The international magazine for the tube and pipe industries

TUBE & PIPE TECHNOLOGY

25 years

January 2012 | Vol 25 No 1 | US$33

The Fives Bronx global tube & pipe finishing installation history in the OCTG marketplace is unmatched. When it comes to six and ten roll straighteners, tube and pipe end-facing and cutting solution and high pressure API hydrostatic pipe testers, the Fives Bronx team of engineers have a history of innovation on their side. We provide solutions to maximizing production up-time, while minimizing down-time. With a patented Quick Change and our COMPASS Software Systems, you'll have complete control of changeovers and exacting control of even the smallest in line adjustments.

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4. 滑軌成型機
5. C型鋼成型機
6. 浪板成型機
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3. Roll forming machine
4. Slide forming machine
5. C-shape steel roll forming machine
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7. Peripheral equipment for tube making machine
8. Forming roller
9. Pipe-bending mold

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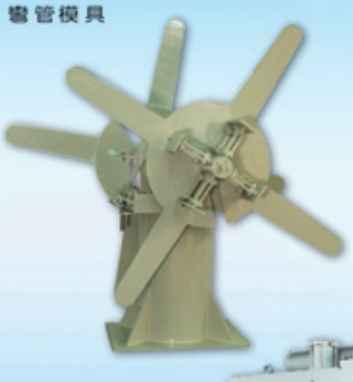
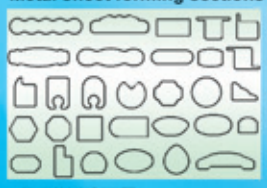
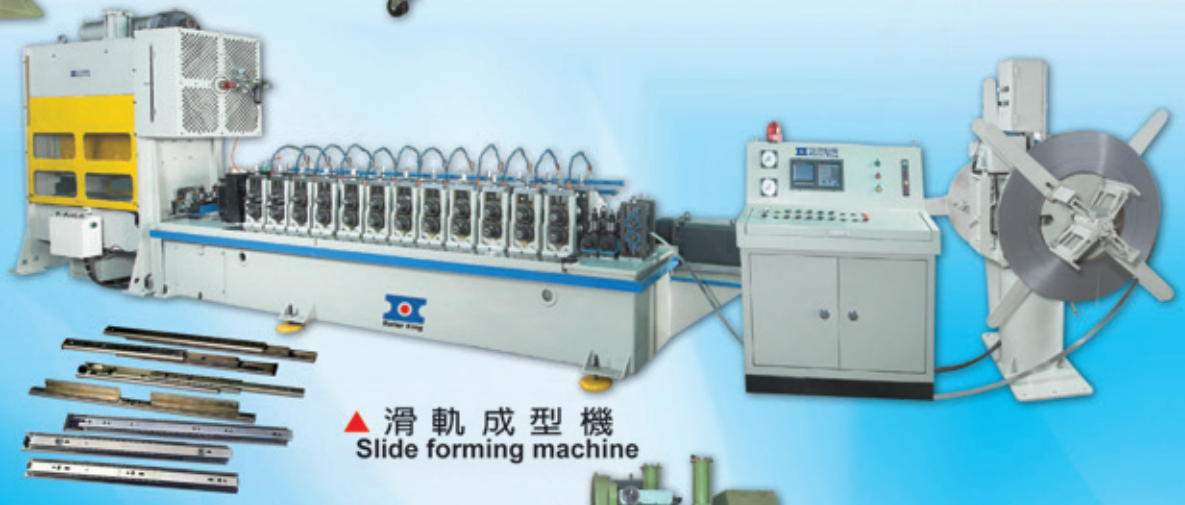


