

TUBE & PIPE

NOVEMBER 2016

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Technology

VOL 29 NO 6

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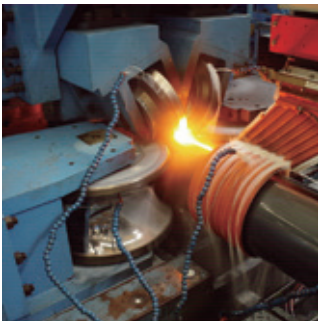
EDGE MILLING



CAGE FORMING SECTION



QUICK CHANGE ROLL STANDS



WELD BOX



RESHAPING STANDS



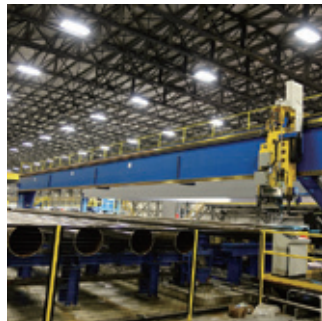
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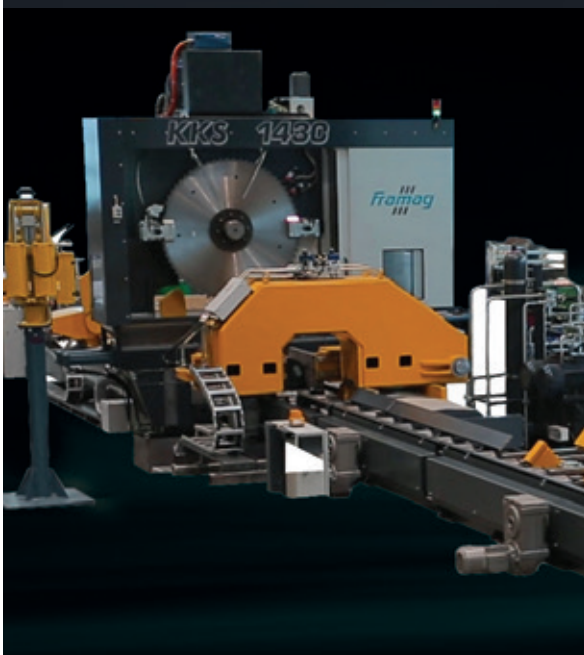


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www.framag.com



framag BILLET SAWING

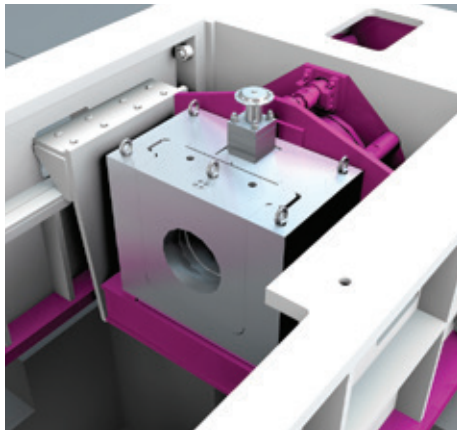
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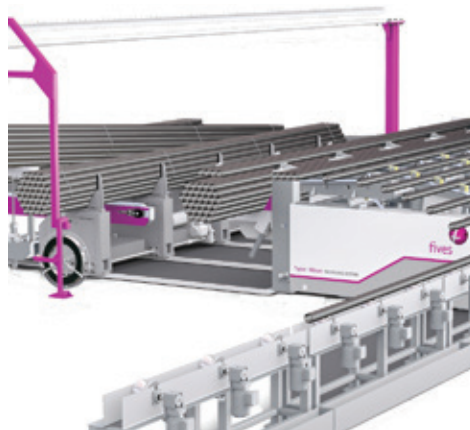
OTO AND ABBEY TUBE MILL



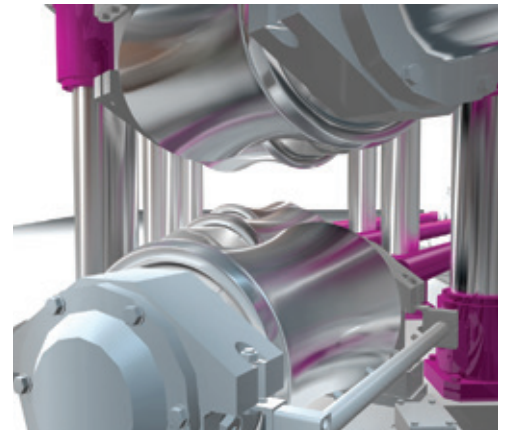
TAYLOR-WILSON HYDROSTATIC TESTER



TAYLOR-WILSON PACKAGING SYSTEM



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Fives is the exclusive supplier of Abbey and OTO mills, Taylor-Wilson finishing equipment, and Bronx straighteners providing custom engineered products that offer a quality, fully-integrated solution. This combination of resources and infrastructure utilizes the most recent developments in technology, delivering reliable tube and pipe mill and finishing solutions for a wide range of seamless and welded products.

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- Abbey slitting lines and drawbenches
- Bronx tube & pipe and long product straighteners
- Taylor-Wilson hydrostatic pipe testing, collapse testing and leak testing machines
- Taylor-Wilson packaging systems for tubes, squares, bars and rectangles

www.fivesgroup.com

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CUTTING, SAWING & PROFILING

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Rory McBride –
Editor

Welcome to the latest issue of Tube & Pipe Technology magazine. This issue we have a feature on cutting, sawing and profiling technology and two extended articles. The first is from Uzinexport, Romania, which is celebrating its 50th anniversary. The second is from Advanced Machine & Engineering/AMSAW and is the final instalment in a series of three fascinating articles from saw blade expert Willy Goellner.

A brand new website for TPT magazine will have been launched as you read this (it launches on 1 November). It has been completely redesigned to make it a far more attractive and intuitive portal for all of our readers.

We decided to undertake this redesign bearing in mind more and more of our readers are accessing the website and online version of the magazine from various devices. The new site is fully scalable so should be a pleasure to read whatever the size of your screen. It will load quickly and automatically adjust to be readable on smartphone, tablet or desktop PC. Go to www.read-tpt.com to see it in action.

Next issue we have features on welding machines and technology, coiling and uncoiling, and Tube Russia and BORU 2017, where the January issue will be distributed.

Enjoy the magazine.

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50 years of large diameter longitudinally submerged welded pipes

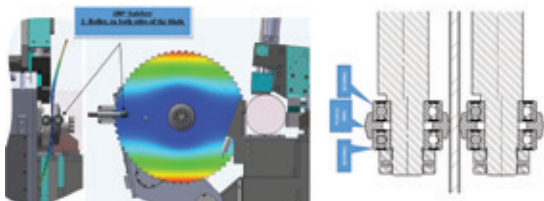
By Uzinexport, Romania



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Minimising vibration and resonance

By Willy Goellner



On the cover . . .

SST Forming Roll Inc and Sanyo Seiki Co are roll forming specialists based in Japan with offices in Chicago, USA.

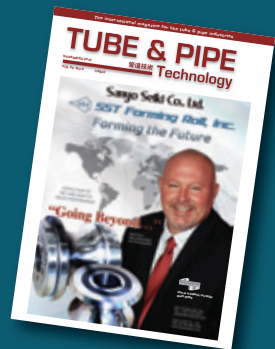
Sanyo Seiki manufactures forming rolls in its main facility in Yamagata, and also has three regrinding factories elsewhere in Japan. All raw materials are forged in the country. Sanyo Seiki also owns two in-house heat treatment facilities.

SST Forming Roll also has a major sales office and regrind facility in Chicago, USA. Sanyo Seiki and SST have a design team consisting of over 20 engineers. The company also offers FEA with six units located in the US and Japan.

SST Forming Roll/Sanyo Seiki will exhibit at FABTECH in Las Vegas, USA, in November. Its booth is located at North Hall N7306.

They were also recently at Tube India 2016 in October and Tube China, and attend all of the major trade shows such as Tube Düsseldorf.

For more information go to: www.sanyoseiki.co.jp



New profile measuring system for hot rolling mill in Slovenia

ZUMBACH Electronic has won a contract from Štore Steel doo in Slovenia for a Profilemaster® SPS 400-S4 in-line profile measuring system, based on laser light section technique and machine vision. The system will be integrated into a hot rolling mill, helping to increase the efficiency of the mill and to assure product quality.

Štore Steel produces various round and flat steel products for the forging, spring and engineering industries. The company is modernising its in-line measuring systems in order to gain better and faster control over its production process. A significant efficiency increase is expected by shortening start-up time and reducing downtime.

The ordered Profilemaster SPS400-S4 is equipped with technology



Profilemaster SPS 400-S4 measuring unit

for full profile measurement and surface fault detection. The system is has four high-speed camera/laser modules to

capture the full contour of the hot rolled profile. Scanning the product with up to 500 full contours per second, the measuring system provides continuous dimensional measurements as well as surface fault detection.

The engineered construction and the conditioning features of the Profilemaster SPS 400-S4 ensure stable and reliable measurements. Commissioning is planned before the end of 2016.

For measurement and control in the cold finishing process, Štore Steel also ordered a non-contact measuring and control system from the Zumbach ODAC – USYS product line.

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

Hydrostatic pipe machine to test beyond the standard API grades

VALLOUREC, a leading company in tubular solutions, and Fives, an international engineering group, have commissioned an innovative hydrostatic pipe tester at the Vallourec's plant in Düsseldorf-Rath, Germany.

Pipe testing machines at tube plants aim to reduce delays on the finishing floor during the testing phase. The test hold time is varied to suit the specific standard to which the pipe is being tested. Fives has been specialising in engineering hydrostatic pipe testing

machines under the brand Taylor-Wilson since 1911, having supplied more than 49 hydrotesters, leak testers and collapse testers worldwide.

The hydrostatic pipe tester designed and supplied to the Düsseldorf-Rath plant has the ability to test beyond the standard API grades and is capable of testing up to premium Cr13 pipes at over 1,250 bar (18,130 PSI). With a maximum diameter of 406.4mm (16") and a heavy wall thickness up to 50mm (1.97") the end load of 8,944kN (2,010,620lb) is one of

the highest Fives has ever manufactured. This technically demanding machine will push the limits of small batch processing while still providing the highest quality and flexibility. The machine is also designed to facilitate maintenance and quick tool change.

The Taylor-Wilson hydrostatic pipe testing machines were the first to address alternative pressures that the American Petroleum Institute (API) implemented to deal with the ever-changing demands in drilling for oil in deeper and harder-to-find areas throughout the world.

The Taylor-Wilson machines are capable of testing tube and pipe with OD from less than 25mm to over 660mm. Designs can accommodate plain end or square cuts, API line pipe ends, threaded and coupled ends, mill sawed or pierced ends. Fives has already supplied more than ten straightening lines to different Vallourec plants in the past ten years.

Fives Bronx – USA
Fax: +1 330 244 1961
Website: www.fivesgroup.com



Hydrostatic pipe testing

Ajax Tocco appoints general manager

AJAX Tocco Magnethermic has welcomed Joe Hawkins as general manager of aftermarket sales.

Mr Hawkins brings over 20 years of induction melting and heating expertise to the company. His entire career has evolved within the metals industry, beginning with Lectrotherm, Inc in 1991. He most recently served as director of sales for ReMelt Scientific. A graduate of Kent State University, Mr Hawkins later earned his MBA from Malone University.

Ajax Tocco designs and manufactures induction heating and melting equipment for various industries and applications. It also provides a range of services that include laboratory process development, preventive maintenance, equipment repair and parts, coil repair facilities and installation services.

The company maintains a team of skilled technicians strategically located around the world to maintain its equipment, as well as competitors' machinery. In addition, the company houses a large inventory of parts for all of its equipment, including older units and some competitor equipment.

Ajax Tocco Magnethermic Corp – USA

Email: sales@ajaxtocco.com

Website: www.ajaxtocco.com

Joe Hawkins



www.read-tpt.com

DIARY of Tube Events

2016



16-18 November

FABTECH
(Las Vegas, USA)
International Exhibition

www.fabtechexpo.com



29 November-1 December

Valve World
(Düsseldorf, Germany)
International Exhibition

www.valveworldexpo.com

2017



23-25 March

Boru 2017
(Istanbul, Turkey)
International Exhibition

www.borufair.com



17-19 May

Made In Steel
(Milan, Italy)
International Exhibition

www.madeinsteel.it



5-8 June

Tube Russia
(Moscow, Russia)
International Exhibition www.metallurgy-tube-russia.com



28-30 June

Guangzhou Tube Fair
(Guangzhou, China)
International Exhibition www.chinaexhibition.com



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

ASMAG signs contract for two innovative production lines in Italy

THE Austrian ASMAG GmbH, a worldwide known specialist in quality machinery for production of metals, has signed a contract with the Italian Berna Ernesto SpA of Lumezzane (Brescia) for the turnkey supply of two complete fully automated production lines. The plants will produce hollow bars and profiles in various brass alloys.

The agreement was signed in Gmunden (Austria) by Andrea Berna, CEO, and Johann Vielhaber, CEO of ASMAG.

This has been the successful result of several technical meetings in which all requirements of Berna have been carefully evaluated to identify and outline the best technological and layout solutions.

The philosophy of Berna, orientated to unconditionally guaranteed product quality and customer satisfaction, has been the theme that has led the

engineers of Scharnstein to their project choices. The technological encounter, knowledge and sharing of experience have been further enhanced by mutual visits of delegations to the respective premises in Lumezzane and Scharnstein.

The scope of supply includes drawbench, straightening lines for rounds and profiles, cut-to-length station, chamfering, straightness control unit and testing table, automatic bundling and packing, erection and commissioning services.

Considering the qualitative targets firmly established by the management of Berna, a strong attention to material handling and an extensive adoption of in-line instrumentation have been foreseen by the Austrian engineers. This will ensure the physical and aesthetic properties of the finished brass bars. ASMAG is a manufacturer

of integrated lines for the production of cold drawn metals (ferrous and non-ferrous). Its markets are mainly Europe, USA and Russia.

Founded in 1984 by the engineer Johann Vielhaber, it has grown since then in the factory of Scharnstein and with the acquisition of SEUTHE, Germany, in 2010 and OCN, Italy, in 2015. The ASMAG group now totals more than 200 employees.

Following the purchase of the assets of OCN, a new ASMAG branch office was established in Tavagnacco (UD), Italy, whose first important result has been this project with Berna.

With this contract, ASMAG confirms its leadership in high-technology cold drawing machinery.

ASMAG GmbH – Austria

Email: sales@asmag.at

Website: www.asmag.at

Roll-Kraft president receives Smart 50 Award

THE president of Roll-Kraft, Sanjay Singh, has been recognised as a 2016 recipient of the Smart 50 Award in Northeast Ohio, USA. The award celebrates Northeast Ohio's top executives in recognition of their talent to build and lead innovative companies.

Companies must represent their community in terms of organisation size and industry. All of this year's honourees

have made a positive impact on employment and business sustainability. *Smart Business Magazine* conducts its annual Smart 50 awards programme in various regions around the USA.

Roll-Kraft produces tooling for the tube, pipe and roll forming industry throughout the world. The main focus of the company is to provide high quality tooling, on time, and capable of

immediate performance upon installation at the customer's location. These goals are of such importance to Roll-Kraft that the company tracks the data and makes it available on its website on a monthly basis for a period of one year.

Roll-Kraft – USA

Fax: +1 440 205 3110

Website: www.roll-kraft.com



Sanjay Singh receives the Smart 50 Award



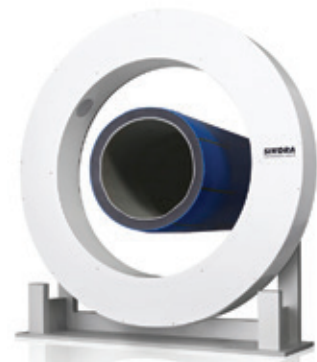
Roll-Kraft team members at the awards ceremony

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Hall 10, Booth H21

Investment in new technology is an important competitive factor

THIS year's 24th International Sheet Metal Working Technology Exhibition, from 25 to 29 October in Hanover, Germany, is all about smart manufacturing. With increasing levels of digitalisation within the production process, EuroBLECH 2016 presents a wide choice of innovative solutions to improve cost efficiency, flexibility and process stability along the entire sheet metal working technology chain.

The official online show preview has now been published and provides an overview of the comprehensive range of products and services on display at this year's show. A White Paper on Industry 4.0 and its impact on sheet metal working can now be ordered free of charge on the exhibition website www.euroblech.com.

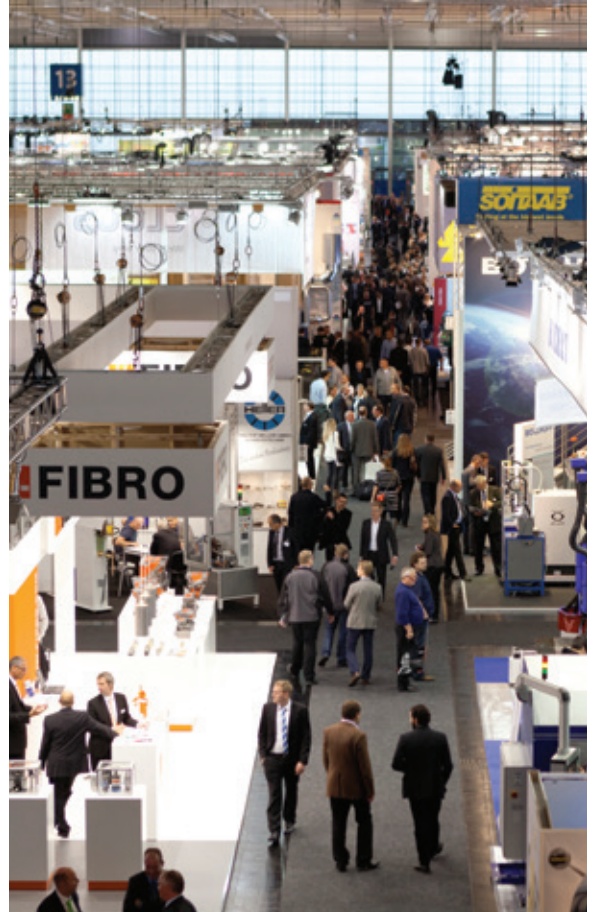
A total of 1,550 exhibitors from 40 countries have currently booked their stands at the exhibition for the sheet metal working industry. Compared to the previous event, EuroBLECH 2016 has grown by 3 per cent in floor space and features more than 89,000m² net exhibition space this year.

Nicola Hamann of Mack Brooks Exhibitions said: "Many exhibiting companies have booked bigger

stands this year and there are 20 per cent of new exhibitors at our exhibition. This shows that the overall situation of the sheet metal working industry is very positive. Initiated by new technical developments, such as Industry 4.0, companies are now planning ahead in order to upgrade their production processes and to achieve a competitive advantage.

"At this year's EuroBLECH there will be an above average percentage of new products live on display on bigger stands, and many new companies have joined the show. Thus, the industry sector is highly dynamic and open for a new generation of sheet metal working."

EuroBLECH 2016
Email: info@euroblech.com
Website: www.euroblech.com



Global services with free training or inspection provided

IN the year of its 50th anniversary, Selmers – a solution provider for pipe cleaning, coating and handling equipment – has converted its after sales department into a customer care department and renamed it Selmers Global Services (SGS).

With a special anniversary 'We Care' campaign, Selmers is celebrating both its anniversary and the launch of SGS. A gift, in the form of free training or inspection, is available on the company's website until the end of 2016.

The launch of SGS is an example of how customer care evolves. The formation of the Selmers Academy

provides solutions with a wide scope of training and inspection.

"It is essential to understand the expectations and needs from our customers to become close partners," explained Rob Schouten, manager, SGS. "We are determined to achieve an optimal solution for each customer [...] That's why we focus at SGS on personal customer contact, so that together we can be proud of the end result."

Polish company Izostal is a customer of Selmers. Its plant manager, Mr Smieszko, commented, "Izostal is always looking for opportunities to improve production processes and

SGS has proved to be a reliable and constructive partner to achieve that. The last received training – a specific training for blasting equipment on operator and technician level – resulted in less downtime and better product quality, so we are very pleased with the cooperation of SGS."

SGS keeps in touch with partners to determine their expectations and needs. At the same time, SGS is open to anyone who needs expertise and reliability.

Selmers BV – The Netherlands
Fax: +31 251 220 777
Email: sales@selmers.com
Website: www.selmers.com



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PASSION FOR PIPING

Final acceptance issued for modernised bar mill

HES Hennigsdorfer Elektrostahlwerke GmbH, a company in the Riva Group, has issued Primetals Technologies with the final acceptance certificate for a modernised turnkey bar mill in Hennigsdorf, in the German state of Brandenburg.

The modernisation project included replacing two existing stands in the roughing mill with new Red Ring stands, which do not have housing. This solution requires less space and has greater rigidity, to enable consistently narrow product tolerances to be achieved. The new stands also have larger rolls. This increases the stability of the process and allows multi-strand operation.

Primetals Technologies received the order in May 2015, and commissioning took place during a scheduled plant shutdown at the turn of the year 2015/16, with industrial rolling restored in January.

HES is one of three production locations that the Italian Riva Group has in Germany. The plant converts raw scrap metal provided by Riva Stahl GmbH into steel products, which are then marketed by Riva Stahl GmbH. The range of products includes continuously cast billets, reinforcement steel and bright steel, which is mainly supplied to the automotive industry and its suppliers.

For the modernisation of the bar mill, Primetals Technologies supplied two new type RR564 housing-less Red Ring roughing stands with a horizontal configuration. The scope of supply also included couplings, drive spindles and spindle supports. The centreline of the rolls can be varied between 480 and 730mm, and the roll barrels are 850mm long. A new gearbox was also installed on one stand.

Stand change parts, a motorised device for roll change operation, and the on-board electrical equipment for the stands completed the scope of supply. Primetals Technologies was also responsible for construction and commissioning.

The bar mill processes billets of carbon steel and low alloy grades with a square cross-sectional area of 140 x 140mm, a length of 12m, and a weight of 1.8 metric tons. The final products are rebars with diameters of between 10 and 50mm, and rounds with diameters ranging from 14 to 50mm. The plant can also be run in two-slit mode if the finished products have a diameter of 28mm or less.

Primetals Technologies Ltd – UK
Website: www.primetals.com

HES Hennigsdorfer Elektrostahlwerke GmbH – Germany
Website: www.rivagroup.com



Two Red Ring rolling stands from Primetals Technologies were installed at HES

Industry platform for the tube industry

DUE to the strong need for construction, infrastructure and energy projects, the market in Turkey has grown in both value and volume in recent years.

According to the Turkish Statistical Institute the local tube and pipe market has grown steadily. Some 4.2 million tons of steel tubes were produced in Turkey last year. This production volume made the country the biggest producer in Europe. 60 per cent of the production was sold in Turkey itself. The rest was exported to the USA, Iraq, UK, Romania and Egypt and to many other countries. In addition to this, 0.4 million tons of steel tubes were imported by Turkey

last year. When tubes other than steel (iron, copper, nickel, aluminium) are also taken into consideration, volume of all tubes becomes at least the double that of steel tubes.

Turkey is a huge market that has a very wide range of tube application demands. It is an important supplier for Middle East and North African countries and many other countries as well.

The 10th edition of Boru (Istanbul Tube Fair) will be held 23-25 March 2017. The Istanbul Expo Centre is next to International Istanbul Ataturk Airport and offers convenient access to the fair. Boru provides a platform for both

exhibitors and visitors to reach their target audience. Companies will have the opportunity to present their new products and connect with industry experts.

The fair is focused mainly on the metal tube industry. Major product groups that will be exhibited at the fair include tubes, profiles, fittings and other accessories made of ferrous or non-ferrous metal for all applications, tube manufacturing machinery and processing equipment.

