and hot passes continued to be produced by manual TIG welding.

In the process of automated TIG welding, the filler passes are laid with the pipes in the 1G position. Adjustable supports allow fast and exact positioning and aligning of the CRA pipes; rotation of the pipes is ensured by a head stock; and the welding set is fixed in an optimised position at the end of a boom.

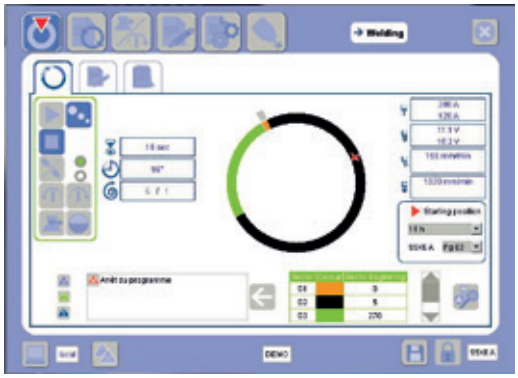
At the beginning of a weld cycle, before the ignition of the arc, the torch can be moved smoothly towards the workpiece. When the electrode touches the base of the groove preparation, it is retracted until the programmed distance to the workpiece is reached.

The related device is called arc voltage control (AVC). Once the arc is struck, it is used to keep the arc length constant, so that multi-pass welding can be carried out without the need for further adjustments between passes.

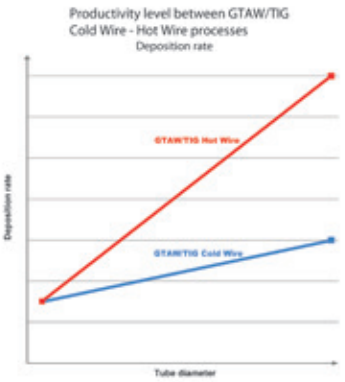
Another useful and innovative feature of the installation is called torch oscillation control (OSC), which allows the torch to move transversally to the direction of welding. The desired width of a welding pass is achieved by programmed periodical movements of the torch to both sides of the groove.

The filler wire comes from a spool ingeniously fitted inside the motorised wire feeder; this particular innovative arrangement means that wire feeding can be started or stopped at any moment and, if necessary, the wire end can be retracted.

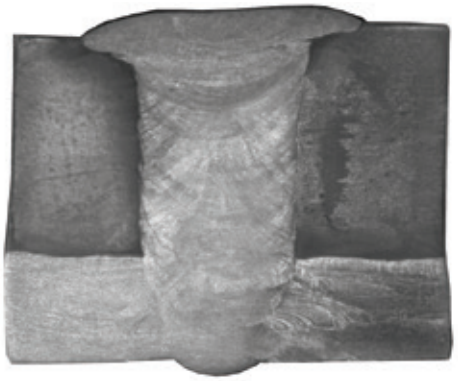
Polysoude P6-HW power source



Intuitive graphic user interface



Hot wire process for increased productivity

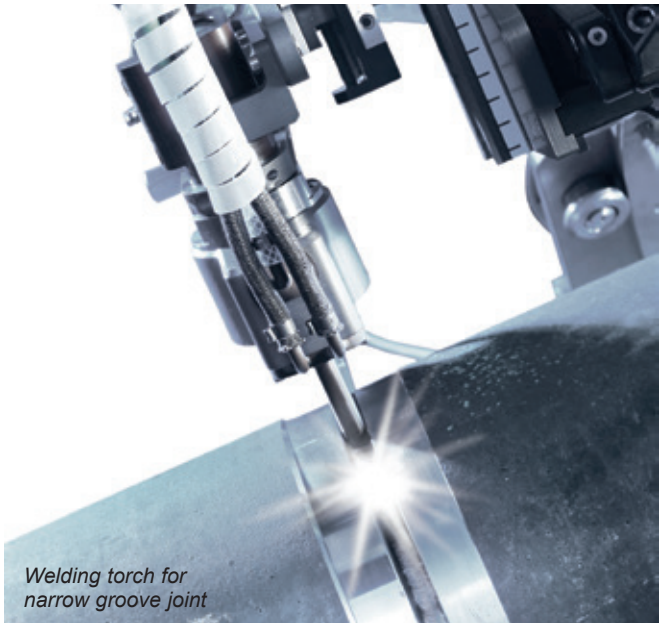


Macrographic section of a narrow groove TIG weld

Wire feeding speeds and pulsed wire feeding are programmed and managed by the power source.

Before mechanised or automated TIG welding takes place, the particular procedure is developed and approved. All functions and movements of the installation are initiated and controlled by the power source and programming is carried out by using the touchpad, which has an easy-to-understand, intuitive graphical user interface (GUI). The virtual synoptic of the GUI is presented on a tactile screen. It not only allows for complete weld data management, but also offers numerous auxiliary functions to support the development and finish of any TIG welding sequence. Some of the main features are:

- A complete documentation of the workpiece data.
- The creation of chained weld cycles to carry out a complete multi-pass welding sequence.
- A detailed description of non-programmable parameters (ie mechanical adjustments of the devices, type and characteristics of used gases, electrodes, filler wire, etc) appended by instructions and comments.
- A database with a search function to deal with more than eight parameters at the same time.