▲ 不鏽鋼管成型機
Stainless steel pipe making machine

金屬板件成型斷面圖
Metal sheet forming sections

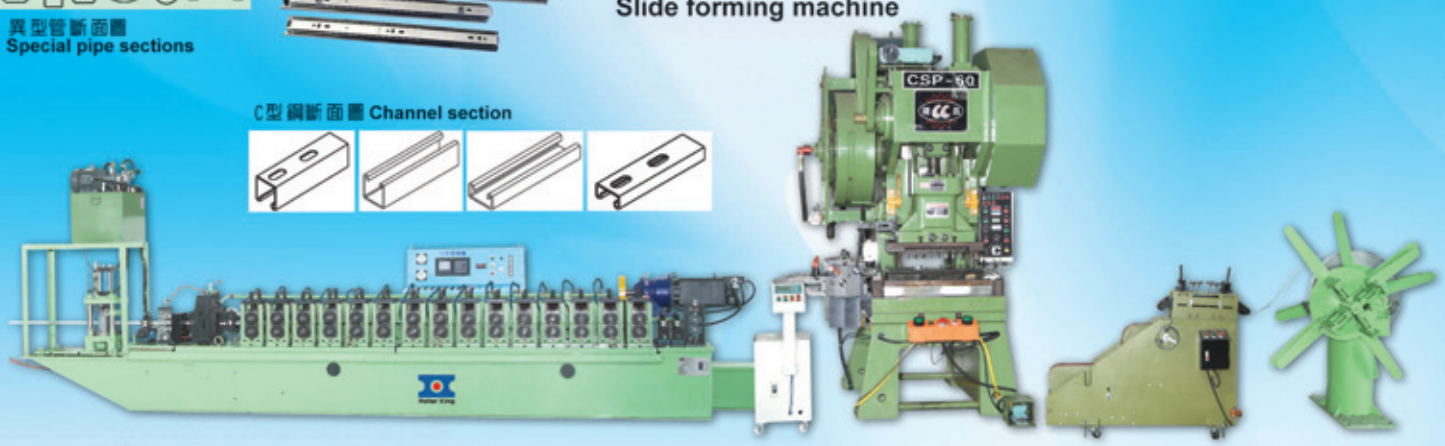


異型管斷面圖
Special pipe sections



▲ 滑軌成型機
Slide forming machine

C型鋼斷面圖 Channel section



▲ C型鋼成型機
C-shape steel roll forming machine

▲ 浪板成型機
Corrugate board forming machine

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EDITORIAL INDEX

TIANBAO,CHINA 2004 - API/ERW 8"-25"Ø

ORRCON,AUSTRALIA 2006 - API/ERW 8"-20"Ø

DRAGON PIPE,CHINA 2007 - API/ERW 8"-24"Ø

HALL LONGMORE,SOUTH AFRICA 2008- API/ERW 8"-24"Ø

GIPI,OMAN 2010 - API/ERW 8"-24"Ø

BHUSHAN STEEL,INDIA 2011 - API/ERW 8"-25"Ø

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The January Issue

It is a very proud day at Tube & Pipe Technology magazine as this issue marks our 25th anniversary. From its inception the magazine very quickly became essential reading and it remains the leading international publication for the tube and pipe technology industry.

The magazine was founded almost 25 years ago to the day by Mr John C Hogg, who many of you knew. It was an industry close to his heart and it was a particular dream of his to help the magazine (and tube technology producers) to reach previously untouched markets around the globe. There is no doubt that that vision was more fully realised than anyone could have imagined.

Probably the most fitting tribute anyone could pay to the magazine – and to the many people who have helped make it a success – is something a veteran of the industry said to me at the recent FABTECH 2011 show. He was trying to explain to his boss, who was new to the industry, why it is such a great publication. "I've travelled the world over the past 35 years selling tube machinery. Every factory that I've been to, no matter how big, how small or how remote – in India, Europe, Africa, China – all have one thing in common. At least one well-thumbed copy of TPT magazine on a desk." We hope that continues to be the case for another 25 years.

Rory McBride – Editor

Front Cover Story

Reika is an innovative organisation based in Germany that specialises in the development and manufacture of machines and lines for the tubular products industry. Based on methodical development, years of experience and know-how as well as the latest technologies and materials, Reika can provide machines and lines of high-performance according to any customer's demands.

The machines are built to the highest standards and offer solutions to the problems posed by ever-changing market requirements. Today, Reika is a worldwide leader in the manufacturing of turnkey tube processing systems and lines. Various worldwide patents are proof of continuous and innovative engineering.

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Website: www.reika.de

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Bending machinery

Manipulation of a length of tubing of various sizes entails vulnerability: to breakage, wrinkling, scratching, marking, humping, collapse, excessive springback, and link failure, among others. The methods by which these threats are circumvented may vary, but never the results. The sole standard applicable to the finished workpiece is always “bent the best way.”
The companies on these pages are some of the best in the world at this difficult task.