Voli Fuar AS – Turkey
Email: info@voli.com.tr
Website: www.borufair.com

Improvements in laser cutting technology

FONON Corp has brought a series of advancements to its latest generation of laser equipment for industrial applications that were previously underserved by the most common laser cutting technology.

The most widely used conventional laser cutting machines incorporate CO₂ lasers, and have proven less effective when used to process certain metals and reflective materials.

Due to their highly reflective nature, a large number of metals and materials cannot be efficiently cut with conventional CO₂ lasers, including aluminium, copper and brass. When processed by a CO₂ laser, these metals reflect a majority of the laser power, causing equipment damage due to back reflections.

Industries that use these metals, including manufacturers of construction equipment, aluminium vehicles, kitchenware, copper and brass gaskets, food processing equipment

of any kind, and materials used in the aerospace and defence industries, can now access advanced laser cutting capabilities.

Fonon's latest laser cutting technology benefits from the company's understanding of material behaviour at transition temperatures – the point when the material changes properties, such as reflectivity and absorption, as it transitions from a solid to a liquid state.

Fonon's cutting machines incorporate advanced lasers that are specially configured for metal cutting, with variable laser beam output parameters, making them suitable for cutting a wide variety of metals, and metals with changing thicknesses.

When compared to a CO₂ laser of equal wattage, Fonon laser cutting technology is claimed to be three times faster when cutting stainless, mild or galvanised steel. Power consumption by Fonon laser equipment is less

than one quarter the consumption of a comparable CO₂ cutting system, and the laser is maintenance-free and requires no consumables.

"More than ever, manufacturers need to find ways to improve quality, speed and their financial bottom line, and there is a dramatic increase in demand for laser cutting machines that can efficiently work with reflective metals," said Dmitriy Nikitin, CTO and interim CEO of Fonon Corporation.

The advanced laser cutting technology is currently incorporated into the new models of the Titan FX line of large, flat-bed laser cutting machines, and is scheduled to be included as optional equipment in all cutting, marking and engraving products available under the Laser Photonics brand.

Fonon Corp – USA

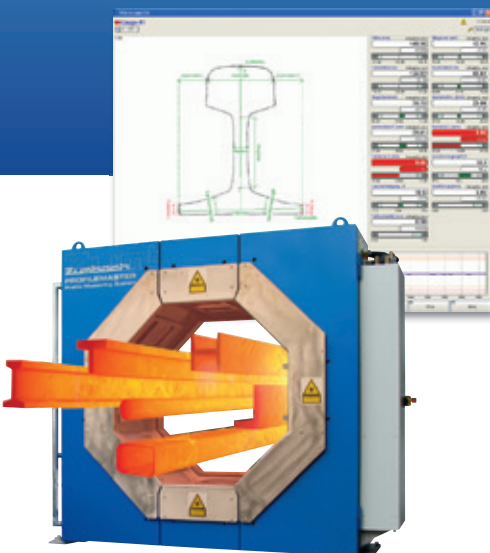
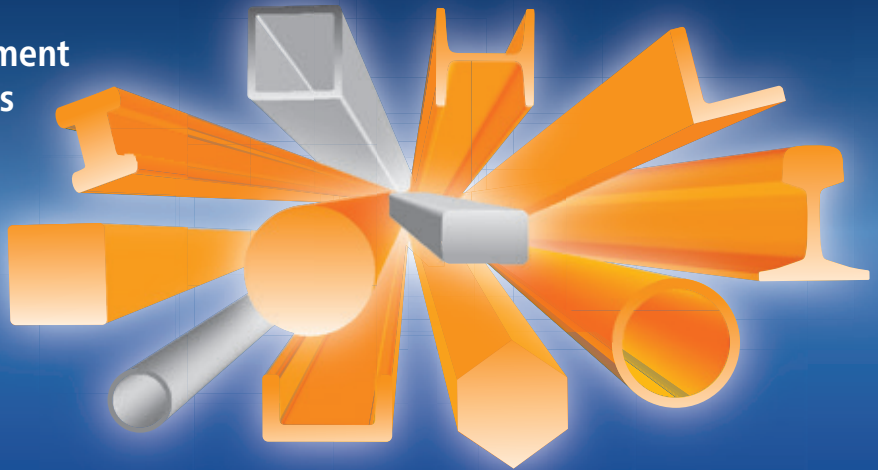
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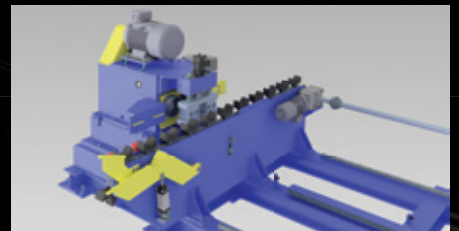
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ADDAFER.IT

Exol Pride sets sail with lubricants

EXOL Lubricants has added a new barge, *Exol Pride*, to the UK's North East Waterways, to transport raw materials from Hull to its bulk blending plant in Rotherham.

The company is a long-term user of the waterways, using an environmentally friendly option while transporting large loads. It has been commended for its reduction in carbon footprint and has featured in a documentary by a major UK TV broadcaster.

Steve Dunn, Exol Lubricants sales director, said, "*Exol Pride* is part of our strategy in aligning the Exol brand with the company's philosophy of supplying customers with the highest quality product, backed up by market-leading support and service."

Where road travel is essential, Exol maintains an economical fleet comprising a mix of dual-purpose vehicles and large tanker trucks to transport both bulk and packaged Exol products to customers across a variety of sectors, including agricultural,

automotive, industrial, marine and rail.

Both Exol's bulk blending plant in Rotherham, South Yorkshire, and head office in Wednesbury, West Midlands, are ISO-14001 accredited, having successfully implemented an effective 'integrated management system',

which focuses on reducing, reusing and recycling waste, as well as using energy efficiently.

Exol Lubricants Ltd – UK

Fax: +44 121 568 6720

Website: www.exol-lubricants.com



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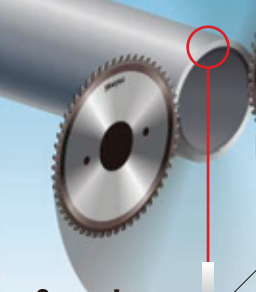

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TANITEC CORPORATION Kyoto, Japan

TMK GIPI to operate new 6" mill

AS part of its ongoing 'In Country Value' initiatives, TMK GIPI (Oman) has announced the final stage of its 8" to 24" mill expansion for manufacturing smaller sizes – 6" to 7", which are used for oil and gas well delivery and are currently sourced from the overseas market.

The company states that the mill modernisation and expansion shows its commitment to the industrial development of the country. It not only contributes to the manufacturing of new products for the exploration and production of oil and gas, but also strengthens the value chain through the participation of local suppliers and local labour.

TMK GIPI CEO Vladimir I Shcherbatykh said, "This mill is world class, state-of-the-art for the oil and gas industry. These days the challenge of increasing oil and gas production is associated with technology, and

TMK's commitment is to provide Oman oil and gas industry, as well as other operators within the region, with products manufactured under the strictest standards and with the highest quality, along with just-in-time service and technical support."

This key milestone for TMK GIPI is expected to create 15 new permanent jobs, develop local talents, give support to SMEs, and stimulate the local economy.

The company states that it is proud to contribute to the development and progress of the Omani economy by minimising dependence on imports and increasing export of local quality products to other markets with fair, competitive prices.

The mill occupies 240,000m² and includes the expansion of new 6" lines, which incorporate the latest technology to manufacture pipes for the oil and gas industry. This technology

includes a cutting-edge heat treatment line, threading facilities capable of processing OCTG, inspection lines to meet the highest quality standards, and adjustment lines.

The entire process ensures production of high quality finished pipes in line with international standard requirements.

TMK GIPI (Gulf International Pipe Industry) was established as a limited liability company in the Sultanate of Oman in January 2007. It claims to be the first manufacturer of high pressure steel line pipes and casing pipes in Oman and the first mill in the MENA region and sub-continent of India to manufacture high pressure 6" to 24" electric resistance welded (ERW) steel pipes.

TMK GIPI – Oman
Email: sales@gipi.co.om
Website: www.tmk-gipi.co.om

Primetals wins order from AMAG to modernise rolling stands

PRIMETALS Technologies has secured an order from AMAG rolling GmbH, an Austrian aluminium producer, to modernise the drive technology on the four-high cold rolling stand in its Ranshofen plant. The order covers not only the supply of the motors, converters and converter transformers, but also the couplings, disc brakes and mechanical adaptations. Primetals will

also handle the design, engineering, project management and training, as well as the removal and assembly of components, repairs and the supply of spare parts.

The purpose of the project is to increase plant availability. Primetals Technologies previously modernised the drive technology of the company's four-high hot rolling stand in 2015.

The drive solution to be implemented on the four-high cold rolling stand consists of a front/back motor layout for the stand and the coiler, and a single motor assembly for the uncoiler. Rugged, water-cooled induction motors from Siemens are fed by Sinamics active front end converters. A Sinamics SM150 converter drives the two 3.3kV mill motors, each of which has a power

rating of 2,200kW and a speed ranging from 300 to 750 rpm. Sinamics S120 converters drive the 690V coiler motors, each of which is rated at 500kW and has a speed ranging from 320 to 1,050 rpm.

Conversion and commissioning are scheduled to take place during a brief plant shutdown at the end of 2016. The challenge will be to convert the rolling stand with as little adaptation work as possible and the shortest possible interruption to production.

AMAG rolling GmbH is a manufacturer of rolled aluminium products. The company belongs to the Austrian AMAG Group, a supplier of cast and rolled aluminium products that are used in a wide range of industries, such as aircraft, automotive, sports equipment, lighting, mechanical engineering, construction and packaging.

Primetals Technologies Ltd – UK
Website: www.primetals.com



Groundbreaking ceremony unveils new tube pickling plant

SANDVIK held a ceremony in June, at its headquarters in Sandviken, Sweden, to commemorate a major investment in a new pickling plant for hot flow processes in tube manufacturing. Construction of the plant is set to begin immediately, and the new pickling line will be up and running by the end of 2017. The new facility will cover 6,000m².

Around 50 people were invited to take part in the event, in which the ground beneath the location of the new pickling plant was symbolically broken for the first time to mark the beginning of construction of the new building. A custom-made shovel was produced for the occasion, and the first dig was a joint effort between Christina Anttila, project manager; Michael Andersson, head of product area tube; Ulrika Silver, supply manager tube; and Petra Einarsson, president of Sandvik Materials Technology.

Ms Einarsson commented, "This investment is very positive for Sandviken. It strengthens our position globally and, at the same time, confirms that Sandviken remains an important part in our forward direction."

Almost all tubes produced in Sweden pass through the pickling process step, which makes the new plant an important investment that will help ensure the stability and quality of tube production. The plant will be equipped with the latest technology and will be designed to provide a safer working environment and environmentally friendly processes.

Sandvik Materials Technology – Sweden
Website: www.smt.sandvik.com

From manufacturer to supplier

IN recent years, a training and adaptation process has taken place at the Tubacex Group 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 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.

Tubacex Group – Spain
Website: www.tubacex.com

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GF to acquire piping company in Indonesia

GF PIPING Systems has announced the acquisition of PT Eurapipe Solutions, Indonesia, giving the company a platform for further growth in the country.

PT Eurapipe has a reputation as a producer of pipes and fittings made from polyethylene. The company, located in Karawang, 80km east of Jakarta, operates in the mining business and other water-related market segments. The acquisition strengthens GF Piping Systems' position in South East Asia in line with the strategy of the division to expand in growth markets.

Founded in 1992, PT Eurapipe generated sales in 2015 of around US\$20mn, with a workforce of

approximately 100 people. GF acquired 100 per cent of the outstanding shares and will rename the company GF Indonesia after taking ownership. The parties have agreed not to disclose financial details of the transaction.

"We are pleased to welcome PT Eurapipe in the GF family," said Yves Serra, CEO of GF. "We look forward to continuing to serve existing customers and partners to the same high standards. We will further expand the company in Indonesia and in the region, working together with the entire team of PT Eurapipe."

GF Piping Systems is a supplier of piping systems made of plastics and

metal. The division focuses on system solutions for the safe transport of water, gas and chemicals in the industry and building technology sectors.

Its product range includes pipes, fittings, valves, sensors and automation, as well as jointing technologies, and covers all water cycle applications. Worldwide, the division operates more than 30 production facilities, and supports customers in over 100 countries through its own sales companies and representative offices.

Georg Fischer Ltd – Switzerland

Email: info@georgfischer.com

Website: www.georgfischer.com

Arc Energy announces acquisition of CLG Engineering

WELD overlay cladding and fabrication specialist Arc Energy Resources has acquired precision machining company CLG Engineering.

Arc Energy Resources provides corrosion-resistant weld overlay cladding services to a variety of clients in industry sectors ranging from oil and gas to defence, power generation, petrochemical, water and nuclear. Its processes provide a practical combination of readily available base materials and corrosion-resistant alloys to protect any critical area. Its fabrication department holds ASME U and U2 stamps, and manufactures radiographic-

quality specialist equipment, including pressure vessels, spools, pig launchers, wellhead equipment and nuclear devices. CLG Engineering provides CNC milling, CNC turning and assembly services to, amongst others, the oil and gas, automotive and rail industries. Certified to ISO 9001 and with over 40 years' engineering experience, its team can produce parts from 25mm to 1.25m in length, and up to 18" diameter, within tight tolerances.

The acquisition means that Arc Energy Resources' 80 employees are supplemented by CLG Engineering's 14, to create a stronger team with a wider mix of skills. Both companies are supported by teams of experienced project managers, inspectors and welding engineers, with access to a wide range of auxiliary processes in-house, including heat treatment, NDT and CMM inspection. Group managing director

Andrew Robinson commented, "This is a fantastic opportunity for both companies.

"CLG Engineering's precision machining capability perfectly complements Arc Energy Resources' cladding and fabrication offering. The group structure enables us to offer a one-stop-shop for all our clients' engineering requirements, from design and material supply through to welding, cladding, machining, NDT, pressure testing, surface finishing and project management."

He went on to say that the cultures of the two companies are highly compatible, from a focus on quality, attention to detail and customer service, to the way they treat their staff. "I have great plans for the future growth of the group, and am looking forward to supporting our clients on new and larger projects," said Mr Robinson.

The acquisition follows a record trading year for Arc Energy Resources, which grew its turnover in 2015 by 14 per cent to £6.5mn and invested heavily in new equipment and facilities, including a bi-cathode rotary head cladding cell, a robotic welding cell and a 6,000ft² extension to its workshop.

Arc Energy Resources Ltd – UK

Email: sales@arcenergy.co.uk

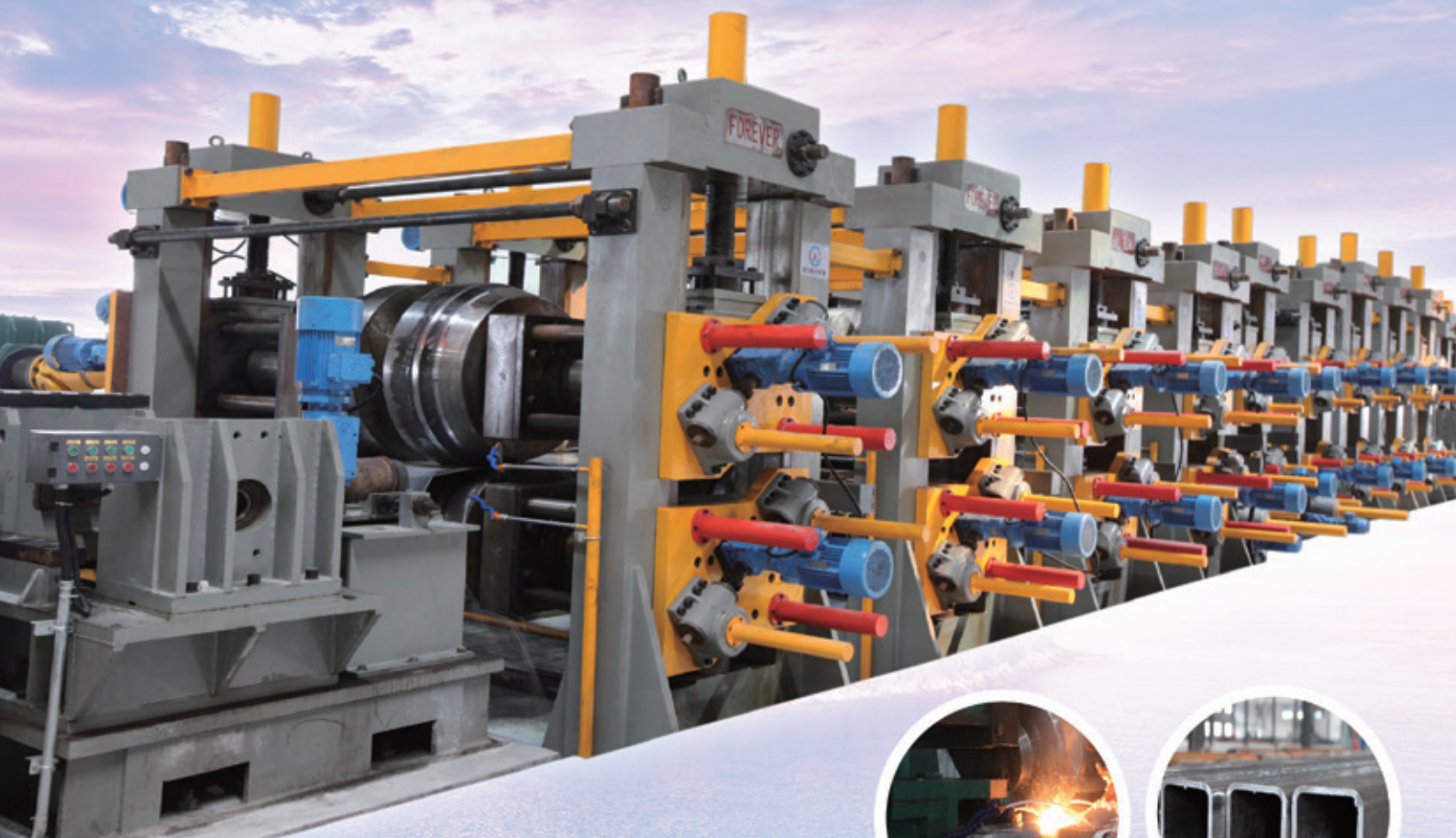
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Arc Energy Resources managing director Andrew Robinson announced the acquisition of CLG Engineering

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Robotic innovation sparks growth

ANT Hire, a UK supplier of specialist testing and construction equipment to the water industry, has announced an expansion of its business and services fuelled by the commercial success of its technology-led robotics and pressure testing divisions.

The expansion of the specialist divisions is the first phase of a growth strategy that aims to increase turnover from £4mn to £10mn in the next five years and create a number of new job opportunities.

Ant Hire provides pressure testing solutions and specialist robotic inspection systems to large contractors and water companies across the UK, including Yorkshire Water, Thames Water, Kier, Lumsden & Carroll and JN Bentley.

The company has its own research and development team based in Leeds, which has led to a number of design patents and inventions. These include the 'Ten Minute Test' – a water pressure testing system that reduces the time required to check for leaks and reduces water company reconnection times – and the development of bespoke robotic camera systems now used by the nuclear industry.

Ant Hire managing partner Adrian Thompson said, "Ant Hire has always been a well-known name in the water supply industry but we've recently seen a huge increase in new business enquiries, particularly in our robotics and pressure testing divisions, which has meant we needed to grow to keep pace with demand. At Ant Hire we aim to provide our customers involved in drainage and clean water networks with an excellent service, and the new space and additions to the team will enable us to offer a one-stop shop for products, advice and technical support to get the job done and to make things simpler for customers."

As part of its recent growth, Ant Hire appointed Antony Scott as director. With more than ten years working in senior roles within the drainage industry, Mr Scott will lead all sales activity for the business and will oversee the launch of new prototype equipment in both the pressure testing and robotics divisions.

The new head office involved a capital investment of more than £350,000, and the new space will enable the business to expand its core teams to support growth and to enhance the customer experience. The new site will also be home to Ant Hire's research and development division.

Ant Hire Solutions – UK

Website: www.anthire.co.uk



Antony Scott

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Line for large multi-layer PPR pipes

AMUT has supplied a line for the production of multi-layer pipes in PP with glass fibre (diameter up to 630mm) to a European producer dedicated to hot and cold water ducting for civil and industrial applications.

The glass fibre improves the elastic module of the pipe, reducing the thermal expansion. Pipe installation costs are lower than for traditional pipe because pipe support is reduced during installation. The quality of pipes is generally enhanced.

The line is composed of three single screw extruders, EA75 AMUT model, L/D 35:1, and one EA20 co-extruder for the coloured strips. The extruder for the inner layer is equipped with anti-abrasion treatment screw and barrel to process the glass fibre.

The line is equipped with a special head designed for processing large-sized pipes with different configurations: three-layer with spiral-helical distribution system. The head is thermo-regulated through a dedicated TCU, keeping

an accurate temperature during the production process (TERAX system). Any sagging effect is avoided and uniformity of the thickness can be maintained.

Each extrusion tool is designed to reduce the time required for pipe dimension changes. The pipe head is equipped with an INRAF system for internal cooling of the pipe. This energy-saving concept allows the reduction of the number of cooling tanks, improving

the dimensional quality of the pipe. An integrated computerised system (Surveyor) controls all the parameters during each phase of the production process. Innovative software manages the action of the vacuum pumps, and saves energy by reducing operating time.

AMUT Group – Italy
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Ø500 / 0.5mm	0.25	< 0.15mm	< 0.15mm

Surface roughness: N5/Ra0.4µm SN4/Ra0.2µm
PVD coating: TiCN/polished

PowerBlade 65

HSS quality: 1.3243 / M35
Hardness: > 65 HRC*

Run out:	DIN	Market	PowerBlade 65
Ø350 / 0.3mm	0.2	< 0.1mm	< 0.1mm
Ø400 / 0.4mm	0.2	< 0.1mm	< 0.1mm
Ø500 / 0.5mm	0.25	< 0.15mm	< 0.15mm

Surface roughness: N5/Ra0.4µm SN4/Ra0.2µm
PVD coating: AlTiN/polished

* Company specific HSS hardening: min. residual austenite, high hardness

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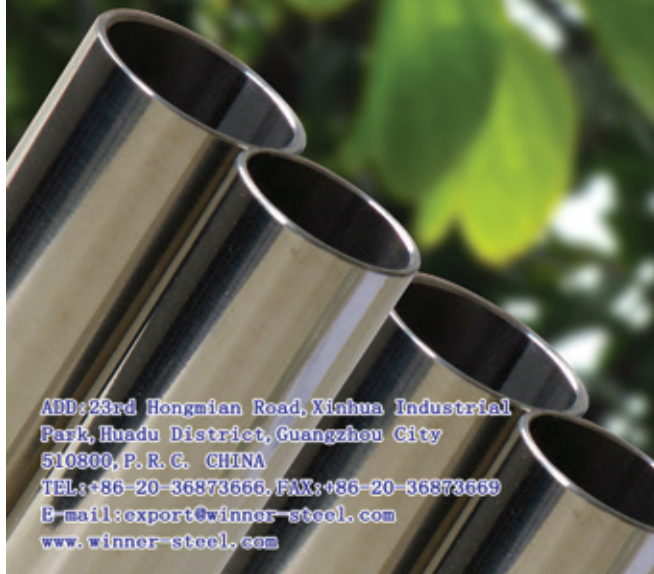


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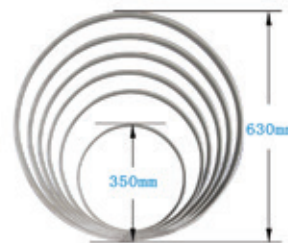
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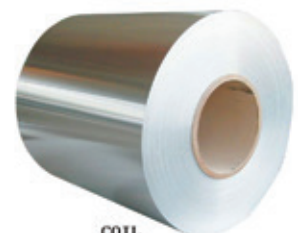
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INDUCOTHERM's Banyard brand is a global leader in the design and manufacture of advanced induction heating systems for pre-heating ferrous and non-ferrous billets, prior to the extrusion of seamless tube with a hydraulic press.