Welding torch for narrow groove joint

- Simulation of a programmed welding cycle and real-time monitoring of welding parameters and progress of the sequence in process.

Finalised and approved customer-specific welding sequences and instructions can be stored and transferred to the designated welding equipment by means of a PC or a USB flash drive.

Before a welding sequence of mechanised or automated TIG welding can begin, the operator must ensure that the workpieces are correctly positioned. However, after the welding cycle has started, the equipment is completely controlled and monitored by the uniquely designed power source. Unlike GMAW processes, TIG welds do not require any machining or grinding operations either at their start or end, or between the passes. Perfect precision is attained time after time.

The melting rates of cold wire TIG welding are quite moderate when compared with competing processes. The filler wire entering the weld pool is cold, and the energy to melt it is delivered entirely by the electric arc. As a result, the melting rate is slower, which consequently affects the weld speed. Hot wire TIG welding, on the other hand, substantially increases both the melting rate and welding speed. The hot wire current is supplied by an additional, separate power source and transferred to the wire via a contact nozzle in the wire guide. The wire is heated by electrical resistance within the wire nozzle, on entering the weld pool, so that less energy is necessary for its final melting. Hot wire application allows the welding time of carbon steel pipes to be reduced to less than half the time needed when using the cold wire process. Moreover, significantly the hot wire TIG process does not reduce the achievable quality of the welds in any way.

In the Shah Deniz 2 project, by using automated hot wire TIG welding equipment, the time needed for filling and capping of a girth weld of the 16" line pipe was 7 hours 30 minutes. The resulting sound, defect-free joint brought about an immense increase in productivity, as time-consuming repair work was no longer necessary and the controlled heat input of the process guaranteed that the required mechanical properties of the welds were achieved, without additional attention.

Finally, due to the use of Polysoude equipment, the project was finished within the intended time. Furthermore, it is clear that in future projects, the technical possibilities of the

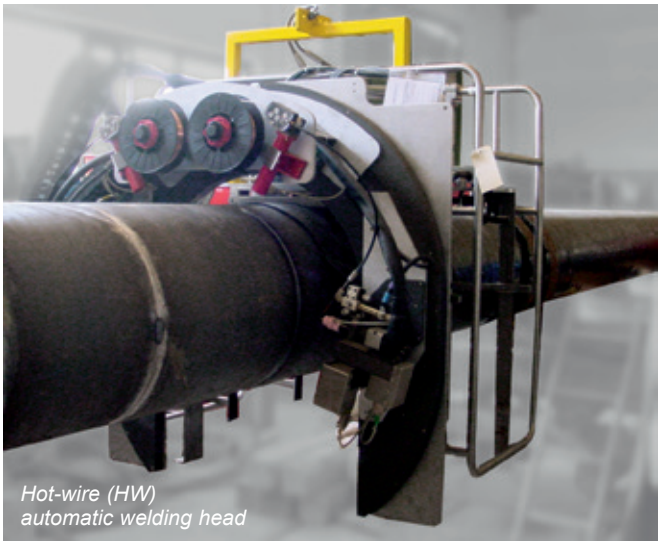
automated TIG welding equipment will be fully employed: volume-reducing J-preparation or even narrow groove welding will be introduced, so that root pass and hot pass can also be produced by automated TIG welding.

Further proof of the proficiency of Polysoude's state-of-the-art welding technology has come from an experienced contractor of the Khazzan project in Oman, where a different approach has been adopted. The company needed to execute approximately 19,000 welds on 12" and 16" 22 per cent duplex stainless steel pipes. From the beginning, it was the intention to utilise the advantages of automated TIG welding to its limits. J-preparation for orbital GTAW of root and hot pass of the 12" pipes and orbital GTAW for the cap pass ensured increased productivity. As an additional measure for the 16" pipes, a narrow groove preparation was executed. All welds were executed successfully within the scheduled period of time.

Narrow groove preparation of pipe ends is an efficient option to improve overall productivity of the joining operations of line pipes. The mechanical characteristics of the pipe material and behaviour in terms of welding shrinkage are considered in order to determine the slim profile of the weld groove (the angle of the weld groove is kept as small as possible). This preparation of the pipe ends requires the removal of less material, so that machining becomes easier and faster. As less material is removed, less material is required to be replaced by the weld: welding time becomes shorter, and filler material consumption decreases.

An example of a macrographic section of a joint between CRA coated workpieces shows the perfect geometry of the narrow groove TIG weld. Line pipes are usually produced in lengths of 6 or 12m and often welded together to 12- or 24m-long sections. As the pipes can be rotated during this procedure, automated welding equipment, as shown, can be used. However, during the laying of a pipeline, either from a barge or as landline, the pipes cannot be rotated. In these cases orbital welding equipment is required.