Finishing and end finishing

At some stage in the production process the tubes are close to completion – certifiable, deliverable, billable. But it is not finished until it is finished. Those charged with quality control in a state-of-the-art tube mill know this stage as the last checkpoint in the production phase of the cycle, hence the most important. Because rejection further along is always costlier than rejection earlier on, finishing and end finishing tend to be the province of perfectionists.

Industry looks to Tube 2012 and to Düsseldorf with growing anticipation

IN just under three months Tube 2012 will have come around again – the number 1 trade fair for the pipe and tube industries, will be presenting technology highlights from various sectors in the exhibition halls on the Rhine in spring 2012.

From 26–30 March the two leading international events wire, International Wire and Cable Trade Fair, and Tube, International Tube and Pipe Trade Fair, will be held concurrently in Düsseldorf for the 13th time.

Current registration figures for both trade fairs make the Düsseldorf trade fair organisers more than confident. At this early stage Tube boasts very positive interim results, with 805 exhibitors from 44 countries. Most European enterprises come from Italy, France, the Netherlands, Austria, Poland, Switzerland, Spain, Turkey, Germany and the United Kingdom. Also positive is the number of registrations received from the Czech Republic. At present, the exhibitors of Tube occupy 45,500m^2 of net exhibition space.

Tube occupies Halls 1 to 7a. Pipe and tube accessories can be found in Halls 1 and 2, trade and manufacturing follow in Halls 2, 3, 4 and 7. Forming technology is located in Hall 5. Pipe and tube finishing machinery is exhibited in Halls 6 and 7a, not forgetting the segment of plant and machinery in parts of Hall 7a.

Tube presents the complete spectrum ranging from pipe and tube production to processing. Ranges include raw materials, pipes and accessories, pipe and tube manufacturing machinery and second-hand machinery, tools and auxiliary materials for process engineering and measuring and control technology. Pipelines and OCTG technology, profiles and profile technology, testing technology and special areas such as warehousing automation and control systems complement the extensive ranges on show.

At this stage (correct as of early December 2011) 1,005 enterprises from 45 countries have already registered for wire. 2012 will again see the traditionally strong participation of exhibitors from Italy, Belgium, France, Austria, the Netherlands, Switzerland, Turkey, the United Kingdom and Germany. Also positive to note is the high number of registrations received from Sweden. The majority of overseas companies come from the USA, China, India and Taiwan. All of these 1,005 companies together currently occupy approximately 55,000m^2 of exhibition space.

Messe Düsseldorf – Germany
Website: www.tube.de

Tube Dusseldorf 2010

Trial facility for tube applications opens

PLASMAIT GmbH, a supplier of plasma heat and surface treatment lines for wire, tube and strip production, has opened a dedicated test facility for continuous annealing and cleaning of tubes. Tube manufacturers are welcome to test plasma heat and surface treatment on their materials at Plasmait's facility in Lebring, Austria.

The Plasma Treatment facility has been designed to perform heat treatment, degreasing and deoxidation on a wide range of ferrous and non-ferrous materials with OD range between 0.1mm and 10mm.

According to Plasmait's R&D director, Peter Ziger, the dedicated tube trial facility is now available to all tube manufacturers who strive to improve the quality of their tubular products. Plasma treatment will benefit most the applications with demanding surface quality requirements or challenging annealing requirements. Such applications are usually found in sectors such as medical, precision mechanical and energy sectors.

Other tube manufacturers may want to consider plasma annealing to reduce energy use, purging gas consumption or replace chemical surface treatments with dry, chemical-free degreasing, surface cleaning or deoxidation.

Manufacturers of coated tubular products may find plasma surface preparation prior to coating or metallic plating also an area of potential interest.

Since the introduction of plasma heat and surface treatment process in the wire industry in 2003 Plasmait has continuously improved the process and widened the application scope to include annealing and surface treatment of tubes and flat products. With over 50 deployments of plasma treatment lines worldwide Plasmait has established itself as a trusted supplier to the wire and tube industry.