The systems are utilised in two specific areas of metal process: thin wall extrusion of non-ferrous tubes, such as aluminium tubular section for air conditioning applications, or heavy-duty extrusion of seamless steel alloy tubes for petro-chemical and nuclear applications.

Light non-ferrous heaters are configured in a horizontal push format. The billet is pushed into the induction coil heated to the required temperature, with a linear temperature gradient of taper, and then transferred to the extrusion press.

In recent years a significant development from Banyard has been the introduction of zero friction aluminium billet heaters. These offer special mechanical handling technology designed specifically to

address the needs of the aluminium micro-tubing sector.

Prior to the extrusion of aluminium micro-tubing, any surface scratches or dents to the billet (before/after the process) can show up on the outer surface of the finished product. Any resultant surface damage will appear magnified on such small diameter micro-tubing.

These heaters have the latest Banyard LFi IGBT power convertor technology. This technology can present precise low frequency energy to multi-zone coils, giving the variable energy and temperature profile to the billet required for high quality extrusion.

Pre-heating of steel alloy billets can use horizontal push through heaters or, in the case of large billets, up to 1,000kg weight, then heavy duty lift systems present the billet to a vertically mounted induction coil.

In recent years increased demand for vertical steel billet heating systems, because of extruded seamless tubing, has increased the demand for high

integrity tubing having a totally uniform, homogeneous metallurgical structure. This is achieved by single-zone and multi-zone heating systems.

Banyard's VSI heating systems provide a turnkey solution to the seamless tube extruder. The latest Banyard LFi IGBT power convertor technology is utilised to give multi-zone coil energy to the billets. Some billets, having been through an expansion process prior to extrusion, can benefit from the linear temperature correction process available with multi-zone coils.

The Inductotherm Group designs and manufactures advanced induction heating systems and products for virtually all metal thermal processing applications. With proven technology for every induction need Inductotherm can offer efficient, reliable and effective products to give the user the competitive edge.

Inductotherm Heating & Welding – UK

Email: info@inductothermhw.co.uk
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ZF Heater from Inductotherm

Weld backing tape for weld purging

IT is important when welding metals such as stainless steel, titanium and zirconium that the welding zone is purged of oxygen even as low as ten parts per million (ppm) before, during and immediately after welding, in order to achieve a clean, oxide-free, zero-colour weld.

During a recent trip to South America, weld purging experts from Huntingdon Fusion Techniques (HFT) were supporting their exclusive distributor and local customers when a discovery was made concerning the use of the company's Argweld® Backing Tape™. A customer showed how the use of his former ceramic backing tiles and the tiny space available for the weld root formation prevented adequate argon flow and caused the welding arc to blow back at the welder.

Luke Keane, distributor support for HFT, explained, "Ceramic backing tiles are designed for submerged arc welding where oxidation is prevented by powder as opposed to argon, so the customers were using the wrong product for GTAW/TIG welding. A demonstration of Argweld

Backing Tape followed, which allowed the argon to flow freely, eliminating the blow back of the arc that was happening previously and enabling the welders to produce a perfect root weld."

Huntingdon Fusion Techniques Weld Backing Tape™ comprises a 75mm (3") wide aluminium adhesive tape backing strip, in the centre of which is a 25mm (1") wide band of woven glass fibre matting. Once the tape is positioned with the glass fibre matting under the centre of the weld joint, the welders can start their arc. The welding torch argon flow has plenty of space to move between the pores of the matting, which allows the welding arc to stabilise and start forming the weld root.

Measured by a Weld Purge Monitor®, all contaminating oxygen below 100 parts per million (ppm) is removed and the stainless steel weld root is completed successfully, with the molten metal being cast onto the fibre glass with excellent side wall fusion and under-bead profile.

The customer was said to be enthusiastic about the clean,



Gas flow using API sampling probe



Finished weld

metallurgically sound, non-oxidised weld, and placed a large order for Weld Backing Tape for immediate delivery.

Huntingdon Fusion Techniques – UK
Website: www.huntingdonfusion.com

Taking the load off system operators

LOADMASTER® loading systems from Schuler can increase the productivity of turning and milling centres by automatically transporting parts to and from the machines.

The newly developed LoadMaster Assist robot cell improves effectiveness further by carrying out tasks such as



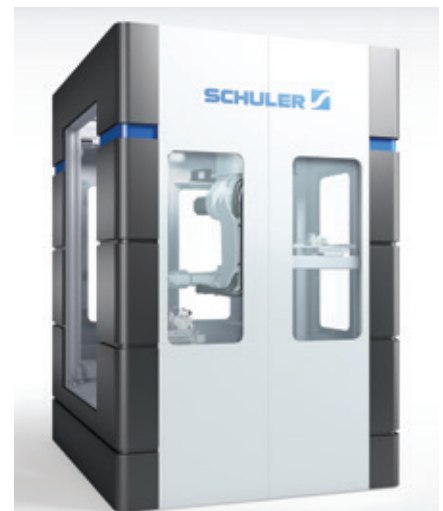
The LoadMaster Assist enables lights-out shifts for turning and milling centres

the clamping of raw parts in the devices or the cleaning and de-burring of parts, which previously had to be performed by system operators. This allows operators to concentrate on other important tasks.

The degree of automation of the machining centres is increased to a level that allows not only lights-out shifts but also, for example, continuous operation over the weekend. The machines can remain in operation for several days without an operator having to intervene.

"The LoadMaster Assist is the logical addition to our solutions for the automation of machine tools," said managing director Stephan Mergner, head of the automation division at Schuler.

The range of loading systems encompasses the LoadMaster Compact modular system, the LoadMaster Flex high rack system, and the LoadMaster Herkules for high weight classes from three to eight tons. The LoadMaster Tool links the tool magazines of processing machines. Schuler presented the LoadMaster



The Schuler LoadMaster Compact, Flex and Herkules loading systems can be equipped with the robot cell

Photo credit: Schuler

Assist at the AMB trade fair in Stuttgart, Germany, in September.

Schuler AG – Germany
Fax: +49 7161 66233
Website: www.schulergroup.com

Adda Fer Meccanica double head end-facing unit

ADDA Fer has established itself as a top-class manufacturer of tube machinery, extending its product catalogue from complete tube mills to finishing lines. Machines that obtain API certification such as end-facing and hydro-tester machines are now standard for Adda Fer. The new target is consolidating productivity and maintaining the best quality.

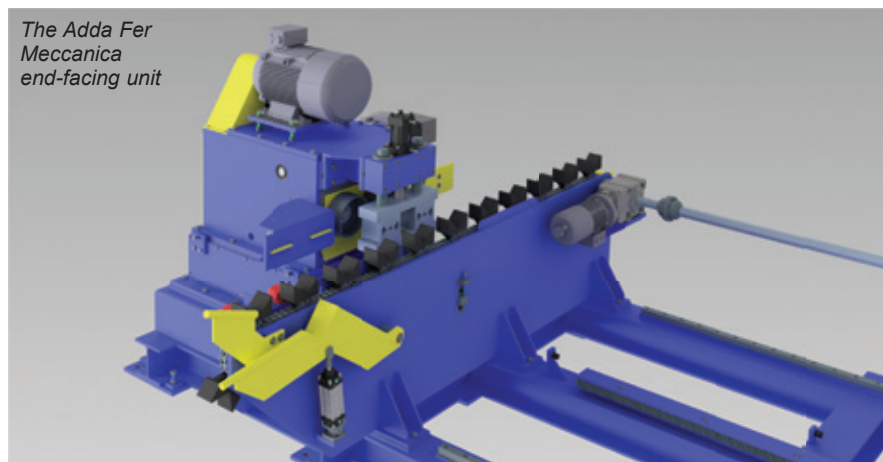
End-facing is generally a process of bevelling one side of the tube at a time, and also just one tube at a time. Adda Fer has improved its machines in order to be able to work two tubes at a time using two parallel heads that bevel the two tubes simultaneously.

This permits the customer to have almost double the time to bevel the tubes. This is very important when the tube mill is really performing and the risk is that the bottleneck could be the time taken to complete the bevelling of each tube.

In order to speed up the cycle time as much as possible and to avoid moving the short tubes for long distances, one pair of bevelling heads is fixed and another pair moves to reduce the distance the tubes have to be moved to process the correct length.

In this way, loading, moving and bevelling two tubes each time, the time available for the operation is higher (almost double that of the single tube version) and the productivity increases with no impact on the process.

One other advantage is that the machine does not require a complicated system of motorised rollers to move the



The Adda Fer Meccanica end-facing unit

tube. It only needs a cylinder to move the tube a few centimetres in order to align it perfectly before the bevelling.

The tube is clamped with two hydraulics grippers (one per tube) in order to stabilise it during the bevelling operation.

To have the ability to block the tube while avoiding vibrations, there is a vice for each measure of tube. The bevelling heads are also automatically adjusted on the centre of the tube by PLC. The line is automatically set up to the correct size. A system with brushless motors moves up and down the axis of the mandrels to centre them with the tubes.

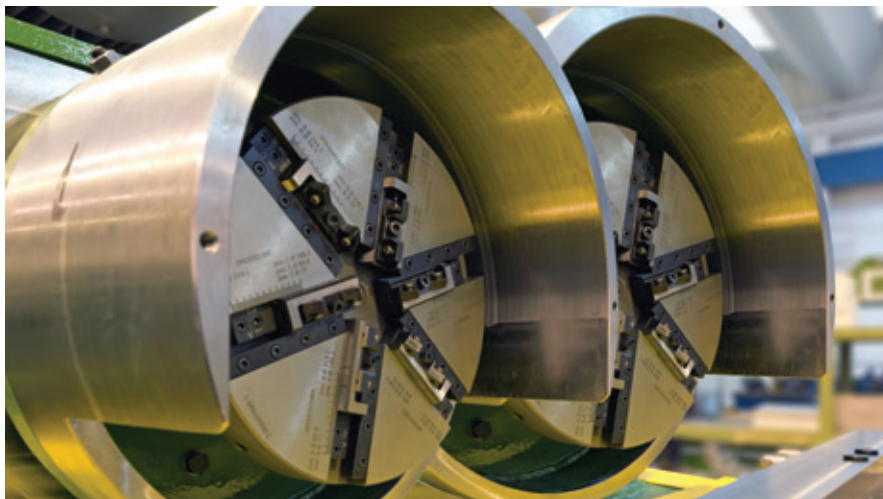
Adjusting the working length also depends on the tube length and this is automatically set up by the PLC. Three motors move the conveyors and the moveable bevelling head.

Adda Fer End Facing EF4 is able to process the following ranges of tube: round tubes from 30 to 114mm outer diameter; tube lengths from 3 to 12m all under automatic control; speed up to 120m/min (with tubes 6m long, six seconds to process two tubes); four chain conveyors to support the tubes with all the ranges; two parallel bevelling heads with the possibility to mount external, internal and frontal inserts to finish the surface as desired; brushless motors to automatically adjust the axis of the bevelling heads depending on the tube diameter; and a sophisticated system to motorise the mandrel on the two tubes in parallel with the same motor using a telescopic mandrel controlled by a brushless motor.

Siemens components and Siemens Sinamics drives and inverters are used to allow full automation of the process.

The interface permits the operator to have full control of the parameters in order to create the perfect bevel and maximum efficiency. Interactive diagnostics also allow the operator to identify the cause of any operational stop or anomaly in the system immediately.

The alarm/failure signals follow a logical sequence and the operator will be warned in plenty of time if there is a problem. The problem will also be saved to a database for later diagnostics and maintenance.



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Expanded prototyping options for new pipe forming geometries

PIPE forming technology is a complex area, with ever-smaller tolerances for advanced new projects from different industries. Companies with fresh ideas need to transfer new products to serial production safely and reliably after development.

Machine constructor transfluid uses its pipe processing technologies for research in its internal prototyping department. In addition to sampling its own new developments, for example in the area of tool technology, companies without machinery of their own can have their pilot series analysed and precisely improved at transfluid.

“Support in this area is in higher demand than expected,” said Stefanie Flaeper, managing director at transfluid. “Therefore we have expanded our research and prototyping department once again just recently. We can perform diverse tests on components and tools with pipe diameters up to 65mm here.”



From turned part to chip-less forming

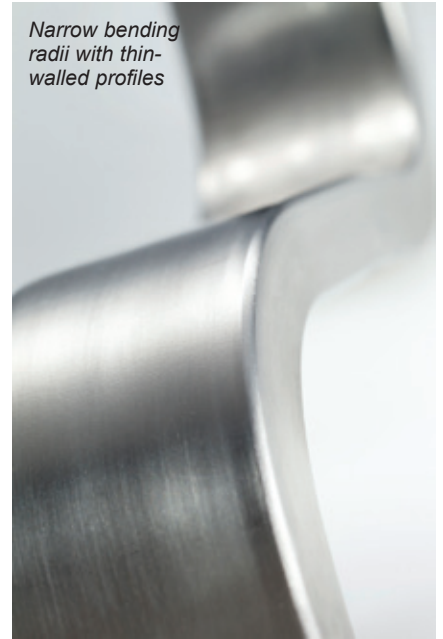


Pipe processing technology such as the continuous SRM type forming machine is available in the prototyping department

Photo credit: © transfluid

A CNC-controlled type SRM rolling forming machine and two axial forming machines are used, with a forming power of up to 25 tons. The entire process chain can be implemented with an additional CNC-controlled pipe bending machine and an orbital pipe separation system, to ensure that requirements, eg regarding burr formation, can be met.

For specific customer projects, the experts in the department can test new forming geometries and tool concepts for serial maturity and quality. The transfluid team relies, among others, on a tactile and visual measuring system for components and tools. The interim



Narrow bending radii with thin-walled profiles

results up to the certain result are documented reliably.

The transfluid experts have special experience as an initial developer of incremental pipe forming, which permits partial rotation-symmetrical forming of pipes made of high- and very-high-strength materials. In particular, review and assessment with lightweight components and high-strength materials is possible. Depending on geometry, this can even be done tool-independently, and the company can offer pilot series or prototype production.

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

A partner for tube and sheet metal forming

EBM is promoting itself as partner for all tasks concerning tube and sheet metal forming. As a manufacturer of electrically operated or hydraulic-driven machines and systems, the company offers standardised and individual solutions to suit customers' requirements, with either automatic or manual operation.

From planning of a product until start of production, customers are supported by 30 years of experience with professional engineering and R&D.

Ebm's areas of business include standard and special machines for tube and sheet metal forming; tools for tube

and sheet metal forming; engineering and service; and prototyping and production of small batches. In the field of tube forming, the company's programme includes machines for radial forming, axial forming, cutting, rolling and stamping.

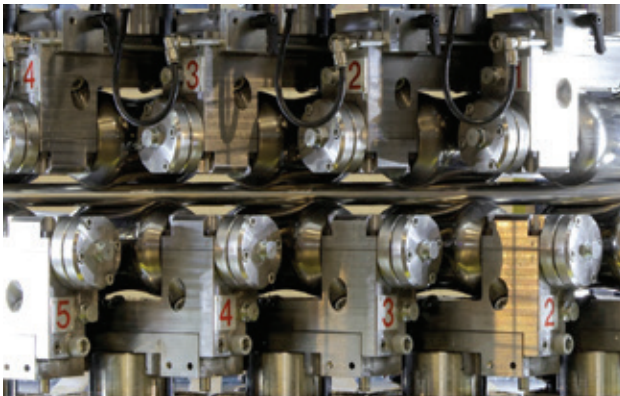
One of its latest developments is the C50VE electric-operated axial tube end-forming machine with five forming stations. The machines of the C series are suitable for tube end-forming with all metal materials. Processes such as sinking, tapering, expanding, swaging, crimping and calibrating can be applied.

Simple designs can be formed with just one tool; for complicated designs, up to five tools can be operated. The clamping of 3D bent tubes up to a diameter of 120mm is possible due to the C-frame.

Other specifications of the C50VE include tube diameters from 3 to 120mm, 80-500 kN forming force and 80-500 kN clamping force. Numerous options are available upon request.

Ebm Erich Büchele Maschinenbau GmbH – Germany
 Email: vertrieb@ebm-maschinenbau.de
 Website: www.ebm-maschinenbau.de

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Reducing weld purging times

WELDERS, supervisors and quality control personnel can often be kept waiting, sometimes for hours, for stainless steel or titanium pipes to be purged of oxygen ready for welding.

In addition, expensive inert argon gas flows away to waste after it has passed through the pipe, gathering oxygen and other harmful gases along the way. QuickPurge® tube, pipe and pipeline

weld purging systems from Huntingdon Fusion Techniques (HFT) are designed to help avoid this time loss and material waste.

The welding manager at a pipework fabricator was recently charged with the task of reducing costs and waiting time in the department. The specialists at HFT were contacted to discuss the options. After discussions during which

the welding process of plasma/TIG (PAW/GTAW) was highlighted, HFT delegates prepared their demonstration equipment for a welding trial on 900mm (36") pipes. The purge was completed in just a few minutes instead of the hours that were taken previously, and the special heat protective covers, fitted around the volume-reducing sleeve, absorbed the extra heat of the plasma arc.

Several welds were made with different sizes of pipe and all were successful, restoring the confidence that the company had lost due to the failure of the previous systems that they had purchased elsewhere.

QuickPurge has an additional gas input line that allows extra purge gas to be introduced for applications such as this, achieving a faster purge down to the lowest oxygen levels, and making it suitable for larger diameter pipes where quality welds are required. The extra cold gas mitigates the additional heat produced by the plasma/TIG process.

The design of the QuickPurge system means that oxygen levels as low as ten parts per million (ppm) can be reached, allowing zero-colour welds to be achieved with no loss of corrosion resistance caused by oxidation.

Using IntaCal® combined with the integrated PurgeGate® device makes it possible to safely inflate the systems with argon gas, for purging the space between the dams where the weld joint is located. With PurgeGate, burst dams are prevented in the event of undue pressure increase or accidental flow increase of the purging gas.

All systems are manufactured as standard with a hose for connecting a Weld Purge Monitor®, which can read oxygen levels down to as low as 10ppm.

Materials used in the manufacture of QuickPurge are resistant to the higher weld temperatures present and they do not outgas, preventing weld contamination.

For pre-heated chrome steel and high strength stainless steel pipe joints, HFT designs and manufactures the HotPurge® range for a higher and longer temperature exposure.

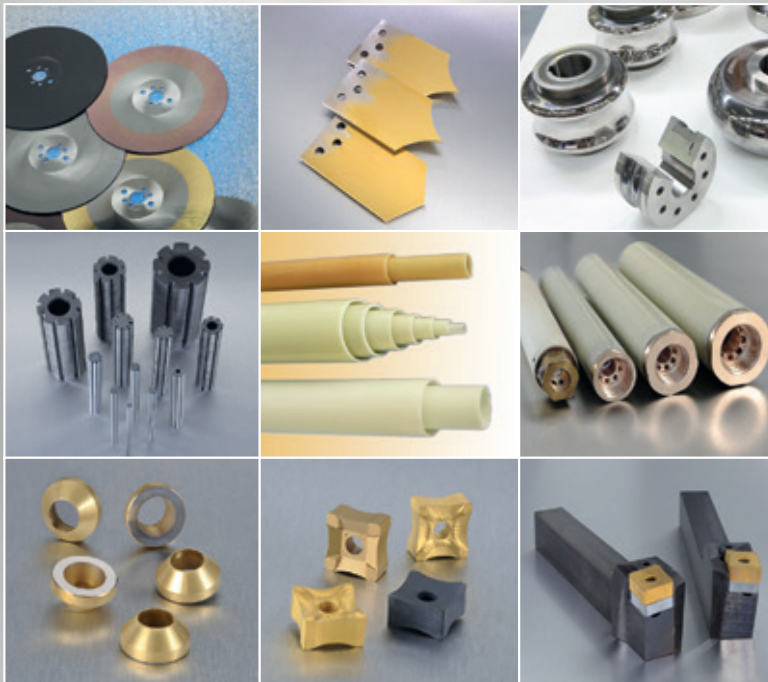
Huntingdon Fusion Techniques – UK
Email: hft@huntingdonfusion.com
Website: www.huntingdonfusion.com

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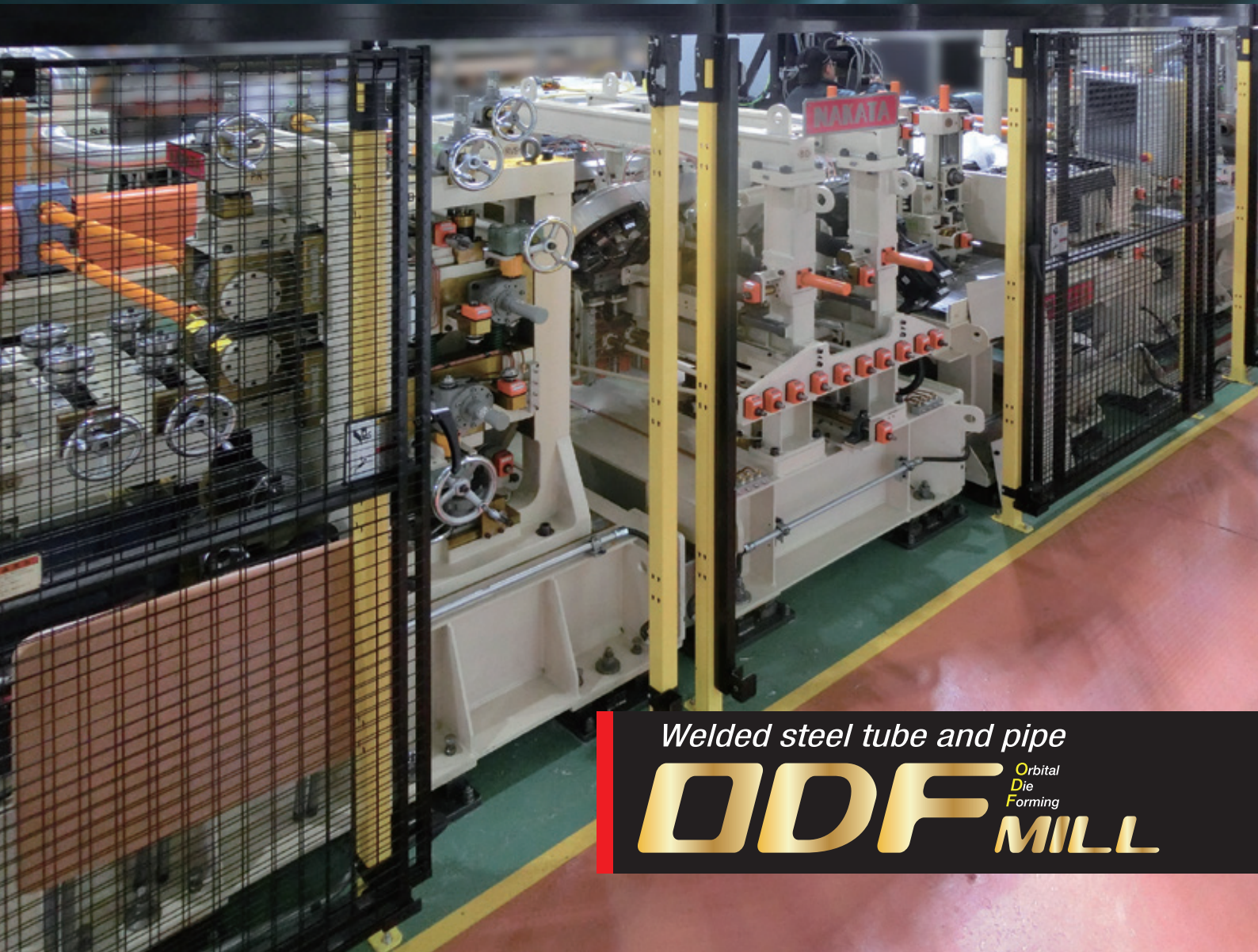
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<http://www.nakata-mfg.com>

New T-Drill HFT-2000 stainless steel tee forming unit

THE patented T-Drill tube tee forming method has been used globally for almost 40 years.