If the line pipe OD exceeds 20", then Polysoude's impressive open carriage welding heads of the Polycar type are perfect for the job. A guide ring fitting the particular OD is mounted on the pipe, allowing the Polycar to move precisely and safely around. The modular design of the Polycar allows for both cold and hot wire TIG welding, whilst the rugged construction resists difficult conditions in the workshop or even on site.



Hot-wire (HW) automatic welding head

Orbital carriage-type welding head

Embracing the future

Polysoude mechanised and automated welding equipment represents modern industrial technology, incorporating future design ideas.

It is a fact that the TIG welding technology offers astounding results in industrial application, with unrivalled joint quality.

Polysoude is able to offer a range of different options to increase the productivity of the process.

Industries may be less familiar with the new Polysoude technological processes than with the traditional competing process of gas metal arc welding (GMAW), a process, coincidentally, with which Polysoude equipment has reached comparable results in quality and weld cycle time.

Ultimately, however, the use of mechanised and automated TIG welding is a serious incentive to industries striving for a zero risk/zero defects' approach in joining technology.

It is time to look to the future and to accept the possibilities that Polysoude equipment has to offer.

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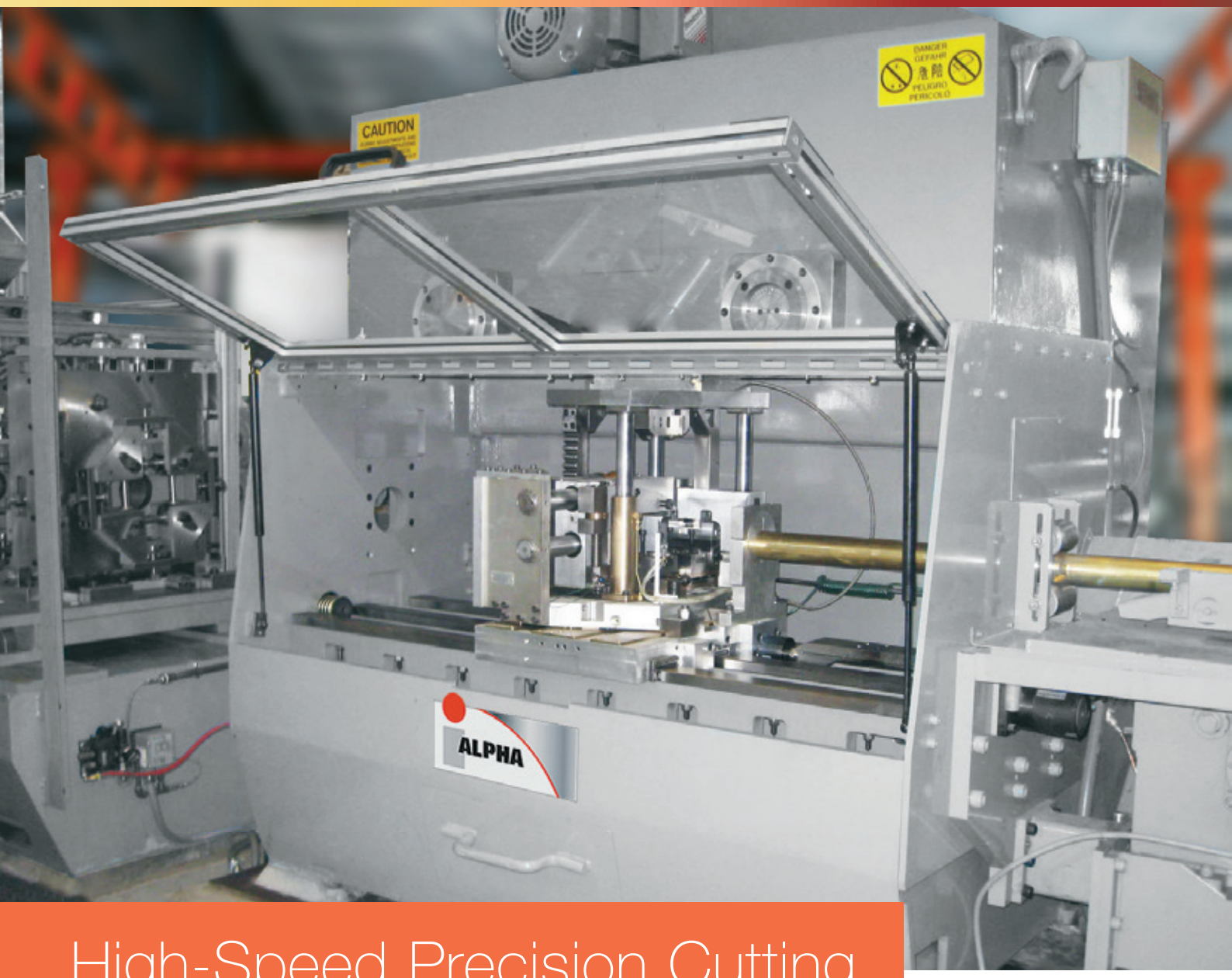

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