Plasmait GmbH – Austria
Website: www.plasmait.com

Diary of Tube Events

2012

FEBRUARY

21-22	**AMI Tube & Pipe Conference** *Cologne, Germany* **Conference**	**Website**: www.amiplastics.com
22-23	**2nd Middle East Steel Tube & Pipe 2012** *Abu Dhabi, UAE* **Conference**	**Website**: www.metalbulletin.com
28 Feb – 3 March	**METAV 2012** *Düsseldorf, Germany* **Exhibition**	**Email**: metav@vdw.de **Website**: www.metav.com

MARCH

26-30	**Tube / wire Düsseldorf 2012** *Düsseldorf, Germany* **Exhibition**	**Email**: infoservice@messe-duesseldorf.de **Website**: www.tube.de www.messe-duesseldorf.de

MAY

7-11	**IFAT Ensorga** *Munich, Germany* **Exhibition**	**Email**: info@ifat.de **Website**: www.ifat.de
28-31	**Tube Russia 2012** *Moscow, Russia* **Exhibition**	**Email**: ryfischd@messe-duesseldorf.de **Website**: www.metallurgy-tube-russia.com

JUNE

26-28	**ITA Tube Conference** *Nashville, USA* **Exhibition**	**Email**: info@itatube.org **Website**: www.itatube.org

SEPTEMBER

25-28	**Tube China 2012** *Shanghai, China* **Exhibition**	**Email**: tube@mdc.com.cn **Website**: www.mdc.com.cn

OCTOBER

23-27	**EuroBLECH** *Hanover, Germany* **Exhibition**	**Email**: info@euroblech.com **Website**: www.euroblech.com
30 Oct – 1 Nov	**Tube India** *Mumbai, India* **Exhibition**	**Email**: dughl@md-india.com **Website**: www.tube.india.com

NOVEMBER

12-14	**Fabtech / AWS Welding Show** *Las Vegas, USA* **Exhibition**	**Email**: information@fmafabtech.com **Website**: www.fabtechexpo.com
27-29	**Valve World Expo** *Düsseldorf, Germany* **Exhibition**	**Email**: infoservice@messe-duesseldorf.de **Website**: www.messe-duesseldorf.de

2013

JANUARY

7-10	**Tube Arabia** *Dubai, UAE* **Exhibition**	**Email**: infoservice@messe-duesseldorf.de **Website**: www.messe-duesseldorf.de

Tube Russia returns in May 2012

FROM 28 – 31 May 2012 the trade fair trio Metallurgy-Litmash (International Trade Fair for Metallurgy, Machinery, Plant Technology and Products), Tube Russia (The International Tube and Pipe Trade Fair in Russia) and Aluminium/Non-Ferrous (International Trade Fair for Aluminium and Non-Ferrous Metals, Materials, Technologies and Products) will return to the ZAO Expocentr in Moscow.

The trade fairs will be jointly organised by Messe Düsseldorf together with its subsidiary Messe Düsseldorf Moscow and its Russian partner Metal-Expo. Supporting associations include the International Tube Association (ITA), the European Committee of Industrial Furnace and Heating Equipment Associations (CECOF), the European Foundry Equipment Suppliers Association (CEMAFON) as well as the European Metallurgical Equipment Association (EUnited Metallurgy) and the German Engineering Federation (VDMA).

The three trade fairs will present the latest innovations for the metal pipe and metalworking industries: Metallurgy-Litmash 2012 will include metallurgical plants and rolling mills, thermo process technology and foundry machinery as well as sheet metals, welding, cutting and joining technology and information processing equipment. Tube Russia 2012 will feature tube manufacturing machinery, raw materials, tubes and accessories, used machinery and process technology tools as well as measuring and control technology. Aluminium/Non-Ferrous 2012 will present plants, machinery and technology for aluminum and non-ferrous extraction and processing, raw materials and primary metal products as well as semi-finished and finished products.

According to the Russian Federation Ministry of Industry and Trade, the 2011 production volume of iron and steel will increase by 4 to 6 per cent. In addition to modernisation needs after the recession, the main projects driving the demand for iron and steel in the country are the APEC Vladivostok Summit in 2012, the Student Games in Kazan in 2013 and the Winter Olympic Games in Sochi in 2014. In addition, preparations for the World Soccer Championship in 2018 are already underway. Metallurgy-Litmash, Tube Russia and Aluminium/Non-Ferrous 2012 will be instrumental in successfully meeting the needs of the Russian market.