T-Drill continues to expand its product range with the introduction of the semi-automatic HFT-2000 tee forming unit to be used in conjunction with the powerful T-Drill T-65 SS collaring machine for small volume stainless steel manifold production.

The HFT-2000 SS is a solution for making tee joints of OD 17–51mm in main run tubes up to 114mm in just a couple of minutes. With the HFT-2000 SS five 51mm collars can be produced in less than ten minutes without moving the tube.

While giving comparable quality to commercial tee fittings, profit increases because the T-Drill tee forming method eliminates cutting of pipe, two welded joints and the fitting cost. If tube polishing is required at the weld points

that is also reduced along with final inspection costs. Branch pipe can be connected to formed outlet either by orbital or manual welding.

T-Drill Oy – Finland
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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)
- CASSETTE 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/m²) and End facing to HUSTEEL CO., Ltd. (2009) & GLOBAL PIPE (2010)
- Exported API 20" Tube Mill Line to SAUDI Steel Pipe Co., Ltd. (2009)
- Exported 18" Tube Mill Line to NAKATA Mfg. Co., Ltd. in Japan. (2005)
- Supplied 12" tube mill line and finishing equipments on full turn-key to HUSTEEL. (2004)
- Exported 24" end facing to NKK (JFE) in Japan. (2002)

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

- Tube Mill Line Capable of Manufacturing up to 24"
- 6-Roll, 7-Roll, and 10-Roll Straightening Line
- Max. 2-Head Automatic End Facing & Beveling M/C
- Max. 5-Head, 700bar Hydrostatic Tester
- Automatic and Semi-automatic Bundling M/C
- Related Equipment and Facilities to Comply with API Standard

MAC system tests for eccentricity during tube drawing

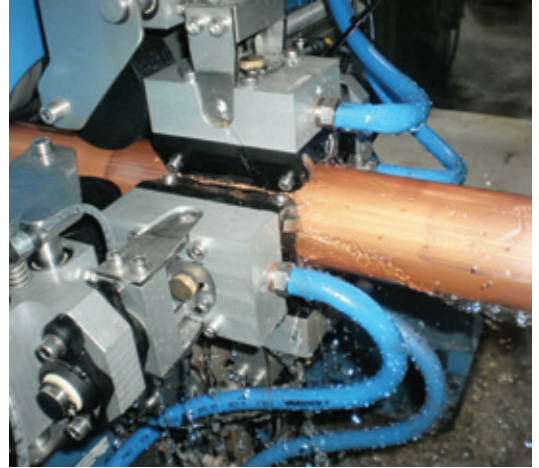
ECCENTRICITY, where the OD and ID are not concentric, is a problem that is most often created during extrusion of the billet before being drawn into a tube. Magnetic Analysis Corporation has recently installed a new Echomac® ultrasonic test system to measure eccentricity at a US copper tube mill that manufactures commercial and industrial grade tube and pipe. The company needed a way to measure eccentricity in a 2.125" OD master tube with 0.1" wall thickness, at speeds up to 600ft/min.

The UT inspection takes place after the extrusion process but while the tube is being drawn in a high speed draw production line, prior to further reduction. Eccentricity in the finished product can mean wall thicknesses that do not meet specifications, causing problems during further processing downstream. This test alerts the processor to this condition, and they can also use the test results to make adjustments to the process to improve concentricity. The Echomac® system supplied uses four transducers spaced 90° around the tube. This allows a very accurate calculation of eccentricity of a non-concentric tube, assuming the external and internal extrusion dies are round. A unique mechanical design is used that allows the transducers to

track tube movement off centre. The transducer ride shoes use wheels to maintain consistent contact with the tube surface and a bubbler water system maintains the couplant for the ultrasonic energy. These shoes are mounted to air cylinders that close after tube entry and then retract prior to the tube back end exiting. This approach tracks the tube surface, and also prevents possible damage to the transducers and shoes from any misalignment of an incoming tube. An encoder wheel is also mounted to an articulating air cylinder, allowing accurate tube tracking and measurement for the Echomac® electronics. Springs are attached to all cylinders allowing a fail-safe retraction in the event of system air pressure loss. A urethane wiper assembly is mounted to the back side for water containment.

Four channel eccentricity testing is a special form of four transducer operation that is designed to measure wall variation based on four independent measurements made at four fixed points that are separated by 90° each around the tube circumference. The

software uses trigonometry to construct a sine function with an offset. The offset is the average of these four wall measurements and is the tube's nominal wall thickness. The amplitude of the derived sine function represents the wall variation. Eccentricity is an expression of wall variation but the definition depends on the particular user and their agreement with their customers. An accurate minimum and maximum wall thickness is also derived, irrespective of the circumferential tube orientation under the fixed transducers. At this stage, the tube can have ovality



Ultrasonic transducers positioned around a copper tube during eccentricity test



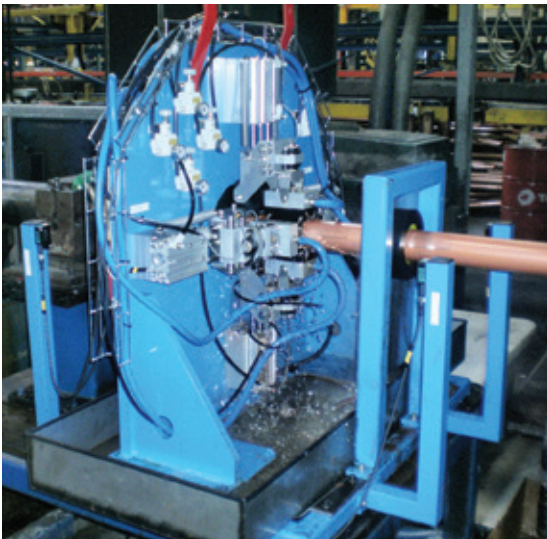
Instrument display showing A-scan of each thickness measurement, as well as charted data of two separate eccentricity alarms, min and max wall, and average wall

as a characteristic due to draw track gripping but the eccentricity is an attribute of the wall thickness of the tube and ovality is ignored.

The raw wall thickness data under each test plane can be displayed for set-up purposes. Each computed channel is processed separately, including thresholds, alarming and recording. The user may set up four independent eccentricity threshold levels. The software gives five choices of eccentricity calculations to suit various customer methods. The operator can customise how data is presented by selecting the type of view for each of the four channels. In the Echomac® installation, two channels are set for different eccentricity sort levels while a third is used for a min-max thickness alarm, and the fourth monitors average wall. As proof that this four channel eccentricity method works, the average wall remains a constant regardless of the tube rotation and eccentricity value and is constant over large production runs.

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

Test head for the Echomac® ultrasonic eccentricity test system recently installed at a copper tube mill





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Servo controlled dual-blade shear cut-off

IN order to justify the investment in a dual-blade shear cut-off, it is commonly believed that annual production volumes must be high enough to fully utilise the machine's potential output. However, manufacturer Haven states that this is not true for all cases.

One of the company's customers – a roller conveyor manufacturer – sees more value in owning a Haven machine than just pieces per hour. Capacity for

future growth is one justification, but the flexibility of the Haven Model #873 Servo dual-blade shear cut-off was the primary reason for the purchase decision.

The customer specified a cut-off that could cut and feed its roller assembly machine in a continuous flow operation. At the same time it wanted to minimise the amount of tag-end scrap by cutting several lengths from the same mill length tube to best optimise the multiple.

The roller conveyor industry has to have the ability to provide large-volume material handling systems, but also the flexibility to react quickly to fulfil small-quantity orders. One option would be to stockpile roller assemblies and use them as just-in-case inventory, but modern lean practices limit inventories while executing just-in-time methods.

The Haven #873S cut-off gives the user the ability to react to inconsistent production schedules by its ability to pre-program several lengths and quantities at the same time from the operator's

#	LENGTH	MQTY	BQTY	CQTY	RQTY
1	30.000	4	400	0	400
2	14.000	0	0	0	0
3	6.000	6	600	0	600
4	8.000	0	0	0	0
5	4.000	100	10000	0	10000

SETUP MENU NEXT LENGTH BATCH REPEAT QUANTITY 100 BATCH RESET
 AUTO MENU MAN MENU



The Haven #873 Servo dual-blade cut-off

panel or from a remote location. When large quantity orders are received, the Haven #873S has the output capacity to fulfil those orders quickly and efficiently. To fulfil smaller orders, the optimised cut lengths that were cut to maximise the multiple can be retrieved from a limited stock supply to complete orders as they are received.

Haven Manufacturing – USA

Fax: +1 912 264 9001

Email: sales@havencut.com

Website: www.havencut.com

COMPLETE, FULLY AUTOMATED LINES FOR PIPE GALVANIZING AND FINISHING



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Inspection, measurement and repair solutions

OMS (Optical Metrology Services) is an award-winning technology company with a track record of inspection, repair and maintenance in difficult-to-reach or confined spaces such as pipelines. Twice winner of the Queen's Award for Innovation, the company's team of specialist engineers work with asset owners, installation companies, fabricators and operators to inspect, repair and verify, as well as manage the integrity of plant and pipelines.

The company's goal is to provide efficient, flexible services to industry, allowing organisations to successfully grow their businesses, safe in the knowledge that their assets are fit for purpose, ensuring maximum performance.

Utilising its suite of versatile crawler units to access seemingly out of reach locations, OMS can provide a range of inspection and corrective repair solutions to address challenging problems faced by the pipeline construction industry, highlighting potential issues before they occur or carrying out risk-based inspection work.

Using innovative technology, the company provides techniques to identify potential problems, confirming tight tolerances are within specification; identifying oxidation, corrosion and

wrinkling; checking wall thickness; and inspecting welds; then implementing corrective repairs such as grinding, filling or welding.

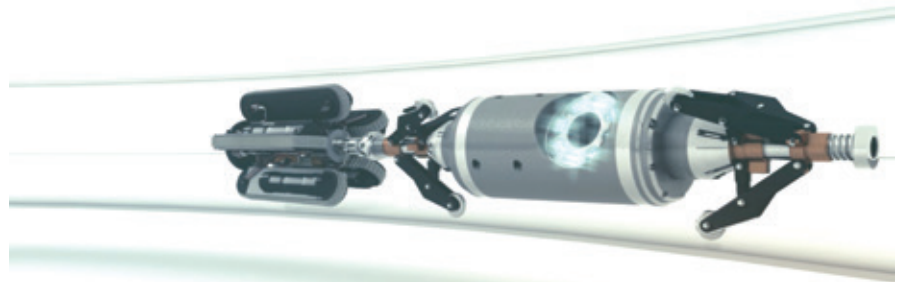
OMS understands the critical importance of accuracy to its customers, whether inspecting a structure to provide condition or shape information, looking for defects in pipework and plant, implementing corrective actions, or even identifying potential problems as pipeline systems are assembled and deployed. The inspection tools are capable of navigating the most difficult situations, including 3D bends, horizontal, diagonal and vertical pipe structures, and both long and short distances.

Tools provide feedback from forward- and side-looking cameras with high

quality images, and real-time video including laser measurement data and detailed mapping, with results compiled into a comprehensive report, allowing further analysis of the asset, if necessary.

OMS's ability to inspect, measure, repair and verify any necessary remedial action, combined with visual, accurate dimensional analysis, allows clients to see the 'bigger picture', make the right decisions, then recommend and implement the right repair solutions immediately, rather than delaying important work.

Optical Metrology Services Ltd – UK
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An OMS crawler unit with camera, inside a pipe

The next Generation of Carbide Tipped Tube Mill Saws have arrived.

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Tool line takes bite out of tube end finishing

FOR manufacturers of tubing products, or those who manufacture products with tubing components, Severance Tool has developed a line of tube end-finishing rotary tools that can de-burr, form or chamfer as required by application needs.

The tools are designed to finish both the inside diameter and outside diameter of tubing ends in a single operation, and many feature adjustable two-piece construction to accommodate work on same-size tubing having varying wall thickness ranges.

Depending upon the application, other features may include Chatterless™ tooth geometry, which alternates tooth cutting angles to eliminate resonant vibration from the tool and workpiece for smooth finishes, and Severance's exclusive Grayhorne™ finish, which provides cutting edges ready to work with no break-in period required.

Among the tools offered are a full line of tube de-burring tools available in high speed steel or carbide construction. Although they provide a 30° inside chamfer and a 45° outside chamfer, these tools are designed for light duty – to break sharp edges of both the inside and outside diameter simultaneously. They feature tooth geometry with a shearing cutting action for fast cutting that prevents loading of chips.

The tools can be reground numerous times for long service, and operate in speed ranges of 50 to 200rpm. The outside ring or member is adjustable, secured by screws, to provide various outside edge break sizes and to compensate for different wall thicknesses within a given tube diameter range. Tube de-burring cutters are available in standard sizes for 1/8" outside diameter (1/16" inside diameter) to 2 1/4" outside diameter (2" inside diameter) tubing, and with a variety of shank styles.

Tube end chamfering mills provide the same shear cutting action and adjustable outside ring as the de-burring cutters, and with Chatterless™ angle geometry are designed for heavy duty cutting to machine precise, smooth 45° outside diameter and 30° inside diameter chamfers in applications requiring easy assembly with other components.

Chamfering mills are available in sizes for pipe and tubing ranging from 3/16" to 2 1/2" outside diameters.

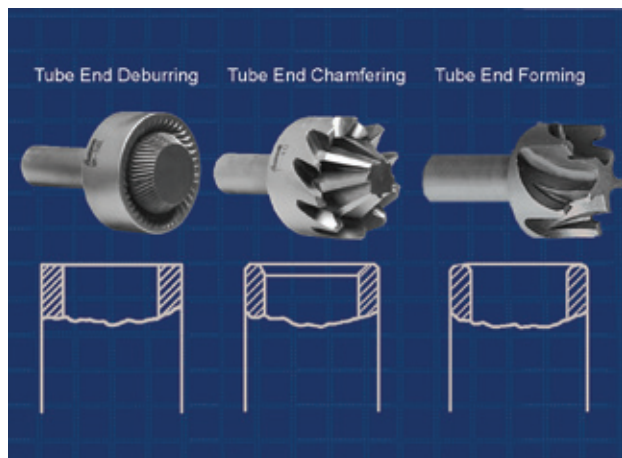
The tube end-forming cutters machine both an inside diameter and outside diameter radius, establishing a smooth, rounded end that is suitable for applications where tubing may be exposed. A selection of high speed steel and carbide tools are available in sizes for tubing ranging from 1/8" to 2 1/2" outside diameters; each outside diameter size is complemented by a range of wall thickness or gauge sizes to accommodate most popular tubing applications.

Severance also provides an application-specific design and manufacture service, including custom sizes, chamfer angles and forming characteristics. Single cutting action (inside diameter or outside diameter) chamfering tools are also available, and the company offers a wide range of tool styles and sizes for de-burring holes through tube walls.

Other Severance tools include 3N1® combination countersink/drills, Midget Mills® rotary files and burrs, inside and outside de-burring and chamfering mills, Micro-Reamers™, electrode dressers, double-end countersinks, Chatterless™ countersinks and adjustable stop countersink units, stop countersink cutters, and a variety of hand-operated finishing tools.

Severance Tool Industries, Inc – USA
 Fax: +1 989 777 0602
 Email: info@severancetool.com
 Website: www.severancetool.com

Tube tools from Severance



Automated orbital welding carriage

THE Gullco Pipe KAT® is an automated orbital welding carriage designed for

pipe welding applications. Suitable for field pipeline manufacturing and power plant construction, the Pipe KAT is a fully integrated welding system that includes a remote control pendant to allow adjustment of critical application parameters during the welding process, including oscillation width,

speed, dwells, wire feed speed and voltage adjustment.

The carriage operates on a track band made of durable aluminium extrusion by engaging the track with self-aligning wheels and a rack and pinion drive. This wheel assembly uses a lever to engage the track, making it quick and simple to install the carriage.



Pipe KAT in operation on a pipeline in Brazil

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Borescopes add speed and efficiency to tube and pipe inspection



The Hawkeye borescope

MANUFACTURERS of tubes and pipes are increasingly utilising borescopes in their visual inspection processes, according to Dr Douglas S Kindred, president and chief scientist of Gradient Lens Corporation, manufacturer of Hawkeye® precision borescopes.

The Hawkeye systems allow fast, reliable visual inspection inside even long, narrow or bent tubes and pipes.

Gradient Lens manufactures more than 80 models of patented Hawkeye Rigid, Flexible and Video Borescopes. Diameters range from 0.5 to 8mm, with lengths from 2" to 20ft, making Hawkeyes suitable for internal inspection of seam welds, orbital welds and internal surface finish.

Made in the USA, in Rochester (New York) and

Phelan (California), Gradient Lens Corporation's patented endoGrins® gradient-index lens technology is built into its exclusive line of Hawkeye Rigid borescopes.

The latest borescopes display high-quality inspection images on portable or desktop video monitors, and laptop or desktop computers. The images can also be saved, documented and emailed.

The newest addition to the Hawkeye line – the Hawkeye V2 Video Borescope – represents the next generation of fully portable, articulating video borescopes manufactured by Gradient Lens.

For more than 20 years, Gradient Lens has designed, engineered and manufactured precision optics and optical instruments. In addition to its Hawkeye borescopes and accessories, the company offers Hawkeye and Luxor® Light Sources, which work seamlessly with Hawkeye borescopes.

Gradient Lens Corp – USA

Email: info@gradientlens.com

Website: www.gradientlens.com

Portable pipe bevelling solution from Exact Tools in Finland

EXACT Tools has launched a new portable pipe bevelling machine to bevel steel, stainless steel and aluminium pipe materials. The PipeBevel 220E will bevel pipe material from 25 to 220mm in diameter with a maximum wall thickness of 10mm.

Currently available in a 220-240V version, the PipeBevel 220E will produce bevel angles of 30°, 37.5° or 45°. The fast, accurate, lightweight and easy-to-use equipment is suitable for site bevelling applications. The company will later launch the same bevelling machine in a 360E version.

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SCARA robots with 750mm reach

COMAU has introduced the Rebel-S four-axis SCARA robot, in five different models with a payload of 6kg and three different reaches.

All models are controlled by the R1C 19" rack-mounted controller, which can be integrated into a single cabinet to control an entire line. The robots are also available in an openRobotics version,

where the robot is directly integrated into the existing machine/line automation controlled by B&R technologies.

Comau says that the name of the new robots reflects the differences embodied by SCARA compared with the other robots in its portfolio: they can be considered 'rebels' in the sense that they are not articulated, they offer

a variety of mounting positions, and they utilise spacers – a simple yet innovative solution to extend the robots' reach.

Rebel-S is available with reaches of 450, 600 and 750mm. All three versions can be floor or wall mounted, while the versions with 600 and 750mm reach can also be configured for ceiling mounting. This flexibility in mounting position is facilitated by the use of dual cabling options (either vertical or horizontal).

The difference in reach is provided by spacers – modules that enable the robot to extend its radius of action. With an extension kit composed of spacers and cables, the five models are effectively interchangeable.

Alongside its robots Comau will offer a range of add-ons, including conveyor tracking and a plug and play vision system, as well as a series of service packages as part of its after-sales strategy.



Comau's Rebel-S range

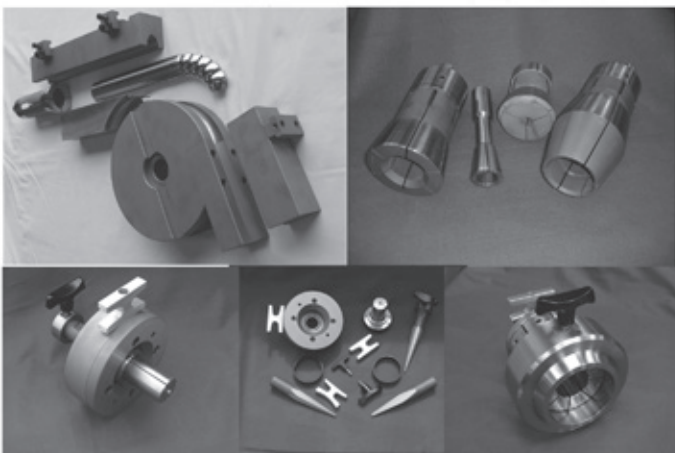
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DVGW certificate for high-pressure pipe system

THE HexelOne® high-pressure pipe system has been certified by the DVGW for gas and drinking water applications.

The approved use of the plastic pipe system in high-pressure settings provides two benefits that previously only applied to low-pressure applications: the corrosion resistance of the pipes

makes cathodic corrosion protection redundant, and the system allows the use of modern installation techniques that shorten construction time.

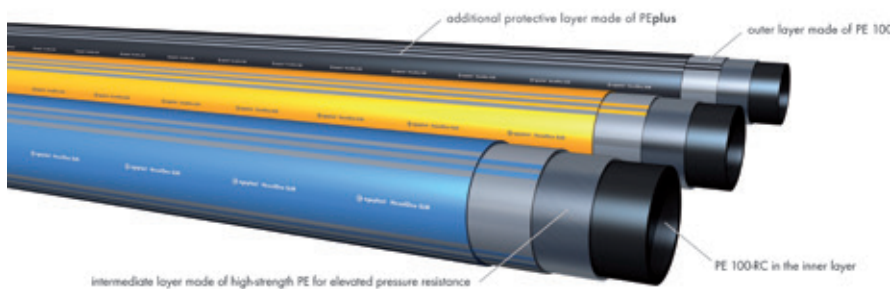
The reinforcement opens new areas of use for egeplast's HexelOne, with permissible operating pressures of 30 bar for water and 16 bar for gas,

exceeding the range of applications previously covered by PE pipes. The stability achieved by the HexelOne pipe with its reinforcement layer of high-strength PE strapping is claimed to be twice as high as that provided by PE-100 full-wall pipes.

Owing to their protective layer and inner layer made of PE 100-RC, the pipes are suitable for trenchless installation.

The DVGW certificate for drinking water covers dimensions from d 90mm to d 125mm. In addition, HexelOne gas pipes have been certified for up to d 160mm.

The HexelOne high-pressure pipe system has been awarded the DVGW certificate for gas and drinking water applications



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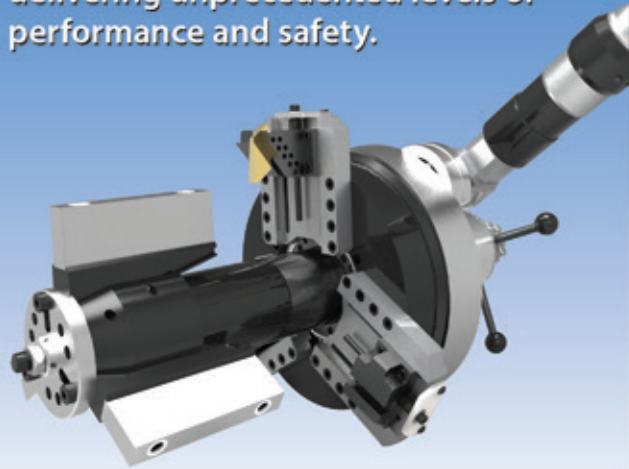
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Manchester Tool & Die exhibiting at Fabtech

MANCHESTER Tool & Die, Inc (MTD) is exhibiting at Fabtech 2016 (Booth N7108), 16-18 November at the Las Vegas Convention Center in Las Vegas, USA.

On display will be MTD's Model M71-E-6 electric tube end forming system for tubes up to 1½" in diameter. This machine is claimed to offer up to a 40 per cent faster cycle rate than comparable hydraulic machines.

A servo flag stop system is standard for these machines for quick, tool-free flag adjustments, which helps achieve quicker and more accurate set-ups. The electric tube end-forming machines also provide easy access for tooling

changeovers and service, energy savings and noise reduction.

Manchester Tool & Die supplies tube end-forming equipment and tooling to a variety of industries, with standard machines ranging from 3/16" to 3" OD capacities. Machines and parts can be manufactured for special applications. The company also provides steel fabricating and production machining services.

Manchester Tool & Die, Inc – USA

Fax: +1 260 982 4575

Email: quotes@mtdbkb.com

Website:

www.manchestertoolanddie.com



MTD's M71-E electric tube end-forming machine

Precision pipe end heating

THE ability to provide uniform heating with a flexible and robust induction stress relieving unit that offers the highest quality has always been the key benchmark for the Inductotherm Group.

The Inductotherm stress relieving unit called Iross offers customers precise heating of the heat affected zone (HAZ) exiting the coil, giving no need for extended soak time in order to reach the temperature tolerance required. This is achieved by using a patented system called Fluxmanager™, developed by the Inductotherm Group to improve shortcomings of using conventional stress relieving systems.

FluxManager™ utilises a shaped intensifier to concentrate power on the workpiece.

The Fluxmanager™ coil is a closed end coil giving a superior control of heating at the cold end, preventing under heating and cold spots. The

intensifier greatly improves electrical efficiency and power factor compared to open coils.

With the necessity of processing pipes of different diameters and walls and the specifics of the real-life industrial environment, it is not uncommon to have a non-symmetrical positioning of the heated pipe inside the induction coil.

Fluxmanager™ was designed to compensate for the off centred aligned pipe making no difference to the heating and final exiting temperature.

By including programmable frequency this allows even greater control of the HAZ and no overheating of the skin, reducing the normal high peaks of temperature during initial start-up of the heating.

Advantages are achieved using Fluxmanager™ technology by addressing the following areas: improved equipment flexibility, repeatability and

robustness with reduced sensitivity to real life plant process disturbances and imperfections; elimination of the use of "robber" rings; ensuring superior radial, circumferential and longitudinal temperature uniformity; and reduction of an external magnetic field around the induction coil.

The Iross stress relieving machine is available in two formats, single phase and three phase, both designed specifically for heating a wide variety of tubular products while delivering the industries best heat affected zone according to Inductotherm.

Both systems also utilise recipe-driven programming, which incorporates a PID control to manage the heating curve and the soaking time if required.

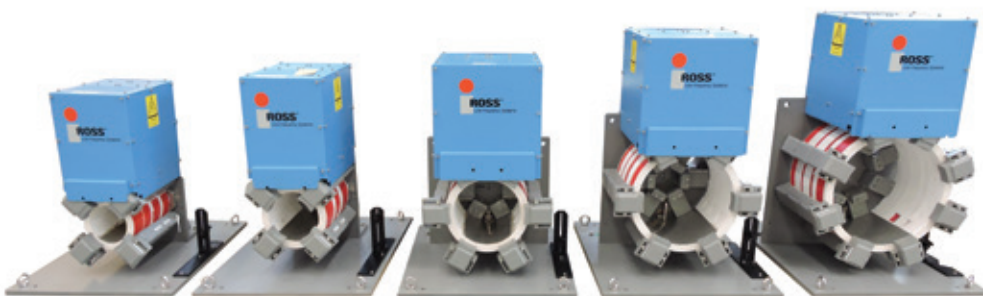
These systems utilise patented Fluxmanager™ technology yielding superior temperature uniformity compared to conventional designs.

The three phase heating system features programmable variable frequency control, allowing precise heating on a variety of pipe sizes and wall thicknesses.

Inductotherm Heating & Welding – UK

Email: info@inductothermhw.co.uk

Website: www.inductothermhw.com



Workshop welding machine



Alfa 400 Easy Life

THE Alfa 400 Easy Life workshop welding machine is designed to fabricate fittings by joining pipe segments with the help of special jaws.

It can also weld special and moulded fittings such as elbows, tees and flange necks, with the use of different jaws.

The machine can handle elbows from 90 to 400mm (4" to 16" IPS), and tees, crosses and wyes from 90 to 315mm (4" to 12" IPS).

It is composed of a machine body with two carriages, one of which is driven by a hydraulic system; and a control panel that features the Easy Life system, which allows a complete welding cycle to be carried out in a simple, intuitive and repeatable way, reducing operator involvement to a minimum.

The built-in memory allows the machine to store 4,000 welding cycles (including the set diameters and SDR). The welding data can be transferred to a PC through a serial port (a USB adaptor connector is available) and data management software, and a printer can be connected to the serial port to obtain a welding report at the end of each welding cycle.

The heating plate features a new, automatically operated horizontal sliding system that enables fast side-sliding of the plate during the exchange period. The milling cutter, for levelling the ends of pipes and/or fittings, slides on recirculating ball slideways, with an electronic device for a soft start.

The machine, which is available in 230V and 400V versions, also features an upper cylinder, to be positioned on the jaws, for welding extra-thick pipes or for when it is necessary to use high pressures.

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Spin-on filters for increased cleanliness in hydraulic systems

EATON's line of spin-on filters protect pumps, valves, compressors and hydraulic systems from contamination as per ISO 2941, ISO 3723 and ISO 2942, and are designed to provide high cleanliness levels for hydraulic

systems. They provide trouble-free operation for power generation, oil and gas, construction, forestry, mining and material handling markets.

The spin-on filters feature cartridges that are engineered to fit into many

leading filter systems. The product line includes an extensive range of sizes, ratings and materials for hydraulic, lubrication and other fluid applications. The filters feature high dirt-holding capacity to ensure consistent filter efficiency and long service life, even at high pressures.

Compatible with a variety of mediums such as oils, fuels, emulsions, glycol water and synthetic fluids, the spin-on filters provide benefits that include cartridge pressure values in 12, 25 and 35 bar; flow rates up to 180 l/min; and a wide range of operating temperatures from -25°C to +110°C.

Eaton's filtration division can help companies improve product quality, increase manufacturing efficiency, protect employees and equipment, and help achieve sustainability goals.

Eaton (Filtration Division) – Germany
Website: www.eaton.com

Machinery for pipe makers

CAGIL Makina, Turkey, specialises in the production of tailor-made spiral welded steel pipe and electric resistance welded steel pipe machinery, offering a wide range of solutions for pipe manufacturing needs.

The company can design and manufacture a complete production mill, with machines to produce pipe profiles used in many different gas, petrol and water line applications.

The various units can be tailor-made and added to the SWP machinery depending on the customer's requirements.

All other equipment, such as for pipe handling and pipe finishing, can be designed and manufactured according to customer needs.

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CNC end bevelling for complex geometries

FOR decades, mechanical copying devices have been the standard for pipe end bevelling. However, this production method alone no longer meets the increasing quality requirements of the pipe industry. International standards such as the American Society of Mechanical Engineers (ASME) already call for more complex pipe end geometries than can be realised using mechanical copying devices.

Graebener's solution is a CNC-capable pipe end bevelling machine that can be operated with a mechanical copying device or with a CNC tool axis, depending on the respective requirement in one-side or two-side design.

With the CNC-capable pipe end bevelling machine, Graebener has developed a 'one for all' technology for the optimum processing of carbon steels as well as stainless steels: mechanical copying and CNC copying in one machine, for all weld seam geometries. Traditional methods alone can fail due to the complexity of some

Graebener's CNC pipe end bevelling machines



geometries and with thick-walled pipes. With accurate CNC control of the tool support, the Graebener machine allows the realisation of complex weld seam technologies, even for pipes with increased wall thickness. Relatively simple geometries can still be copied mechanically.

The CNC pipe end bevelling machine automatically takes into account the ovality at the pipe ends, ensuring

an optimum chamfer geometry. This is made possible by an electronic measuring system that records the pipe ovality to the centre over the entire pipe circumference. Deviations from the theoretical pipe centre can be displayed graphically.

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Expanded fusion machine range

MCELROY has expanded its Acrobat fusion machine line, following its launch in 2014.

The Acrobat range is designed to meet the needs of the HVAC, plumbing and mechanical industry.

The latest model – the Acrobat 250 – has a lighter weight hydraulic power unit (HPU) that is easier to move around the job site and consumes less power.

A lightweight heater and guide rod latching system eliminates the need to manually hold the heater in place during overhead fusions, reducing operator fatigue, and an ergonomic handlebar design makes it easy to use from all angles, even overhead.

"It's exciting to design a new line of equipment that makes it easier for operators to work in challenging indoor environments where pipe is fused in very tight spaces," said McElroy president Chip McElroy.

The Acrobat 250 goes a step up in size in fusion capability for 63 to 250mm

(2" to 10") polypropylene pipe, but offers the same compact design that allows operators to fuse pipe in the confines of walls, ceilings and floors.

To further reduce its footprint, the carriage can be configured from four to three jaws without tools. A single-size insert design can accommodate a

variety of pipe sizes, and its narrow jaws allow fusions to most flanges and fittings.

McElroy – USA
 Fax: +1 918 831 9285
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McElroy's Acrobat 250

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Accelerated manufacturing with assembly station

SPANISH metal structure manufacturer Tecade SA has partnered with Pemamek to deploy a Pema Assembly station that is able to handle and weld heavy and large diameter work pieces.

Tecade has operated for 30 years in the field of heavy steel manufacturing, and has developed into a large-scale international company, becoming established in the bridge and offshore markets. The company's plans are to implement large investments while maintaining the same positive business incline.

Even though Tecade has its main focus on domestic markets, the company aims to broaden its supply internationally. It currently exports around ten per cent of its production and has major projects in progress in

countries such as Mexico, Scotland, Venezuela and Canada.

In order to boost production and drive growth in the bridge and offshore industry, Tecade was in need of production machinery for heavy and large diameter products. The aim was to find a supplier that would be able to provide reliable machinery and a complete solution from welding to material handling.

Tecade worked with Pemamek's product specialist, with clear and open communication, and developing ideas were exchanged during and after the project. To implement the solution and get the machinery in manufacturing use as soon as possible, Tecade closely cooperated with Pemamek's team. Even with the agreed tight schedule, the

assembly line was delivered on time and was ready for production after only one week of commissioning.

"Pemamek understood our needs and was able to fulfil all of our requirements," commented Juan Diego Camino Muñoz, chief operating officer of Tecade. "They were flexible and cooperative to make the solution to our needs. Additionally, Pema had experience in wind and offshore industry, and presented very good references."

The Pema Assembly station now enables Tecade to speed up the manufacturing process while producing high quality products that can weigh up to 300 tons. Efficient production of customers' large-scale cylindrical and conical pieces relies on the ability to operate in a broad area with a diameter of 1.5 to 8m, where no additional setting times are needed.

The station also enables precise and fast shell fit-up and tack welding. With an integrated column and boom, the seams of each work piece can be welded in the same station.

Tecade's first project with the Pema Assembly station included manufacturing piles with a diameter of 2.7m and thicknesses of 50, 60 and 100mm.

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Juan Diego Camino Muñoz and the Pema Assembly station



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Faster, more accurate surveys Tier 4 engine

FINDING inaccurate survey information completed by specialists, consultants and customers usually means re-work and additional costs to modify or change fabricated components, whether piping spools or structural assemblies that do not fit. This impacts the customer through delays or additional cost. The Proliner IS TubeCheck system can eliminate this concern.

The Proliner 10IS is a precise and reliable machine for immediate digital measuring, scanning and quality control. The Proliner is portable and versatile, and can measure any object within a 20m spherical envelope, including concrete plinths, existing pipe spooling, flatness of surfaces, flange orientation/rotation and other geometric shapes. All measured data can be exported as a DXF (CAD) file into a PDF report.

Prodim TubeCheck software is developed to gather, analyse and inspect LRA and XYZ coordinate data for tubes or pipes to ensure quality control. Data is displayed as Pass or Fail for ensuring

precise quality control for tube or pipe bending machines.

Final calibration of bending machines can be adjusted according to the TubeCheck software calculations.

Customers who have bought the Proliner IS are reported to have seen immediate benefits through the use of the equipment, with one commenting, "The speed of surveys is quicker and it is more accurate than other traditional survey methods. It also minimises or eliminates the need for hot work on site by removing the need for unnecessary field welds, as the spools or structural elements can be completed off-site in our workshop prior to installation. It has also removed unnecessary interfaces in the survey process as data is captured as a DXF file that can be downloaded directly into AutoCAD, removing duplication and human error."

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MCELROY has launched a new machine in its flagship TracStar® series that offers advanced emissions reduction and automation technologies, allowing users to meet tough regulations in air quality and data logging.

The new TracStar 900 Series 2 Automatic features a Cummins US EPA Tier 4/EU Stage IIIB engine that burns ultra-low sulphur diesel, making it cleaner burning, quieter running and more efficient. Fusion functions are controlled automatically with The Coach® pendant, which also has the ability to upload joint reports to the McElroy DataLogger® Vault™ for safe storage, analysis and validation of pipeline integrity.

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Cycle time and environmental benefits of new tube processing system

As part of its ongoing programme of replacing machines deemed to have reached a natural end of life, Worcester, Bosch Group, has introduced its first BLM 4-Runner tube processing system. The new machine is designed to deliver cycle time savings of between 25 and 30 per cent compared to the machine it replaced, as well as delivering environmental benefits to the company.

As a manufacturer of domestic heating and hot water appliances, one of Worcester's key targets is energy efficiency, as demanded by its customers. The company has a corporate policy of ensuring that any machine tool purchases reflect this energy/environmental remit. Previously, tube processing at Worcester had been carried out by hydraulic-powered machinery. The switch to the BLM 4-Runner, with its all-electric, servo-controlled operation, provided a step forward in environmental terms, with the added advantages of improved quality and consistency and reduced cycle times.

"It is part of our long-term vision to replace all of our old hydraulic BLM Planet machines with modern all-electric, servo-driven tube processing systems," said Chris Packer, group leader – manufacturing. "The 4-Runner's servo control is important for a number of reasons, such as improved accuracy of bends, consistency and cycle times, but of equal, if not

greater, importance was the fact that they are far more energy efficient compared to hydraulic machines, and this was key to our purchasing decision."

The BLM 4-Runner is a modular-based machine that can be configured to include de-coiling, straightening, end-forming, bending, cutting off and unloading. The machine at Worcester is fully configured in this way, delivering finished components from coiled copper tube up to 22mm in diameter.

The bending capability of the 4-Runner allows left- and right-hand bends to be formed, as well as fixed and variable radii bends in single and 3D planes. The machine is also capable of completing compression and draw bending techniques.

For end-forming, the BLM 4-Runner features a multi-station end-forming unit with either four or six ram-type forming stations or four ram stations and one rotary station. A variety of cutting devices can also be specified; depending on the material being processed, these include internal or external orbital swarfless cutters, or conventional saw blades.

A key benefit of the BLM 4-Runner's all-electric system is its consistency of bend. With servo-driven positioning every bend is the same. "The variations that we find on our hydraulic benders have been totally eliminated since the switch to the 4-Runner," said Rob Crane, production engineer.

Commenting on the environmental gains of switching from hydraulic to all-electric, production leader Adam Timms said, "The total lack of hydraulic oil makes it much easier to maintain the quality of the working environment. The cleaner working environment also makes it much easier to maintain our Five S, total productive maintenance (TPM) and planned maintenance initiatives (PMI)."

In addition to the 4-Runner, Worcester has taken delivery of a fully electric BLM Tube-Form ELE end-forming machine. With a ram capable of applying eight tonnes of pressure, the machine allows the company to produce more complex forms, with up to six punches available, and also on larger diameter tube than could previously be achieved.

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Tube bending on the BLM 4-Runner



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A Europe-US tax war?

As the European Commission mulls tax arrangements at home and abroad, the US protests EC tax probes into American companies

The competition department of the European Commission (EC) has rejected US claims, made in a 24 August white paper issued by the Treasury Department, that it is unfairly targeting American companies in its effort to curb tax avoidance in Europe.

The charge of bias was flatly rejected by an EC spokesperson, Lucia Caudet. "This is very clear if we look at the facts," she wrote. "In October 2015 the first [EC] state aid decisions on tax rulings concerned a European company, Fiat, as well as a US company, Starbucks. In January 2016, the Commission adopted a negative decision concerning a Belgian tax scheme with recovery concerning 35 mostly European companies."

In the 25 August edition of its "Brussels Playbook", the independent news and commentary site Politico (Arlington, Virginia) recommended that "tech pros" seeking the full story consult "US Treasury Slams EU Tax Probes ahead of Possible Apple Verdict" at <http://politi.co/2c756u9>. But Politico's Brussels-based senior EU correspondent Ryan Heath thought that an introduction in question-and-answer form might also be useful. Here, lightly edited and abridged, is his insider's view of a complex issue in its early stages:

How did we get to this point? Most governments now agree that it has been too easy for multinational companies to minimise tax; and they have been working, slowly, to close loopholes. Instead of examining only generic tax breaks – to see if they amounted to an unfair subsidy to certain companies – the EU competition authority decided in 2014 to get more aggressive. They're now looking at individual tax rulings (special low-tax deals) that some European governments have granted to individual companies.

Why would the US feel targeted? Because their successful tech companies are the ones that find it easiest to cut tax deals in Europe. That's because they have most or all of the following attributes: they're big, have lots of tax lawyers, offer high-skill jobs (thereby creating bidding wars among governments), and they're new and thus not weighed down by tradition and contracts. Plus, unlike big industrials they don't have massive factories to move from one country to another.

Michael Mandel of the Progressive Policy Institute, which first pushed the US Treasury to intervene on the issue, has blogged: "The European Commission has the right to impose whatever rules it wants on state aid. But it doesn't have the right to unilaterally decide what share of multinational income it gets to tax."

[Fact check by Politico: One of the Treasury Dept arguments is that the Commission "should not seek retroactive recoveries under its new approach." This is Treasury wanting to have

its cake and eat it, too. By definition, all Commission state aid cases are retroactive – because they deal with past behaviour.]

Who will win? European competition authorities have been underestimated before, at great cost to their opponents. They're tough, and they know companies will do a lot to maintain access to the EU's 500 million consumers. That said, the EU has been pushing boundaries (and hitting walls) with a number of its competition cases, and the costs of a massive tax dispute with a key ally probably outweigh the benefits. We're headed for a hidden compromise.

[“Reality check” by Politico: The US government is the only advanced-economy government to run a policy of citizenship-based taxation for individuals. That policy leaves many Americans living overseas facing double taxation, and leaves companies that offer those people banking services subject to huge penalties if they don't share their American clients' details with US authorities. In other words, the US government has no problem unilaterally deciding what share of individual income it wants to tax. It just wants foreign authorities to be less unilateral in their own tax approaches.]

Of related interest . . .

➤ More than half of American tech start-ups valued at \$1 billion or more had at least one immigrant founder, according to a recent study by the National Foundation for American Policy, a research group that focuses on immigration issues. Now, under a rule proposed on 26 August by the Department of Homeland Security, foreign entrepreneurs in any industry could soon be eligible for a new immigration option that would grant them temporary entry to the US for up to five years.

The proposal, which does not require congressional approval, would allow immigration officials to admit entrepreneurs case by case. To qualify, an applicant must have an "active and central role," and a significant ownership stake, in an American company founded over the previous three years.

In a presidential election campaign season roiled by acrimonious immigration issues, the move is one of several efforts by President Barack Obama to liberalise America's immigration policies without action from a resistant Congress. Gaining an immigration route for start-up founders has been one of Silicon Valley's political priorities for years.

Oil and gas

A protest against a pipeline by a tribe of the Sioux nation of Native Americans is 'an environmental and cultural flash point'

"[In the week of 22 August], an impassioned fight over a 1,170-mile oil pipeline moved from the prairies of North Dakota to a federal courtroom in Washington."

Jack Healy of the *New York Times* explained that the Standing Rock Sioux tribe, whose reservation lies just south of the charted path of the Dakota Access pipeline across ranchland and under the Missouri River, had asked a federal judge to halt construction. The tribe argued that a leak or spill could be ruinous.

At this writing it is not known whether the pipeline will be allowed to move ahead, or if an injunction will pause it or stop it altogether. But the protest against it by Native Americans from tribes across the country, gathered since April outside Cannon Ball, a town in south central North Dakota near the South Dakota border, has attracted attention beyond the usual. (“North Dakota Oil Pipeline Battle: Who’s Fighting and Why,” 26 August)

Describing the mood at the scene as “calm but anxious,” Mr Healy reported that North Dakota’s governor had declared a state of emergency, and law enforcement had barricaded the main highway leading to the site where hundreds of protesters were encamped in a field belonging to the United States Army Corps of Engineers. There were reports of confrontations with law enforcement officers and construction workers, and 20 people had been arrested. Construction on a road to the pipeline was stopped, at least temporarily. The pipeline company, Energy Transfer Partners, has sued several protesters, claiming threats and intimidation toward contractors and blockage of work at the site.

A ROUTE THROUGH SACRED LANDS

Mr Healy reported that the Dakota Access pipeline is a \$3.7 billion project that would carry 470,000 barrels of oil a day from the oil fields of western North Dakota to Illinois, where it would be linked with other pipelines. Energy Transfer says the pipeline will pump millions of dollars into local economies and create 8,000 to 12,000 construction jobs. (Permanent long-term jobs – for maintenance and monitoring of the pipeline – will be far fewer.)

The Standing Rock Sioux see the pipeline as a major environmental and cultural threat. They say its route traverses ancestral lands – which are not part of the reservation – where their forebears hunted, fished, and are buried. They say historical and cultural reviews of the land where the pipeline will be buried were inadequate. They also worry about catastrophic environmental damage if the pipeline were to break near the point where it crosses under the Missouri River.

The Sioux are not alone in their resistance. While the pipeline has approval from state and federal agencies, and farmers and ranchers have welcomed the thousands of dollars in payments that came with signing agreements to allow it to cross their land, others oppose it.

“In Iowa, one of the four states that the pipeline would traverse, some farmers have gone to court to keep it off their land,” wrote Mr Healy. “They say that Iowa regulators were wrong to grant the pipeline company the power of eminent domain to force its way through their farms.”

But he noted that most landowners in the 346-mile path of the pipeline through Iowa have signed easements allowing it to be built across their land.

THE PERENNIAL QUESTION: PIPELINE SAFETY

Mr Healy placed the battle – “an environmental and cultural flash point” – in the context of the 2.5 million miles of pipelines that criss-cross the US carrying and pumping oil and natural gas to processing and treatment plants, power plants, businesses and homes. Most of these lines are buried, but some run above ground. While a natural gas line to a new subdivision seldom generates national controversy, proposed major pipelines like the Dakota Access; the Keystone XL (which would have connected the oil sands in Alberta, Canada, with the US state of Nebraska); or the Sandpiper in northern Minnesota have provoked strong opposition from environmental groups and people living in their paths.

Tackling the question of pipeline safety, the *Times* noted that energy companies and their federal overseer, the Pipeline and Hazardous Materials Safety Administration (PHMSA), promote the safety record of pipelines. The companies claim that it is far safer to move oil and natural gas in underground pipes than in rail cars or trucks which can crash and explode.

“But pipeline spills and ruptures occur regularly, sometimes in small leaks and sometimes in catastrophic gushers,” wrote Mr Healy. In 2013, a pipeline in North Dakota broke open and spilled 865,000 gallons of oil onto a farm. In 2010, a pipeline dumped more than 843,000 gallons of oil into the Kalamazoo River in Michigan, resulting in a cleanup that lasted years and cost more than a billion dollars, according to *Inside Climate News*.