When the trade fair trio was last held in 2011, a total of 265 exhibitors from 24 countries showcased their products to 10,500 visitors (including attendees at the concurrently held wire Russia trade fair).

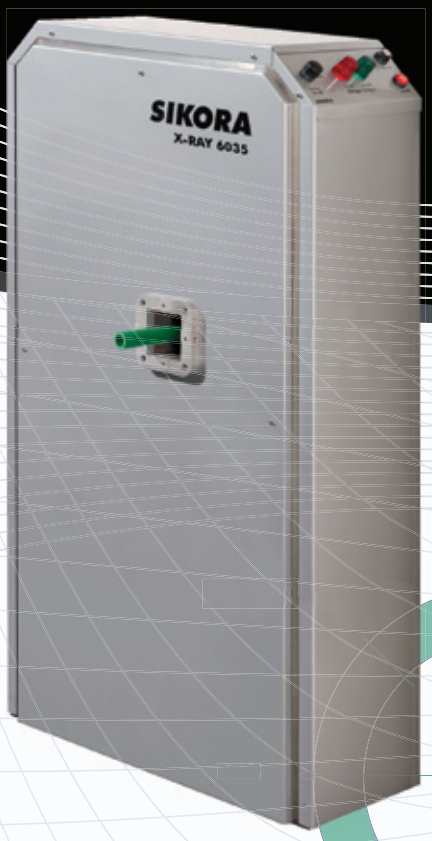
Messe Düsseldorf – Germany
Email: info@mdna.com
Website: www.mdna.com

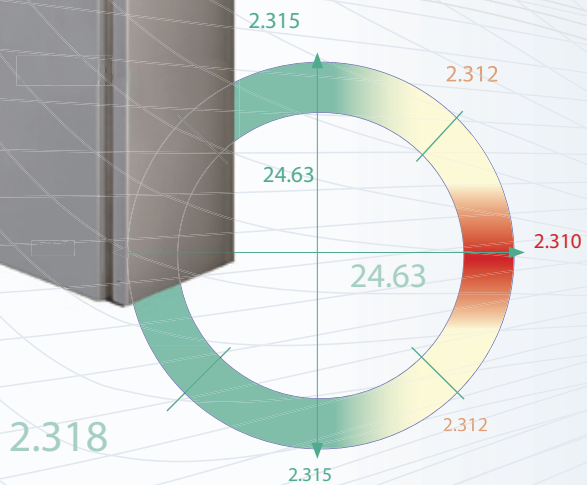
Tube Russia

www.sikora.net/xray6000

»The better you know our products the more you like them.«

David Carracoi
Head of Performance Improvement Department at SIKORA





Integrated in hose and tube extrusion lines the X-RAY 6000 measures online the wall thickness, eccentricity, the inner and outer diameter and ovality of products with a diameter range from 0.7 to 270 mm.

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Thermatool appoints new manager of materials engineering

THERMATOOL Corporation has welcomed Lesley D Frame, PhD as its new manager of materials engineering and development. Dr Frame will be an essential part of the continued growth of the Thermatool business worldwide, and she will be working to further improve the services provided to Thermatool customers.

Dr Frame received her BSc from Massachusetts Institute of Technology in 2004 in Materials Science and Engineering. Remaining in the same field, she received her MSc and PhD at the University of Arizona in 2007 and 2009, respectively. Upon graduating with her PhD she worked with solar thermal technology at University of Arizona, and Dr Frame spent eight months in Cardiff, UK as a Fulbright Scholar. Her research in the UK focused on the non-destructive analysis of residual stress relaxation in heat treated and plastically deformed metals using neutron diffraction and synchrotron x-ray diffraction. Dr Frame is an expert in metallurgical structure, properties, processes and performance. Her past research has included several international collaborations in a wide range of fields relating to materials science and engineering, including experimentation with, as well as characterisation and analysis of, phase change and heat treatment phenomena in several alloy systems. As a new member of the Thermatool Corp team Dr Frame will be managing HF welding research, developing new processes using variable frequency welding methods, and providing technical support.