➤ In a 2012 examination of pipeline safety, *ProPublica* – a New York-based independent source of investigative journalism in the public interest – reported that more than half of the pipelines in the United States were at least 50 years old. Critics cite ageing pipelines and scant federal oversight as factors that put public health and the environment at risk.

Elsewhere in oil and gas . . .

➤ India’s state-owned Oil and Natural Gas Corp has reached an agreement with GE Oil & Gas, of the US, for support to ONGC’s exploratory campaign in shallow-to-medium waters. Over a three-year period, GE will provide an estimated 55 subsea wellheads for the operator’s drilling and completion projects.

As reported from New Delhi in the *Economic Times* (24 August), GE said in a statement that for more than 30 years it has supplied ONGC with subsea production equipment including large-sized conductors, subsea wellheads and subsea trees. The first wellhead under the new contract is to be delivered by the New Year, with GE doing the manufacturing in India (Kakinada) for the first time. Engineering and project management will be provided from Singapore by GE regional teams.

Ashish Bhandari, CEO-South Asia at GE Oil & Gas, told the *Economic Times*, “With India’s new energy policy and gas pricing policy in place, we are seeing an uptick in ONGC’s exploration and development activity.”

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Two coups for the United Kingdom: at sea (nuclear submarines) and in the air (commercial drones)

▶ The US Navy has selected Sheffield Forgemasters International Ltd to build critical components for its new generation of Columbia-class nuclear missile submarines. As reported by industry editor Alan Tovey of the *Telegraph*, the \$30 million contract for the submarines – which are to replace the current Ohio-class vessels – is an important win for the company, and builds on its decades of supplying components for the Royal Navy as well as earlier US ships. (“Boost for British Steel as Sheffield Forgemasters Wins Deal to Supply US Nuclear Subs,” 9 August)

The castings to be provided by Forgemasters are believed to be slated for use in the weapons launch systems of the new vessels. Noting that “these are complex components and require detailed modelling and manufacturing to highly specific tolerances,” CEO Graham Honeyman told the *Telegraph* that the work was under way, with deliveries to commence this year. Another tranche of components will follow in 2017.

Forgemasters, founded in 1805, is expected to play a key role in the construction of Britain’s own next-generation Successor nuclear submarines. That \$40.7bn programme (with a \$13.1-billion contingency fund) is moving ahead after July’s parliamentary vote in favour of replacing the Royal Navy’s Trident submarines.

Mr Tovey noted that the importance of Forgemasters to Successor was highlighted when – orders from the offshore oil and gas industry having dried up – BAE Systems, Rolls-Royce, and Babcock joined forces to offer the company a \$39.4 million support package. “The three blue-chip engineering businesses,” he wrote, are themselves key partners in the programme to build the new fleet of Royal Navy submarines. Last year, Forgemasters, which is privately held, was reported to have attracted the attention of Chinese investors, but nothing came of discussions. According to the *Telegraph*, “winning sensitive contracts for nuclear submarines” is likely to put paid to overtures from other prospective stakeholders.

▶ In another significant win for the UK, Amazon is partnering with the British government to significantly expand drone testing, a move that could allow the devices to deliver to British homes far earlier than in the United States. Britain’s aviation regulator will let Amazon test several aspects of drone technology that the US Federal Aviation Administration (FAA) has not permitted. The tests have already begun.

As reported by Cecilia Kang in the *New York Times* (“Amazon Expands Drone Testing in Britain,” 25 July), the partnership puts pressure on the FAA, which has rebuffed requests by Amazon, Google and other drone makers to advance their delivery plans. She noted that “tech behemoths and other drone makers” have aggressively lobbied the FAA to authorise the devices to significantly reduce costs to transport by airplane, freight and trucks.

Ms Kang wrote that Amazon is working with British regulators in the trials of drones that fly beyond the line of sight of operators in rural and suburban areas. It is also testing

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technology whereby the machines automatically detect and avoid buildings and other aircraft; and whether a single operator can safely command multiple drones at once.

As first described in December 2013 by Amazon's chief executive, Jeff Bezos, the plan by the e-commerce company to use drone delivery will rely on those functions. Mr Bezos has since pointed to regulation as the biggest obstacle to realising his vision, and Seattle-based Amazon has moved much of its drone research and development to Britain, Canada and the Netherlands.

But the company views its partnership with Britain as its most important. The Civil Aviation Authority – the British equivalent of the FAA – has said it may also enter into similar partnerships with other commercial drone makers.

The US economy

With the American consumer 'in decent shape' in an improved labour market, sales of new homes are soaring

Averaging roughly 3 to 5 per cent of gross domestic product (GDP), residential housing construction makes an important contribution to the US economy. If spending on related services (eg rents and utilities paid by lessors) is considered, that contribution is much higher, averaging roughly 12 to 13 per cent of GDP. By either calculation, a steep rise in sales of new homes is very good news, and that is precisely what the Commerce Department delivered on 23 August in Washington.

According to the Commerce data, purchases of new homes in the US unexpectedly jumped in July to the highest level in almost nine years, led by soaring demand in the nation's south and adding to signs of persistent housing-market strength. Sales increased 12.4 per cent to a 654,000 annualised pace, the fastest since October 2007.

As noted by Michelle Jamrisko of *Bloomberg News*, that exceeded the most optimistic forecast in a *Bloomberg* survey. (The median forecast of 72 economists called for the pace of sales to decelerate to 580,000. Estimates ranged from 540,000 to 610,000.) Purchases in the south were the strongest since before the start of the last recession. ("US New-Home Sales Unexpectedly Surge to Almost Nine-Year High," 23 August)

To Ms Jamrisko, that suggests that employment gains and historically low borrowing costs are providing firm support for housing demand, helping to reduce inventory and probably keeping new construction elevated. The Commerce report showed an increase in the percentage of homes sold for less than \$300,000, indicating builders are turning their sights to entry-level buyers.

The increase "makes perfect sense when interest rates are low, credit continues to ease, and the consumer is in decent shape given the jobs market," Brett Ryan, US economist at Deutsche Bank Securities Inc in New York, told *Bloomberg*.

"You're seeing finally that builders are responding with more supply, and that's been one of the big problems in the current cycle."

▶ The median sales price of a new house in the US was \$294,600 in July, the Commerce report showed. The average rate on a 30-year fixed mortgage was 3.43 per cent in the week ended 18 August, close to the record-low 3.31 per cent reached in 2012, according to figures from Freddie Mac (the federal home loan mortgage corporation) dating to 1971.

Hard times have this good effect at least: they keep bad drivers out from behind the wheel

"Who says recessions are all bad? About 5,000 fewer people die every year in auto accidents [in the US] for each one percentage point increase in unemployment, because downturns keep dangerous drivers off the road."

The question posed by Peter Coy, economics editor of *Bloomberg Businessweek*, has respectable support. In a forthcoming study in the *Journal of Risk and Uncertainty*, researchers claim to have documented "an instance of a natural economic force [ie unemployment] that impels riskier drivers to drive less while not discouraging safer drivers."

Mr Coy noted that previous research had shown that people generally drive less during economic contractions, which naturally contributes to a reduction in fatalities. The innovation by Clifford Winston, a senior fellow at Brookings Institution, a Washington-based think tank, and Vikram Maheshri, an economist at the University of Houston, was to show that the biggest decline is in driving by the worst drivers. ("When Unemployment Falls, Thousands of Americans Die," 25 August)

Those who took to the road less often as unemployment rose included drivers who nevertheless had accidents during the course of the study. It also included drivers who have older cars, who are over the age of 60, and those living by themselves or with only one other person (who tend to have higher accident rates than family heads).

Professors Winston and Maheshri do not present strong evidence as to why these particular groups did less driving. They do theorise that people with lower incomes might be more likely to lose their jobs and thus not need to commute to work. These drivers might also be likelier to have older cars and to live alone. According to Mr Winston, though, this cannot be the whole story since commuting accounts for only about 20 per cent of time behind the wheel.

The research, which was supported by the AAA Foundation for Traffic Safety, found that auto fatalities in Ohio were 14 per cent lower when the jobless rate was one percentage point higher. With reference to a nationwide auto fatality toll of around 33,000 a year, the study arrived at a figure of roughly 5,000 saved lives. "In all fairness, this is by no means definitive," Dr Winston acknowledged in the *Bloomberg* interview. "This is clearly a first cut."

➤ For Mr Coy, one intriguing question is how the US might get dangerous drivers off the road without first having to suffer through a recession. Driverless cars would help, the authors suggest. For example, Dr Winston observed, much mayhem is caused by drivers with suspended licences. Driverless cars would give these grounded miscreants a way to get around without taking the wheel themselves.

Technology

Australian scientists, adepts at exploiting solar power, achieve 97 per cent efficiency for converting sunlight into steam

The "Big Dish" at the Australian National University (Canberra) is made up of a concave surface of reflectors, directing sunlight to a receiver suspended at the focal point. A new receiver for the dish, designed and built by scientists at ANU's Research School of Engineering, is reported to have achieved 97 per cent efficiency for converting sunlight into steam.

Writing in *New Atlas* (formerly *Gizmag*), Michael Irving said that the team that designed, built and tested the receiver describes it as resembling a top hat, with a wide brim running around the bottom of a narrower cavity that extends upwards. The dish reflects sunlight onto water pipes that wrap around

the bottom of the receiver's brim and up into the cavity, heating the water to 500°C (932°F) and turning it into steam. To minimise heat loss, the steam hits that peak temperature at the deepest part of the cavity, so that any heat that is lost can feed back into the pipes around the brim.

"When our computer model told us the efficiency that our design was going to achieve, we thought it was alarmingly high," Dr John Pye, of the Research School of Engineering, told Mr Irving. "But when we built it and tested it, sure enough, the performance was amazing." ("Solar Thermal Record Sees 97 Percent Conversion of Sunlight Into Steam," 22 August)

New Atlas distinguished photovoltaic solar panels, which absorb sunlight and direct-convert it into electricity, from the concentrating solar power (CSP) system in use at ANU – which reflects sunlight from a wide area and focuses it in on a small receiver. As the receiver heats up, water inside turns into steam, driving a turbine to generate electricity. Rather than storing that power in potentially costly batteries, the thermal energy is stored in molten salts so that water can be added to create steam (and subsequently electricity) long after the sun goes down.

Dr Pye said that the ANU design could result in a ten per cent reduction in the cost of solar thermal electricity. "Our aim," he told Mr Irving, "is to get costs down to 12 cents per kilowatt-hour of electricity so that this technology will be competitive."

Dorothy Fabian, Features Editor (USA)

**NEW
PRODUCT**

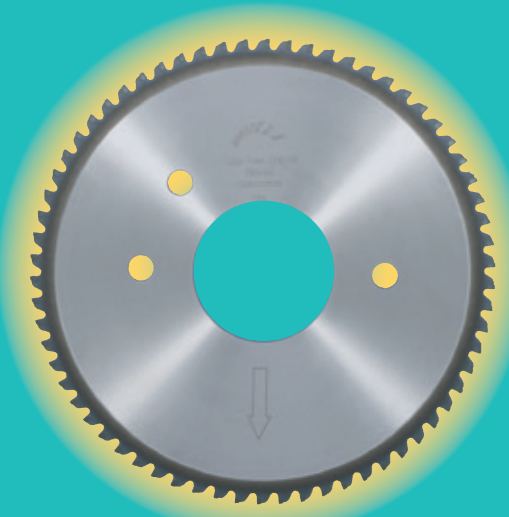
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APPLICATION

For Cutting tubes by orbital machine

Features & Benefits

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Cutting, sawing & profiling technology

The expression “clean-cut” did not originate in a tube mill, but it might well have. A precise, immaculate cut, with minimal detritus, has been the ideal since tubing was first offered cut-to-length. That this quickly became an achievable goal attests to the importance accorded the cutting operation from the earliest days of the tube and pipe industry.

Only a perfectly cut or sawn end will serve the purposes of peristaltic pumping, medical diagnostics and therapeutics, and remotely piloted aircraft. Just as materials, dimensions and tolerances preside at the beginning of the production cycle for such high-end applications, repeatable and precise cutting is the essential means to a satisfactory ending.



Two-head, two-axis drill with programmable saw

APOLLO Srl has designed a new machine, following numerous enquiries from customers who needed to drill bars with varying centre distances on both the width and the length of the piece, and perform cutting on the drilled bars automatically by simply setting a program, enabling drilled and cut pieces to be obtained in a single run through the machine.

The Cut Drill NC is equipped with a 3m-long bar feeder; by re-machining pieces a second time, it can work with bars up to 6m in length. The company can also supply an inlet and outlet roller conveyor to bear the bars. The maximum size of profiles that can be processed by the machine is 150x60mm.

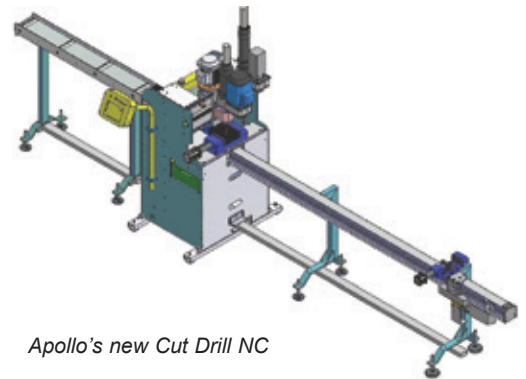
On the central machine body, a motorised slide is installed for positioning the two drilling units, which can create holes of up to 18mm diameter on steel.

Upon request, one of these two units can be fitted with a lead screw in order to perform threads, or with a bit that drills and taps in a single step, installed on a floating spindle.

The saw has a disk of maximum 375mm diameter, with quick approach and adjustable cutting power.

The machine is equipped with a cooling pump for the bits and one for the saw disk. There is also a collecting tank, which is divided into two parts – one for the scraps and the cooling liquid, the other where the cooling pump of the saw is placed.

The drilling and tapping head is driven by a brushless motor on which the rotation speed of the tools can be programmed. Each drilling head can have its own independent program, allowing creation of holes at different and



Apollo's new Cut Drill NC

variable centre distances. The number of programs is limitless, because they can be downloaded on a USB stick delivered with the machine.

Apollo introduced the new machine at EuroBlech in Hanover, Germany, in October.

Apollo Srl – Italy

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Website: www.apollosrl.com

Air curtain for underwater cutting with ESAB plasma systems

PLASMA, laser and water-jet cutting systems manufacturer Hypertherm is introducing a new Centricut air curtain for underwater cutting with ESAB plasma systems.



The Centricut air curtain produces a curtain of air that surrounds the plasma arc

The air curtain is designed for use with the Centricut quick-change torch for ESAB PT-36, PT-600 and PT-19XLS torches, and mounts directly onto the torch. Once installed, it produces a curtain of air that surrounds the plasma arc, to keep the arc free from the effects of water.

According to Hypertherm, its simplified design makes the air curtain smaller and lighter than its OEM counterpart, and because it is mounted to a quick-change torch it is easier to install and remove from the table. This saves time and effort, and makes changing consumables more efficient. The air curtain is adjustable to any position, and works with all three Centricut quick-change torches for ESAB plasma systems.

“The introduction of this air curtain expands the appeal of the Centricut brand quick-change to the 20 per cent or so of ESAB customers cutting underwater,” explained Cynthia von Recklinghausen, product marketing manager for Hypertherm’s Centricut

brand. “These customers are now able to enjoy the convenience and time-saving benefits of the quick-change torch without sacrificing cut quality.”

Centricut products are designed with critical-to-function tolerances and are precision manufactured by advanced machinists.

Businesses interested in a free trial of a Centricut brand product or a technical consultation to improve their cutting process can contact Hypertherm or their authorised Hypertherm distributor.

Hypertherm designs and manufactures cutting products for use in a variety of industries such as shipbuilding, manufacturing and automotive repair.

Its product line includes plasma, laser and water-jet cutting systems, in addition to CNC motion and height controls, CAM nesting software, robotic software, and consumables.

Hypertherm Europe BV –

Netherlands

Website: www.hypertherm.com

High specification band saw powered completely with electrical drives

THE MEBAe-cut band saw operates without the need of a hydraulic motor, instead using electrical drives resulting in a clean cut without compromise.

Advancements in automation and integration of sawing techniques within companies' value added chain require a continuous increase in performance, economic systems and customised complete solutions.

At the same time environmental factors and energy use are more important than ever. MEBAe-cut meets these requirements.

All the drives on MEBAe-cut models are powered by soft start motors, eliminating voltage spikes. Electrical axles are moved with high precision and accuracy, resulting in efficient power consumption, improving cutting accuracy and increasing the life of the saw blade. Electrical driven systems have a significantly lower power demand when compared to a hydraulic-based system. For example, material clamping: hydraulic clamping requires permanent pressure, consuming energy during a cutting cycle. Electric clamps only require energy for the vice movement (clamping and releasing), not during the cutting cycle. At the same time, there is no danger of leaks when using electrical clamps.

Compared to hydraulic-based systems, MEBAe-cut machines also have lower maintenance and running costs, there is no need to replace hydraulic oils and filters, the machine/blade performance is improved due to increased hydraulic temperature, and



Band saw powered by electrical drive

hydraulic leaks, which can be a major concern in the maintenance of cutting fluids and operator safety, are no longer a problem.

Noise reduction is another positive for the MEBAe-cut. The only noise generated is the sound of the blade cutting the material resulting in a much quieter cut, which can be a major consideration when purchasing new equipment due to health and safety restrictions on noise levels within the working environment. Hydraulic-based machines have additional noise produced by the hydraulic pumps and motors, even if the machine is not working.

MEBA was the first industrial manufacturer to integrate electrical systems into its machines with the linear ball screw feeds. MEBAe-cut high-performance band saw has again been a pioneer in the industry, dispensing with the use of hydraulic systems entirely.

The MEBAe-cut is equipped with a newly electric material clamp. The material is clamped in the main and in-feed vice by a servo-controlled spindle drive. The clamping pressure can be adjusted individually for each application and can be pre-selected via the

machine control. For example, thin-walled tubes can be clamped safely. In combination with the proven MEBA saw feed system, the MEBA material in-feed system and the backlash-free guide elements, MEBAe-cut is claimed to be unrivalled in precision and reliability. The saw feed works via servo-controlled lead ball screw spindle with automatically controlled cutting pressure and feed control.

The band saw control also includes a two-handed operating system for rapid vertical movement. On automatic machines a new control system reduces the required remaining material clamping section to 110mm. The material in-feed system is also controlled by electric servos and lead ball screw spindles.

The machine has automatic material height detection and positioning of the adjustable blade guide arm movable via the clamping vice-jaw. These factors ensure a high degree of flexibility. The control panel and chip conveyer can be located on the driven wheel or tension wheel side of the machine. The youngest member of the MEBA family also boasts a compact design. Its new CNC control is based on Windows CE with touch-sensitive panel.

MEBAe-cut is available in three models 400, 500 and 600, and is available as a semi-automatic machine or a 90° fully automatic machine. All models are made for high productivity and for long-term and continuous use in single- and multiple-shift operation.

MEBA Sawing Solutions – Germany
Website: www.meba-saw.de

Rafter ships RT-3000 weld box and turkshead for profiles

RAFTER Equipment Corporation has delivered welding and straightening equipment to a major North American custom roll form parts producer.

The equipment included an RT-3000 high-frequency induction (HFI) five-roll weld squeeze box and an RT-3000

double-sided turkshead straightener. The equipment will be used for the production of HSLA welded seam profiles up to 3" square x 0.16" thick for an automotive application on the customer's existing RLM Manufacturing roll former. Rafter states that it was

chosen for the project because of its reputation for providing the kind of heavy-duty mill equipment necessary for this application.

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

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Saw technology from framag

FOR framag, a saw manufacturer from Frankenburg, Austria, the requirements of ThyssenKrupp Rothe Erde GmbH were clear: an old sawing system had to be replaced and the new saw needed to be integrated in the existing production line. The goal was to achieve a high level of process reliability and a good cutting

result on quenched and tempered steels (eg 42CrMo4) and construction steels.

Using state-of-the-art technology, framag engineered a KKS 1600 cold circular saw that cuts round materials with a diameter up to 600mm and a length of 6,000 to 10,000mm precisely

and reliably (out-of-roundness up to 1.5 per cent). A special three-point clamping device, combined with a table height adjustment system, supports the material during cutting.

The newly developed hydraulic saw blade damping patented by framag improves the smooth running of the saw blade, which also has a positive effect on the blade's service life. The cut becomes more even overall, with a minimal cut gap.

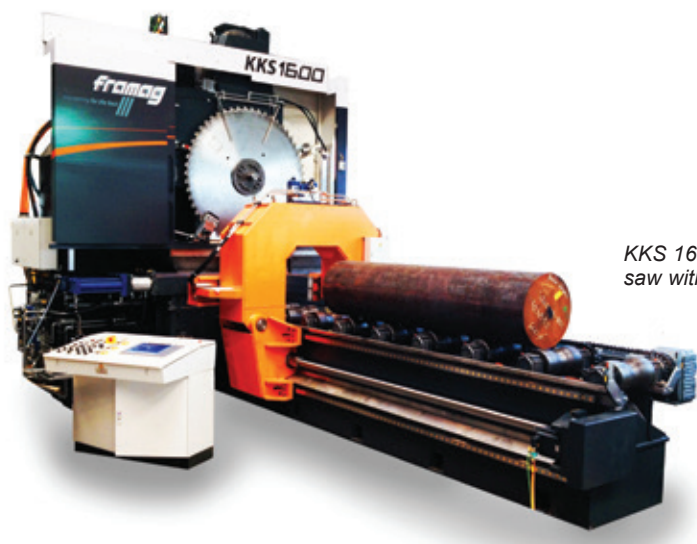
"framag is a competent partner. The communication in the project phase was very good and all our requirements were met to our complete satisfaction," said H Tschich (Dr Ing) from ThyssenKrupp Rothe Erde.

"The installation and commissioning were also carried out extremely professionally. The agreed acceptance criteria were met without any problems."

framag Industrieanlagenbau GmbH – Austria

Email: office@framag.com

Website: www.framag.com



*KKS 1600 cold circular
saw with control panel*

Laser cutting solutions

HORN Machine Tools, Inc (HMT), a manufacturer and distributor of CNC tube bending machinery, offers both flat sheet and tube laser cutting machines. The machines utilise efficient fibre laser technology and are configured in four different models, which can be customised to fit customers' requirements.

The fibre laser power source is from IPG Photonics, the laser cutting head is from Precitec, the servo motor system is from Yaskawa and the control system is from Power Automation. The machines utilise Lantek software to facilitate programming and nesting functions. All the major components have worldwide support and are readily available.

According to company president Kent

Horn, "The market has been seeking a lower cost solution for laser cutting for some time now. Until recently this valuable manufacturing process has been out of reach for many fabricators because they can't justify the high cost. We can now provide both a high quality CNC tube bender and laser cutter, for much less than the laser would cost from other sources."

HMT will be exhibiting an automatic style tube laser at Fabtech Expo, 16-18 November, in Las Vegas, USA, along with two all-electric CNC tube benders. Show attendees are invited to view how the company is innovating laser tube cutting and bending technologies.

The high production, fully automatic tube laser model FLTA, which will be

showcased at Fabtech Expo, loads the tube into the cutting area and processes the cut parts without assistance from the operator.

For entry-level buyers there is a semi-automatic machine that has the same cutting capability, but the operator provides minimal assistance to position the tube into the tube chuck. Both machines have an unloading table to handle the cut tubes being discharged from the machine.