Dr Frame

Thermatool Corp – USA
Email: mdidonato@ttool.com
Website: www.thermatool.com

Technip awarded major contract for accelerated production system

TECHNIP has been awarded a major procurement, installation and operation support contract by Petroleos de Venezuela SA (PDVSA) covering subsea, onshore and offshore facilities, for an accelerated production system on the Mariscal Sucre Dragon development, offshore Venezuela.

The Mariscal Sucre Dragon field is located around 25 miles North of Paria peninsula, state of Sucre, Venezuela at a water depth of 100 to 130m (328-427ft).

The project scope covers supply and installation of subsea flowlines; supply and installation of gas processing equipment onshore; and operational support for the subsea, offshore and onshore facilities.

Thierry Pilenko, chairman and CEO of Technip, commented: "This project builds on the strong relationship with PDVSA for ongoing work. It brings together for our client the combined expertise, know-how and skills of all our business segments, demonstrating the strength of our global footprint and of our integrated model."

Technip – France
Website: www.technip.com

Changes to Simona AG executive board to take place in 2012

EFFECTIVE from 1 January 2012, Fredy Hiltmann has been appointed a new member of the executive board of Simona AG.

Mr Hiltmann will oversee the area of corporate finance (chief financial officer). Having completed a vocational training programme in the field of business, Mr Hiltmann studied economics and business administration (HWV). He held senior positions at a number of global corporations, including Siemens AG and Georg Fischer AG. Most recently, Mr Hiltmann was employed as chief financial officer by the Metalor Group. Mr Hiltmann is a Swiss national.

By mutual consent with the board, chief sales officer Detlef Becker stepped down from his active role as a member of the executive board at the end of September 2011. He has been an executive board member of Simona AG since 1 April 2008. His role in the company will be assumed by Wolfgang Moyses, chief executive officer of Simona AG. The chairman of the board Hans-Werner Marx thanked Mr Becker for his contribution.

Simona – Germany
Website: www.simona.de

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FFX Mill

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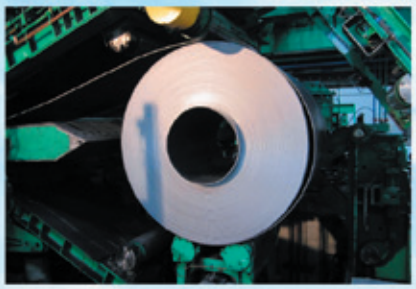

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http://www.nakata-mfg.com

Boosting productivity and delivery times

SMS Meer, Germany, has announced that it will invest around €60mn in the expansion of its Mönchengladbach site by 2015.

"We are increasing productivity, reducing delivery times and thereby safeguarding jobs at the site over the long term," said Dr Joachim Schönbeck, president and CEO of the plant construction and mechanical engineering company, at the symbolic groundbreaking on 14 July.

The modernisation of the machinery will reduce unit costs while shortening lead times. The expansion of the heavy-equipment bay will further improve production processes. "Overall we will be able to improve our ability to deliver considerably and can offer our customers an even better service," explained Dr Schönbeck.

Extensive training measures and the modernisation of the workshop will ensure that staff can operate the machinery perfectly, right from the outset. While other companies are shifting production to Asia, SMS Meer is demonstrating its belief in Germany as a production location. Dr Schönbeck commented, "Germany as a location offers benefits, particularly thanks to our committed, well-trained employees. If we can retain our place at the top here, then Germany, too, still has a good future in front of it as a production location." The investment is not linked to a reduction in the workforce.

SMS Meer GmbH – Germany
Fax: +49 2161 350 667
Email: info@sms-meer.com
Website: www.sms-meer.com

The symbolic groundbreaking ceremony

Roll-Kraft staffer named to Fabricators and Manufacturers Association

ROLL-KRAFT is pleased to announce that Patrick J Hopkins has been selected to be a part of the Young Professional Council. This is a group sponsored by the Fabricators & Manufacturers Association (FMA). Their mission is to identify, create, and establish mentoring and networking opportunities to reach potential entrepreneurs, business owners, and those interested in a manufacturing career.

The group provides speakers for manufacturing conferences, local schools, and various other opportunities, to enumerate the advantages and benefits of being involved in the manufacturing community.