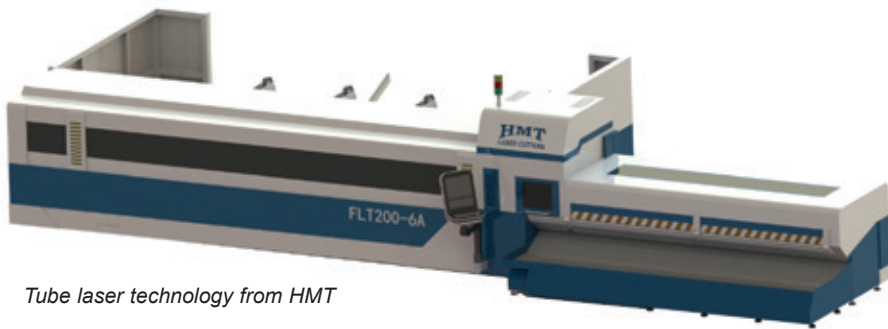
The flat sheet cutters are configured in two formats: the FLSA model is a conventional 5ft x 10ft flat sheet laser cutter with a double exchange sheet handling system; and the FLTS model is a combination machine that combines a 5ft x 10ft flat sheet cutter with a tube spindle for processing tubular shapes. The combination machine is of interest to fabricators who have both flat sheet and tube cutting requirements, but do not have the volume to justify buying two separate machines.

Horn Machine Tools, Inc – USA

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Email: sales@hornmachinetools.com

Website: www.hornmachinetools.com



Tube laser technology from HMT

Plasma cutting up to 100mm

AS A long-established manufacturer of plasma cutting techniques, Kjellberg offers plasma and laser cutting equipment for a wide range of tasks in automated, mechanised or manual cutting.

Following the launch of the plasma systems Smart Focus 130, 200 and

300 in 2014, Kjellberg has added a new model to the series: the Smart Focus 400, with a maximum cutting current of 400A for material thicknesses up to 100mm, expands the application areas of the plasma series.

When cutting electrically conductive materials, the Smart Focus 400 achieves precise cuts and high cutting speeds, while keeping the costs per cutting metre low. The results are sharp cut edges and smooth cut surfaces, fine markings and low angular deviations.

With the Contour Cut technology for cutting mild steel, the user cuts fine contours and small holes with a material thickness to diameter ratio of 1:1. For cutting larger contours, the further technological development Contour Cut Speed is used. With equivalent cut quality, the cutting speed is increased by 50 per cent.

Kjellberg's foremost objective when planning the new system was meeting



Plasma cutting with the Smart Focus

the requirements of customers in all application areas, eg 2D plasma cutting, bevel cutting up to 50° or underwater plasma cutting. The user-friendly system achieves results with only a few settings, even under challenging conditions.

Kjellberg Vertrieb GmbH – Germany

Fax: +49 3531 500 229

Email: vertrieb@kjellberg.de

Website: www.kjellberg.de



Smart Focus 400

GBC cutting and bevelling equipment

MATHEY Dearman has announced a new partnership to bring the professional Italian products from GBC Group to the US market. The GBC cold cutting and bevelling equipment is a natural complement to Mathey's line of precision equipment.

Brandon Boyd, Mathey Dearman's director of sales, said, "GBC's pipe cutters, millers, bevellers and flange facing machines have been known throughout the world for more than thirty years. In the field of pipe and plate cutting and bevelling they occupy a leading position in the world market."

The GBC Group has two main operational units, both in Italy: a facility in Torbiato di Adro where the major business activities are carried out, and a plant in Castegnato where the main components of all the company's machines are manufactured.

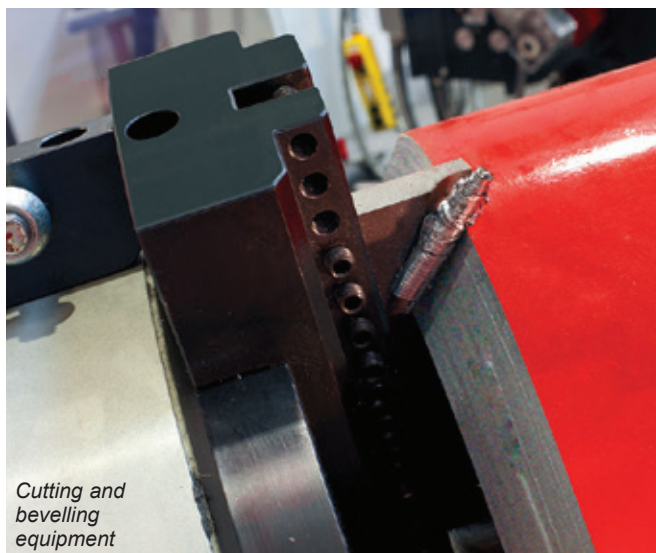
Since 1996, GBC has adopted management procedures in accordance with the standards of the quality assurance system UNI EN ISO 9001 (SGS Italia SRL N° IT 96.088 since 1996), certifying the manufacturing standards of its equipment.

The partnership with Mathey Dearman will make GBC's equipment readily available through Mathey Dearman distributors in the USA. A national authorised service centre will also be available for GBC products in the USA.

Since the 1930s, Mathey has been designing and building cutting and bevelling machines and clamping, aligning and reforming systems for pipe and tubing. It has also developed other tools and equipment, including measuring and layout tools, gauges and inspection devices.

Mathey states that its distribution network is made up of some of the most successful and well-known distributors of welding, pipefitting and industrial equipment in most countries around the world. Its products are found in the construction of oil and gas pipelines, power plants, ships, refineries, LNG terminals, petrochemical plants, bridges, and other projects where pipe is installed.

Mathey Dearman – USA
Fax: +1 918 447 0188
Email: sales@mathey.com
Website: www.matheycnc.com



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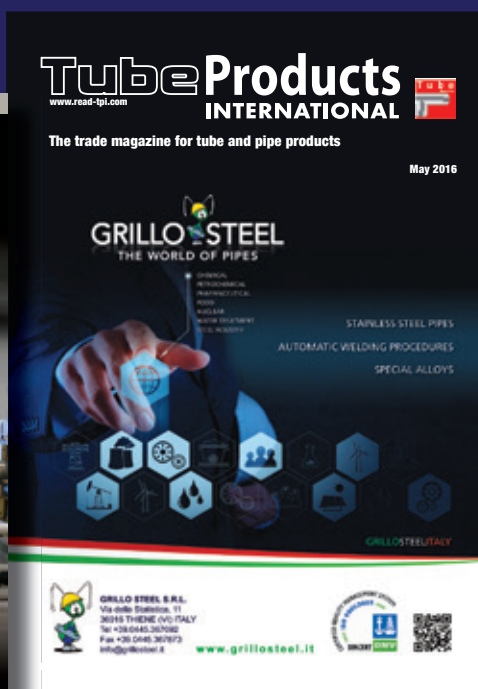


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Lincoln Electric公司宣布任命新的副总裁

Lincoln Electric Holdings, Inc 控股公司子公司Lincoln Electric Company已任命Daniel McMillin担任美洲焊接部门财务副总裁，立即生效。

McMillin先生将接替现任美洲焊接部门业务发展部总裁的John Bronstrup先生。

作为美洲焊接部门财务副总裁，McMillin先生将负责领导区域财务和会计事务，并支持美洲焊接业务的发展。

公司控制人，高级副总裁Geoff Allman先生表示：“Dan在Lincoln Electric公司

广阔的财务背景以及对公司业务、战略以及文化深入理解使他非常适合领导美洲焊接财务团队。”

McMillin先生拥有25年过的财务和会计经验，于2004年加入Lincoln Electric公司担任财务报告主管。在Lincoln Electric公司的12年期间他担任了多项财务领导职务，包括欧洲财务总监，而且最近担任了国际控制人。

在加入Lincoln Electric公司前，他在RTI International Metals, Inc公司以及Coopers & Lybrand公司担任各种不同的财务和会计职位。

McMillin先生拥有俄亥俄州大学会计专业学士学位，是注册会计师。Lincoln Electric公司世界领先的电弧焊产品、机器人电弧焊系统、等离子和氧燃料切割设备设计、开发和制造商，是合金材料钎焊和低温焊领域全球领导者。Lincoln公司总部位于俄亥俄州克利夫兰，有48个生产基地，包括在全球19个国家的经营部门和合资企业，在全球160多个国家有分销商网络和销售办事处。

Lincoln Electric – 美国
网址: www.lincolnelectric.com

用于上海STAL公司高端产品的新型冷轧机

全球工业工程集团Fives和上海STAL Precision Stainless Steel Co, Ltd有限公司签署了一项设计、制造和供应新型20Hi冷轧机的合同。该轧机将用于STAL公司在中国上海莘庄工业区新的不锈钢生产线。

STAL是一家由美国Allegheny Ludlum公司和中国宝钢集团公司合资建立的公司，专门生产和销售精轧不锈钢带材。为增加精密不锈钢带材产能，STAL公司已决定新建冷轧车间，其中包括一条新的光亮退火生产线以

及新型20Hi冷轧机，计划2017年试运行。

Fives将像STAL设计和交付一套20Hi冷轧机，生产能力将达到80000多公吨每年。可将1.5毫米厚的入口带材轧制成0.04毫米到1.2毫米厚的带材。最大的带材宽度为1250毫米，而且能够以全幅轧制到最小的厚度。

轧机的终端设备将由Fives集团中国子公司在当地制造。轧机的设计，结合超厚以及全幅，据说目前是独一无二的。新生产线以及轧机将生产用于高端应用

的超薄不锈钢材，例如智能手机和平板电脑等。

Fives集团60多年来专业从事冷轧机设计和制造，是全球技术领先者以及国际钢铁企业的合作伙伴。

2006年，Fives集团为上海STAL公司Huajin Plant工厂设计和交付了一台20Hi冷轧机。

Fives – 法国
传真: +33 14523 7571
网址: www.fivesgroup.com

2016中国国际管材展览会： 展示尖端管材技术的国际盛会

今年国际管材和线材展览会将于2016年9月26日至29日再次回归上海新国际博览中心。主办方——上海电缆研究所、杜塞尔多夫展览（上海）有限公司以及中国国际贸易促进委员会冶金行业分会再次聚在一起带给你亚洲第一的展览会。在2016年的展出中，组织者将特别关注紧固件行业的知名媒体“金蜘蛛传媒”，推出“上海紧固件与技术展专区”。致力于打通上下游渠道，打造紧固件产品、生产设备和原材料的一站式采购平台。

本届展会规模创历史新高，将有9个展厅，占地97000平方米。将有超过1650家品牌展示其最新的产品和技术，将吸引来自80个国家和地区逾40,000名专业观众莅临。

2016中国线材展位已销售一空，同时80%的管材展以及紧固件专区展位也已售出。将参加展会的管材公司包括：SMS、EFD、Inductotherm Group、Boehlerit、LAP、TPCO、KTM、Biekerit、Youfa Steel Pipe Group、Panyu Chu Kong Steel Pipe、Jiuli、Stellar Group、Jueneng Special Steel、Hubei Xinyegang Steel、Bao Steel、Ampco Metal、Formdrill、Uniwell Machinery、Sicolinx、Chiao Sheng以及Maxtech。随着中国“十三五”计划的出台，中国将重点推进基础设施、产业布局、环境保护和建筑节能产业的迅速发展，这意味着整个国家对线缆线材和管材的需求将增加。巨大的市场潜力将吸引很多国际公司来占据市场份额。

今年将有来自德国、北美、意大利、奥地利、英国、日本、韩国及台湾的参展商参展。一站式的商贸平台，展示先进的国际前沿技术及解决方案，将为本土行业注入新概念、新思路，有利于加速推进行业创新。

“2025——中国制造”以及“一带一路”发展战略将带动汽车制造、新能源、高铁及城市轨道交通、航空航天、石油化工、建筑业以及其他行业的快速发展，这将给紧固件行业带来新的商机。同时，紧固件产品的转型升级也需要更多先进的紧固技术，为紧固件生产设备和相关产品带来市场需求。

Tube China 2016
网址：www.tubechina.net

罗马尼亚管道制造商购买整套 1.2米P0管道生产线

罗马尼亚管道制造商TehnoWorld安装了一整套来自battenfeld-cincinnati公司的挤出生产线，由欧盟项目资助。TehnoWorld将使用这条生产线扩大生产，包括在苏恰瓦费尔蒂切尼工厂生产直径达1.2米的的双层HDPE管道。该生产线主要用于TehnoWorld工厂光滑管道和波纹管道的生产，整条生产线以及所有主要组件都来自battenfeld-cincinnati公司。

TehnoWorld公司主管Ing Iustinian Pavel表示：“这是TehnoWorld与battenfeld-cincinnati公司再次合作的绝好时机，因为我们的活动领域已经达到“新视野”。对于我们来

说，battenfeld-cincinnati是可靠的、有价值的商业伙伴，我们过去曾合作开发我们的生产能力。battenfeld-cincinnati展示了产品和服务的高质量，同时帮助我们进一步开发和提升了技术标准和灵活性。”

这条1.2米管道生产线能生产压力等级为SDR 11、SDR 17和SDR 26的管道。它配有一台solEX 90-40主挤出机以及一台uniEX 45-30共挤机。为了增加彩色条纹，battenfeld-cincinnati提供了一台小的、节省空间的coEX 30-25共挤机，安装在带旋转臂的牵引式模台上，方便移动。

管头配有可调模孔，包括一个锥形的芯棒以及一个纵向移动的外套筒。涵盖的管道直径范围为900到1200毫米——还可以扩展到，500到800毫米的直径（SDR 11到SDR 26）。

螺旋状1200 VSI-TZ+管头减少了厚壁管道的下垂和椭圆度，即使是在很高的线速度下，这多亏其双步分布理念。集中的熔体冷却和内管冷却操作主要在环境空气下进行，这样减少了操作成本和维护需求。

内管冷却也减少了冷却长度，这对TehnoWorld有限的生产空间来说非常重要。这条来自battenfeld-cincinnati的新生产线使公司能够生产1.2米的管道（SDR 17），吞吐量超过1500公斤/小时，冷却长度不到40米。

冷却段包括两台vacStream 1200-6真空罐以及四台coolStream 1200-6冷却槽，并辅以其他生产线组成部分：牵引机（pullStream R 1200-10 VEZ）、启动辅助（startStream AFH 60）、切割装置（cutStream PTA 1200）以及管端加工台（rollStream RG 1200）。

TehnoWorld公司自2005年以来一直生产聚乙烯和聚丙烯管道，每天生产70多吨。

battenfeld-cincinnati集团在德国、奥地利、中国和美国都有生产设施，专门生产节能、高效的挤出机以及整套挤出生产线。他为管道、型材、板材、热塑性板材以及制粒领域各种应用提供定制解决方案。这些方案来自各种单螺杆、双螺杆和行星辊挤出机、工具、下游设备、轧光机、压延喂料设备。

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cutStream PTA 1200切割刀具可无屑切割或有屑切割，具体取决于应用（图片来源：© TehnoWorld）



2016年Polysoude大师班活动

POLYSOUDE公司最近举行了2016年机械化氩弧焊和包覆大师班活动，证明了创新的设备、技术以及热情的参与是成功举办开放日的完美公式。

这项国际性活动在英国谢菲尔德核先进制造研究中心举行，技术人员、管理者以及企业家参加了此次活动，人数破纪录，他们都渴望掌握机械和轨道氩弧焊以及包覆最新技术发展第一手资料。Polysoude的先进设备和技术与英国核先进制造研究中心设施的配合被证明是一个成功的组合。

活动主要关注建立在历史成就上的科技进步：活动主题通过对Polysoude最新的尖端设备的演讲以及现场展示呈现。

Keith Bridger先生做了开幕式演讲，他是焊接和材料工程负责人，他对英国核先进制造研究中心的历史以及在工业发展中的作用做了简短介绍。他强调Polysoude赞助的重要性，如果英国核先进制造研究中心支持新的核建造行业以及石油和天然气行业则需要新设备，如Polysoude的创新型窄间隙氩弧焊焊炬以及堆焊系统。

Polysoude集团首席执行官Hans-Peter Mariner介绍了英国团队和焊接技师，强调了此次活动的国际性，吸引了来自组多国家的介绍者和示范者，这是Polysoude的处理能力，因为其完善的全球网络，全球资源以及办事处能随时快速响应客户。他希望设备展示能证明未来制造业展现在哪。

考文垂大学连接和添材制造科学知名教授Steve Jones博士指出在以往的努力和创新基础上开发电源技术的重要性。此外，他还强调在设计阶段理论提出者和制造者之间的有效沟通至关重要，比

如，这样能够使Polysoude按照客户的独特需求设计和调整设备。

以轮播的方式使成组的参与者能第一手学习和了解Polysoude的技术能力。在技术员对轨道焊、自动窄间隙焊以及堆焊进行现场演示时，Polysoude的代表们对这些工艺程序进行了解释并回答了許多有趣而有充满热情的问题。

在技术演示期间，还有很多活动计划在客户的参与下完成，客户借此分享了使用Polysoude设备的经验。Arc Energy Resources公司的Alan Robinson对堆焊技术的发展给出了自己的看法，从过去供应商不能集成包覆设备，到现在Polysoude根据不断增长的市场需求为客户以及客户需求设计并个性化设备。尤其是Robinson先生指出了Polysoude最新的TIGer氩弧焊技术在速度和效率上的卓越性，并表示它将是一场“革命”。

BAE Systems公司的Norman Cooper对一些重要的高附加值制造业机械化轨道焊接技术进行了介绍，概述了从手工焊到成功的自动化可编程氩弧轨道焊的戏剧性的令人兴奋的改变。Cooper先生指出Polysoude通过生产更高质量、更可靠的零缺陷设备来迎接更高质量控制要求的挑战。

Graham Hart Process Technology公司的Charles Byrne在最后完成了演说。他解释了Polysoude技术是怎样引入管板焊接头的，通过质量保证以及更好的性能提高了换热器的生产，因此提高了公司的知名度以及客户信任度。

在吊起参与者的胃口之后，再来一点堆焊领域的一些重要突破犒劳他们——该技术专门用于耐蚀合金——即TIGer包覆系统。该技术代表hotwire TIG技术的下一个改进阶段，与标准的氩弧焊工



现场演示，分组围绕特定话题展开讨论



轨道焊接现场演示时的解释说明



Polysoude展示者在解释窄间隙焊接技术程序

艺相比包覆速度更快，沉积率更高。配备TIGer焊接技术的焊机非常具有经济效益，每公斤熔敷金属操作成本将减少20%到50%。

Polysoude – 法国
网址: www.polysoude.com

Mandelli Sistemi SpA公司纪念Francesco Mulazzi

MANDELLI Sistemi SpA公司宣布一个不幸的消息，其机械设计经理Francesco Mulazzi最近过早离世了。



Francesco Mulazzi

公司通过帮助年轻的机械工程师创造学习机床的机会来纪念他。

鉴于此，这家位于皮亚琴察，80多年来一直在意大利从事机床制造的公司，宣布成立以Ing. Francesco Mulazzi命名的奖学金，用于奖励2016到2017学年将参加机械工程

研究生阶段的学生，专攻皮亚琴察分支米兰理工大学的“机床和制造系统”专业。

Mandelli 首席执行官Saverio Gellini表示：“这些学生在硕士学位毕业后将获得奖学金，而且有机会应对劳动力市场，因为他们可以在皮亚琴察Mandelli Sistemi工厂进行为期6个月的培训实习，而且还有津贴。”

Mandelli Sistemi以及公司下属的Gruppo Riello Sistemi的总裁Andrea Riello表示：“我们的目的是将其与对机床感兴趣的年轻工程师们的持续培训联系起来，来纪念我们已去世的同事。同样也与Francesco的妻子Tiziana和年轻的女儿Manuela分享这种想法，女儿也

是一名大学生，她们两也很赞成我们的想法。”

奖学金将奖励给竞赛获胜者——已经公布在Mandelli机构网站，以及Politecnico di Milano Piacenza Branch、MUSP Consortium of Piacenza、Unione Costruttori Italiani di Macchine Utensili (UCIMU)网站上——5万欧元的奖金分给两个奖项。

竞赛每年举行一次，这样Ing. Francesco Mulazzi Scholarship奖学金将帮助最年轻的机床工程师推进他们的事业和培训。

Mandelli Sistemi SpA – 意大利
网址: www.mandelli.com

汽车精密管道新生产线完成试运行

ASMAG Austria公司为美国中西部地区一位客户的整条4"精密钢管生产线完成了试运行。

管束由一个夹头分离器分开，管道进给到液压锻尖机。一个全自动管道搬运系统包括三重推进器以及线程装置。管道由一个600千牛的三重拔管机进行高速拉拔。

生产线终端由一台十辊精密矫直机、超声波和涡流试验台、多重锯切线、在线倒棱装置、外观检查和全自动堆垛、打捆以及弯曲系统组成。

公司选择ASMAG的原因有很多，包括ASMAG公司是完整的解决方案供应商，而且整条生产线只需要一个接触点，以及其在精密管道生产设备上的声誉。



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Hypertherm公司发布新网站

等离子、激光以及水射流切割系统制造商Hypertherm公司提出新口号来支持公司的远景目标，并推出新网站来支持全球个人和公司工业切割和机器人需求。

Hypertherm的新口号“塑造一切可能”取代了本世纪初以来一直使用的口号“充满自信的切割”。新口号传到了公司提供产品、服务以及技术帮助客户实现目标的角色。Hypertherm总裁兼首席执行官Evan Smith解释道：“通过产品和服务以及1400多家Hypertherm相关业主以及成千上万的授权合作伙伴帮助客户切割部件5E76实现他们的商业目标。”

Hypertherm也推出了全新的网站。网站访问者可以对不同的切割技术和平台进行比较，解决切割难题，并与全球Hypertherm专家进行联系。网站包括主要的导航更改以及更强大的搜索功能，易于找到内容，同时是智能化的，响应式设计可在电脑、平板电脑以及智能手机上查看。Hypertherm公司通信和品牌管理团队负责人Denise Champagne表示：“对于新、老制造商，新网站Hypertherm.com将提供有用的内容帮助人们做出明智的决定以及最有效地使用Hypertherm的产品。我们使他们能够进入了解我们近50年的切割技术，得到一

些完成其新项目的信息和支持。我们也将对我们认为成功的一些关键点提供比以往更多的信息，如环境的可持续性以及更精益的生产，希望其他公司可以从我们的工作中吸取经验。”

Hypertherm公司设计和制造各种先进的切割产品，用于各种行业，如造船、制造业和汽车修理等。其产品线包括等离子、激光和水射流切割系统，此外还有数控运动和高度控制、CAM嵌套软件、机器人软件和耗材。

Hypertherm – 美国
网址: www.hypertherm.com

爱尔兰材料搬运商迄今为止最大的展台

COMBILIFT今年在国际Fabtech展会上的参展将很难被忽视。这个爱尔兰制造商将在三个展台上展出至少专业和定制材料搬运解决方案五大型号范围。无论您是要搬运长型且棘手的货物、托盘、集装箱、以及超大尺寸的货物还是搬运这些东西组合起来的物体，都有一款Combilift方案能满足你的要求。

展品包括目前最小的Combilift: 1.5t Combi-WR步进式堆垛机，这是唯一一台能够在仅2.1米宽通道作业的车子。Combi-GT独立式机型能在很窄的通道作业，因此可以大大增加业主的储存空间该机型也将在展会上展出。

Combi-CB是一款紧凑型平衡重设计叉车，能向多个方向运行并能搬运托盘式和长型货物。来自原有的却仍然流行的C系列机，能够处理2.5吨到25吨

的货物，也将展出。与所有Combilifts叉车一样，C系列机以其室内外能力、稳固的设计以及可靠且寿命长的操作而具有价值。

Combilift还将展出Aisle-Master VNA 铰接式叉车，可以替代其他类型的叉车组合，能更有效的卸载、搬运和储存货物，主要是托盘式货物。董事总经理兼首席执行官Martin McVicar评价到：“拥有目前为止最大的展出空间使我们能够公平的展出越来越多的产品范围。我们期待游客来参观我们的产品组合，现场演示以及Combi-CB跳舞，这是备受欢迎的需求。”



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50 years of designing large diameter longitudinally submerged welded pipes

By Uzinexport SA, Romania

UZINEXPORT SA is an important Romanian company dealing internationally in the contracting and construction of metallurgical plants and pipe mills. It is proud to be celebrating its 50th anniversary this year. It is one of a small number of engineering companies able to design, manufacture and supply, test and commission equipment and plant for the production of large diameter, longitudinally submerged welded pipes (LSAW pipes).

The entry point to this market was recorded in early 2000 with the contract placed with them by Man Industries, India, for a mechanical pipe expander meant for its plant in Indore and entirely designed, manufactured, tested and commissioned by Uzinexport as general contractor, in association with several other companies including M/S Iprolam, which designed and provided the hydraulics, electricals and automation system, and M/S Upetrolam as the manufacturer of the mechanical equipment.

This first project was followed by repeated orders, which allowed Uzinexport to become the reliable supplier of LSAW pipes to three out of four of the biggest Indian pipe manufacturers – Jindal Saw Ltd, Essar Steel Plant and Man Industries.

The reference list in the field has added more machines like the edge milling machine, hydro-tester and bevelling machine, besides the originally offered pipe expander, surpassing the required technical parameters according to the various customers.



Figure 1: Mechanical expander 16"-60". Client: ESSAR Hazira, India, 2010

Expander range

Longitudinally welded steel pipes:
 Outer diameter: 406 to 1,524mm (16" to 60")
 Wall thickness: 6.4 to 34.9mm for X80
 Length: 6,000 to 12,500mm
 Material grades: Up to X 80, according to API 5L, 45th edition



Figure 2: Mechanical expander 18"-56". Client: Hunan Shengli, China, 2013

Expander range

Longitudinally welded steel pipes:
 Outer diameter: 457 to 1,422mm (18" to 56")
 Wall thickness: 6.4 to 44.5mm for X80
 Length: 9,000 to 12,200mm
 Material grades: Up to X 120 according to API 5L, 45th edition



Figure 3: Edge milling machine 18"-56". Client: Hunan Shengli, China, 2013

Length without tabs: 9,000 to 12,200mm
 Width: 1,436 to 4,470mm, (Ø457mm (18") to Ø1,422mm (56"))
 Thickness: 6.4 to 60mm
 Material grades: Up to X 120 according to API 5L, 45th edition; σ_c max = min 830 MPa
 Cutting speed: max 300m/min



Figure 4: Pipe hydrotester 16"-60". Client: Essar Hazira, India, 2010

Nominal technical data

Longitudinally welded steel pipes:

Outer diameter:	406 to 1,524mm (16" to 60")
Wall thickness:	6.4 to 34.9mm for X80
Length:	6,000 to 12,500mm
Material grades:	Up to X 80 according to API 5L, 45 th edition, σ_c max = 675 MPa
Max hydro-testing force:	4,300t
Testing time:	5-30 sec



Figure 5: Facing and bevelling machine 16"-56". Client: Man Anjar, India, 2005

Longitudinally welded steel pipes

Outer diameter:	406 to 1,422mm (16" to 56")
Wall thickness:	6.4 to 31.8mm for X80
Length:	6,000 to 12,700mm
Material grades:	Up to X 80 according to API 5L, 45 th edition, σ_c max = 675 MPa.
Power of bevelling head:	129 kW
Cutting speed:	50 to 175m/min

The geographical area has also been expanded with new customers located in China and Malaysia being added.

Iprolam SA is a heavy engineering company that specialises in hot and cold rolling mill technology machinery, automation and process control. Iprolam SA was founded in 1959, benefitting from its complex structure with all the technical

specialities reunited, with an elite core of engineers offering vast experience and an impressive database of more than 100,000 projects.

Iprolam SA has the competence of approaching complex, turnkey projects, as well as specialist projects in the majority of industries, predominantly in the metallurgy field, providing services as general designer, general supplier and general contractor.

Iprolam SA offers competent services in the design of rolling equipment, electric power supply, automation equipment and equipment for the measurement and control of continuous processes. It also caters for electric drive installations – adjustable by AC and DC digital converters – sequential control using state-of-the-art PLCs, computer monitoring, management and control installations for the metal technology processes.

Iprolam SA is a competent and trustworthy company and is certified by Germanischer Lloyd according to ISO 9001:2000 and ISO 14001:2004.

All these years have also marked a continuous effort to improve the quality of the pipes produced through a better control of its parameters. Some examples of this are given below.

The measurement system is built to assure high-accuracy pipe measurement in order to certify the parameters related to the API 5L standard requirements, or to the requirements of other specific norms.

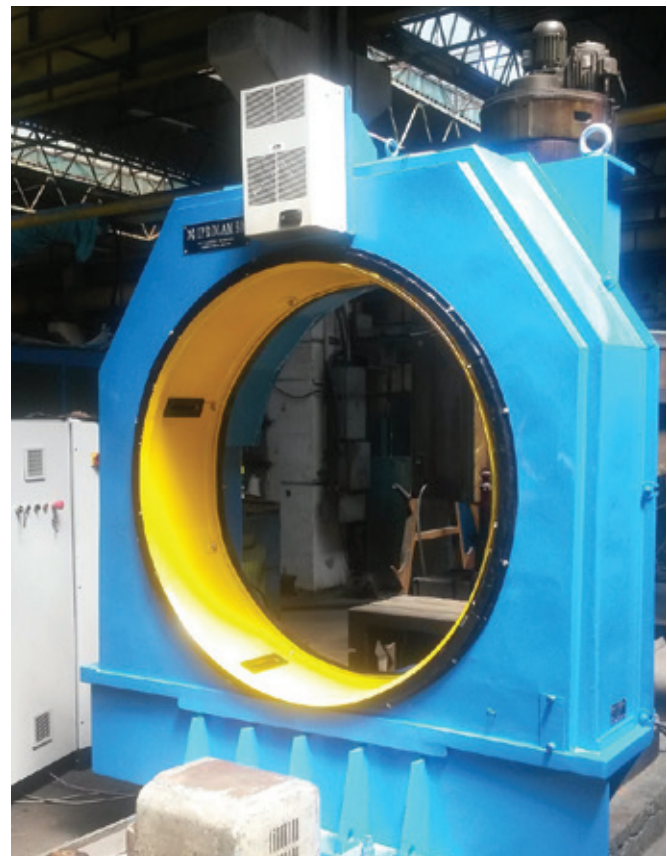


Figure 6: Online pipe diameter and out-of-roundness measurement system

Minimising the damaging effect of vibration and resonance with stabilisers and dampers

by Willy Goellner, chairman and founder – Advanced Machine & Engineering/AMSAW

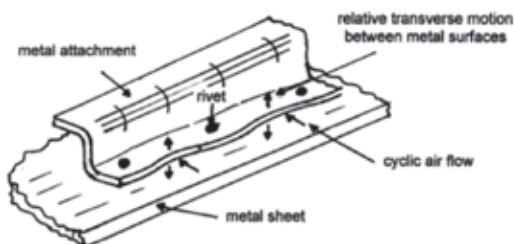
This third and final article in the current series from AME focuses on how best to minimise the damaging effects of vibrations and resonance with stabilisers and dampers. As part of the team that invented the first billet saw using carbide-tipped circular saw blades and the founder of AMSAW machines, my design team has learned throughout the past 50 years that success in carbide sawing comes from a solid understanding of four factors: vibration, resonance, damping and stabilisation.

Even with a well-designed carbide saw, blade vibrations will still occur. That is because it is nearly impossible to take into account every possible cause of vibrations. Understanding stabilising and damping best practices is the key to minimising the inevitable vibrations created during the sawing process.

From a structural dynamics standpoint, the main parameters of mass and stiffness are considered to be conservative. This means that they can store, or conserve energy. Damping is the parameter that dissipates energy by converting mechanical energy into heat resulting in the reduction of mechanical energy.

Where can you see damping?

Damping within the structure and the material: For example, the damping in conventionally jointed metal structures is partly due to hysteresis within the metal itself, but primarily due to friction at bolted or riveted joints and the fluid (sometimes just air) that pumps in the joints or even from micro slip.



Discrete units, usually using fluids, such as vehicle suspension dampers and viscoelastic damping layers on panels that are often added to a mechanism or structure to suppress unwanted oscillations.

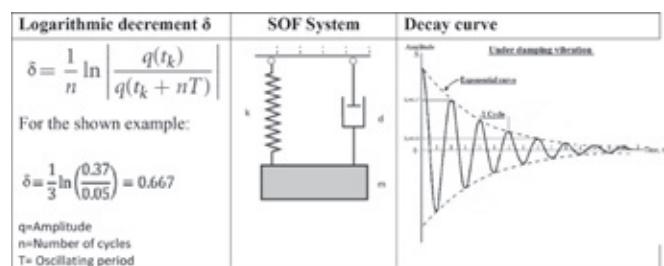
Fluid around the structure: Fluid around the structure can also be a dampener.

Damping can be generated by magnetic fields. The damping effect of a conductor moving in a magnetic field is often used in measuring instruments. Moving coils can develop surprisingly large damping forces. One common application is electromagnetic brakes in a gear train.

Now that we know the different kinds of damping, we will explore ways to quantify the effect:

a) Logarithmic decrement

Damping is the loss of energy and in the case of any single degree of freedom vibrations it can be quantified with the logarithmic decrement (reduction of amplitude per cycle). When you know the amplitudes of two successive peaks and the number of cycles in between them, the logarithmic decrement can be calculated as followed:



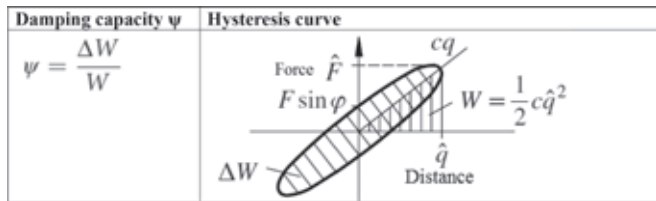
b) Force-displacement diagram

In the **force-displacement diagram** you can see the energy loss as a mechanical hysteresis because the area underneath the force-displacement diagram is proportional to energy. The load and unload curve don't match as you would assume for an ideal elastic material, but you get a hysteresis loop which is proportional to the energy loss. Between the stress and the strain you'll see a temporal phase shift. The end value of the strain will be reached after a relaxation time, which depends on a time dependent processes taking place in the material. In the same fashion you can observe a remaining strain after unloading which will reach zero after a longer period. This is due to the reason that atoms will change to an energetically favourable position and withdraw energy. When using **ferromagnetic materials** the strain will cause

an alignment of the magnetic elementary and causes **local eddy currents**.

The amount of the dissipated energy is driven by the load and velocity, which goes along with amplitude and the frequency of an oscillation. Furthermore it will also be influenced by the temperature.

By dividing the amount of energy dissipated in a harmonically excited structure by the work applied the **specific damping capacity** ψ can be calculated.



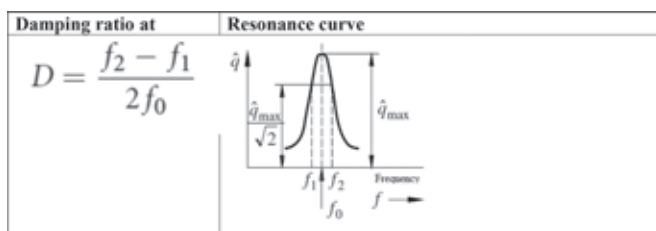
c) Damping ratio

The **Damping ratio D** is a dimensionless parameter that describes the amount of damping relative to the critical damping. A critically damped system converges to zero as fast as possible without oscillating.

When the system is excited with resonance frequency, the amplitude q_{max} and resonant frequency f_0 is measured. Then the exciting frequency is changed until the amplitude will be

$$\frac{q_{max}}{\sqrt{2}} \quad (-3dB)$$

With the two frequencies f_1 and f_2 the damping ratio can be calculated. This is the so called **half-power band width method**.



Where do you experience damping on a machine tool?

a) Damping of machine bases

In big structures, damping forces will dominantly occur where relative motion exists (eg coupling points such as bolt connections and guide ways). In order to increase the friction within the machine base, machine builders use core sand in the hollow areas to cause dry friction. In case of rigid body vibrations the material damping is nearly non-existent.

The material damping of cast iron is better than that of steel, but the welding joints of steel structures and interfaces outweigh this disadvantage.

On the other hand reaction resin concrete has a considerably higher damping factor, but high damping material only has an

advantage when the mode dynamically deforms the part and due to lack of stiffness you have a dynamical weak spot.

b) Damping of joints

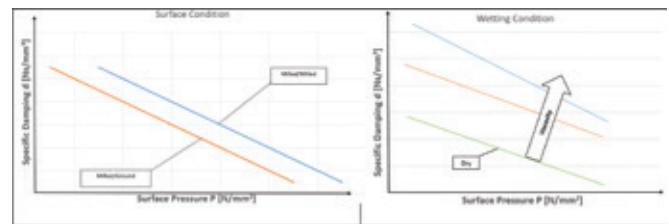
The **damping of joints and interfaces is about one to two decimal powers bigger than material damping**. Main driving factors for this kind of damping are:



Influence of different contact conditions for damping

Higher surface roughness, less pressure and fluids with higher viscosity can cause favourable damping conditions.

The mechanism in the joints is driven by many parameters, which are difficult to collect by measurements. Practical experience shows that the values are subject to a huge variance. The resonance frequencies as demonstrated in the last article can be calculated pretty accurately due to mass and stiffness distribution, whereas the resonance amplitude can show bigger deviations in practice.



c) Squeeze film damping of guide ways (box ways)

Squeeze film dampers use the speed-proportional shear forces in viscous liquids for damping. The damping effect of squeeze film dampers is based on the displacement of liquid between two surfaces, which have a relative motion normal to the surface.

The calculation of the damping due to an oscillating movement in y-direction assumes that the gap is filled completely with oil at any time. Parallel to the track longitudinal direction the oil is displaced or sucked in again. The flow creates a pressure gradient between the track centre and the outer edge.

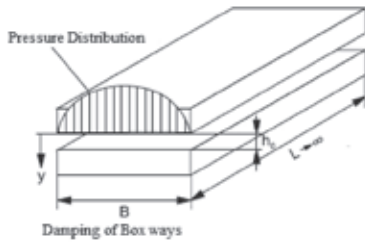
The integration of the resulting pressure gradient results in the damping force F:

$$F = \eta \cdot L \cdot \dot{y} \cdot \left(\frac{B}{h_0}\right)^3$$

The damping factor d is the force derived by the velocity:

$$d = \frac{dF_y(\dot{y})}{d\dot{y}} = \eta \cdot L \cdot \left(\frac{B}{h_0}\right)^3$$

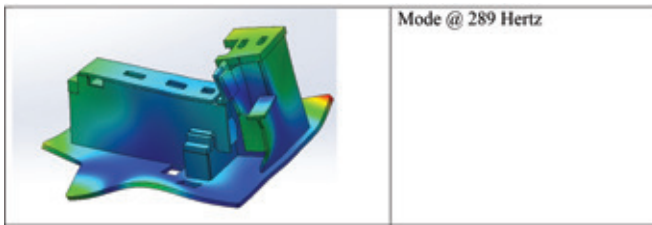
η =Dynamic viscosity
 y =velocity



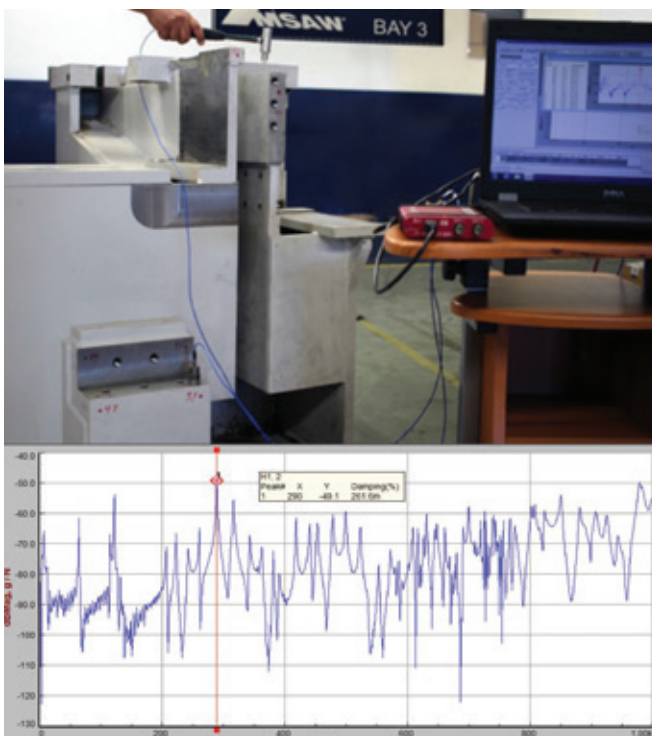
The formula shows that the **damping by the oil viscosity depends in highly disproportionate extent on the surface area and the gap height.**

How can you measure the damping of a structure

- 1) The natural frequency without damping is determined by using an FEA package, in our case Solid Works Simulation.



- 2) A suitable suspension for experimental modal analysis is chosen to keep the effect of the suspension small and to be close to a free boundary condition. The effect should be little for the natural frequency as well as damping. Since you always have to support the load you can just do this approximately, with suspension cords, springs or



other means. As a rule of thumb the natural frequency of the rigid body mode and suspension should be 1:10 of the lowest elastic mode. Helical steel springs usually have a negligible damping factor as well, and would be a good suspension.

- 3) The structure is excited with an impact hammer and the transfer function between an accelerometer and the hammer and the modal damping is calculated. We use a DataPhysics® Data Acquisition System for this step. The modal damping is the damping ratio D for a particular mode.

Vibration reducing gadgets for saw blades

Today more or less effective damping devices are on the market. AME has developed and tested stabilisers and dampers for the last 50 years; we started with a broom stick, and pushed it against the blade, while supported by a machine structure. As silly as it may sound, it proved to be very effective.

Besides designing a saw, using circular carbide or cermet-tipped saw blades with the best damping characteristics, it is important to stabilise the blade to obtain acceptable surface finish and tool life. A saw blade vibrates 90° to its plane and its amplitudes will cut a wider slot if not contained. This was discussed in more detail in our first article, "Effect and Prevention of Vibrations in Carbide Sawing". This results in larger chip volume, which will increase the sawing torque and could create torsional vibrations in the gear box. Torsional vibrations are very damaging to the carbide teeth and the gears, and must be avoided.

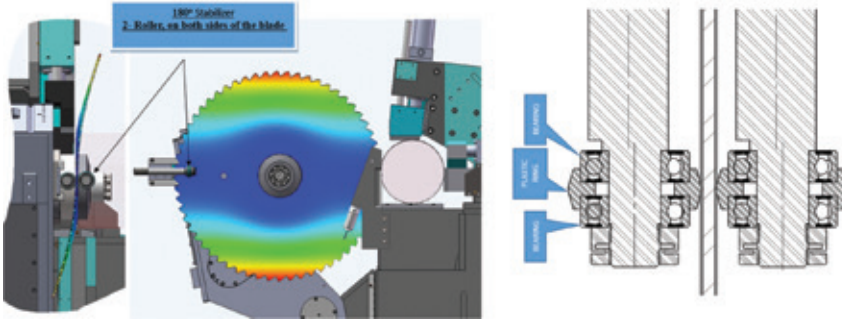
a) Stabilisers

To minimise vibration-related problems, carbide saw manufacturers developed gadgets that they mistakenly called "damping devices", but in truth they operate as a stabilising device. These mechanisms usually consist of hardened plates, which can be adjusted to suit the blade body thickness. These so-called damping devices actually do not dampen the blade, but only stabilise by constraining the vibration amplitudes of the blade by limiting vibration amplitudes. In fact, stationary hardened plates do not absorb any energy caused by vibration. True damping is only accomplished through dissipating the energy produced by the vibrating blade. The friction between the rotating blade and the stationary stabilising plates will create heat. Generally the saw blade has to be properly tensioned for stability purposes. Heat within the blade reduces the blade tension and, therefore, must be cooled by air. In order for the air to cool the blade there must be a small clearance between the stabilising plates and blade body for air flow, which unfortunately diminishes the effect of stabilisation.

b) Dampers

Damping requires absorption of the energy created by the forces of the amplitudes of the lateral blade vibrations. This can be done by using vibration-absorbing material for the dampers, using fluids as energy absorbers or other means.

AMSAW® developed a unique device using rollers.



Based on sophisticated test results using a Data Acquisition Instrument, laser triangulation sensors and Bentley® probes, we developed and patented a combination stabiliser and damper with the following characteristics:

- Anti-friction rollers instead of stabilising plates, eliminating any heat build-up through friction. The rotating bearings transfer the heat by ventilation too.
- A speciality-shaped damping ring contained between two anti-friction ball bearings. This ring is made of a special vibration-absorbing compound.
- An eccentric device allows pre-loading the blade with the rollers on both sides of the blade. This eliminates the gap on the present devices between stabilising plates and the surface of the saw blades and makes the device especially stiff.
- The eccentric adjustment and simple screw lock makes the device very user friendly and cuts the time for blade exchange to a fraction compared to the present devices on the market.

Damping and thermal issues often go hand in hand

For damping forces due to material deformation you need to use continuum mechanic models, which are complex because you have to solve a system of partial differential equation. Usually there is an interaction between mechanical and thermodynamic processes, since the material is heating up and many material properties are functions of the temperature.

Plastic is a good damping material, which indicates that high frequency vibrations will create much heat. But plastic is also a good thermal insulator, which leads to the problem that heat might destroy the damper material if not properly sized. Simple calculations show that this aspect should not be neglected.

Conclusion

- If you cannot avoid that a forcing frequency is matching a natural frequency of the structure you should at least have high damping at this mode to reduce the problem.
- Box ways are more expensive and more demanding on maintenance but have better damping than anti friction linear ways. Hardened roller elements rolling on hardened ways hardly dampen.

- There is a distinct difference between stabiliser and damper of a saw blade. A stabiliser constrains the saw blade but on the other hand a damper withdraws energy.
- In general you have two possibilities. Either you have a sub-critical or over-critical operation. Sub-critical means that the forcing frequency is lower than the natural frequency and over-critical means that the forcing frequency is higher than the natural frequency. In the past machine tool builders always tried to be as low as possible with the natural frequency and so they added a lot of mass. This way they didn't have to worry about the forcing and the natural frequency will match.

According to Newton's second law: when you have the same force that is causing vibrations and you increase the mass, the acceleration will go down.

Nowadays with enhanced simulation and measurement equipment you have a better understanding of natural frequencies and you can avoid problems by the right balance between mass and ingenuity. Smart systems with a lot of modal damping will help too. This will result in a better, more cost-efficient saw.

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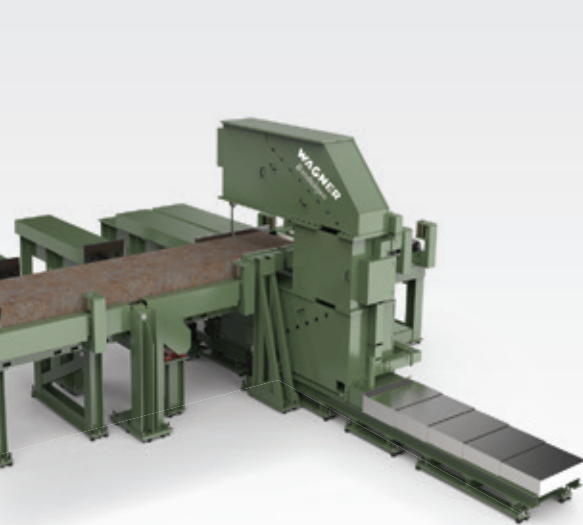
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