Often, the group works directly with school guidance counselors to answer questions and challenge America's youth to investigate the field of manufacturing. Their effort is to dispel the old stereotypes of dirty and dangerous factory workplaces, and expose them to the updated, modern factory floor, with automated systems, and clean working conditions. There are many advantages in pursuing a career in manufacturing these days. Roll-Kraft is a leading producer of tube and pipe tooling and roll forming tooling. With 48 years of manufacturing experience, Roll-Kraft is very dedicated to the efforts of this council.


Patrick J Hopkins

Roll-Kraft – USA
Website: roll-kraft.com

Steel Industry Solutions

— Cage forming 4" - 14"

ADDA FER
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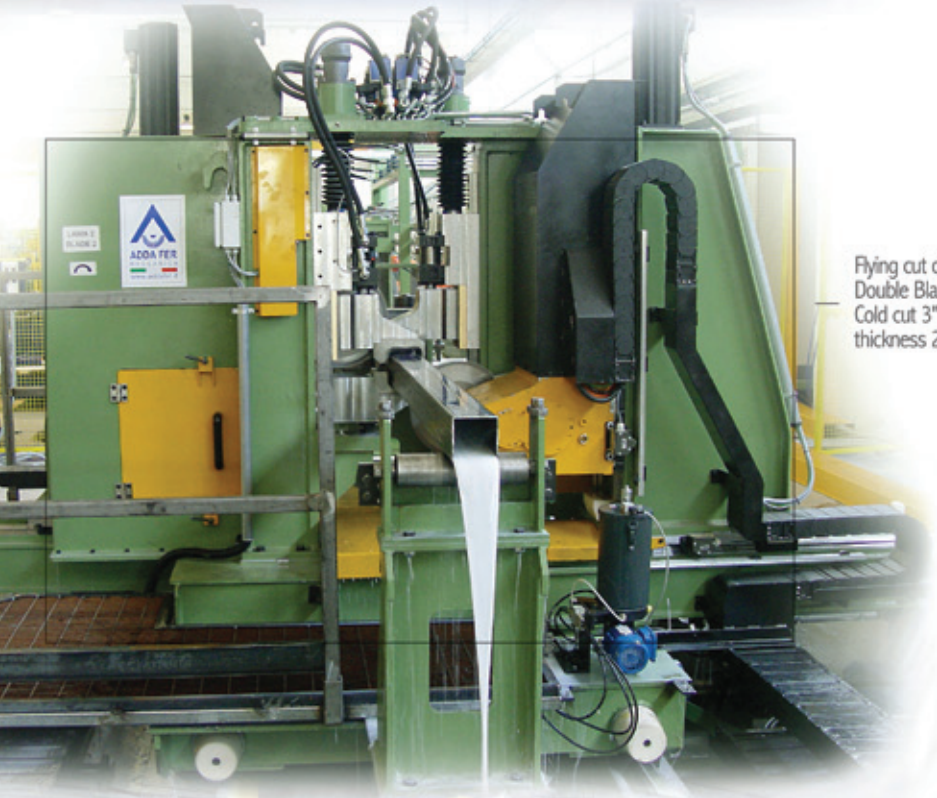

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thickness 2 mm. - 10 mm.

— Automatic packing
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ITA
International Tube Association

IL FUTURO PASSA DA QUI. THE FUTURE STARTS HERE

Royalton appoints new VP of sales

ROYALTON Industries has appointed Len Steinmeyer as vice-president of sales. Mr Steinmeyer will head up the company's sales and marketing efforts for its line of metal forming and coil processing equipment.

Mr Steinmeyer has 40 years' experience in the metal working industries and has devoted his career to helping customers improve their productivity and operations. He began his career in service for Kent Corporation in 1971, starting up machines and training operators on their use, and later moved on to service manager and finally head of the Tesgo Inc sales and marketing group. He is a graduate of Baldwin Wallace College, where he obtained a Bachelors Degree in Business Administration, and a graduate of Cuyahoga Community College, where he obtained an Associates Degree concentrating on Engineering Technology.

Mr Steinmeyer has written numerous papers and speaks frequently at conferences for the SME (Society of Manufacturing Engineers), TPAI (Tube & Pipe Association International) and the FMAI (Fabricators Manufacturing Association International), PMA (Precision Metal Forming Association) and the ITA (International Tube Association). He is a past member of the board of directors of the FMA (Fabricators Manufacturing Association) and a past chairman of the board (2001) of the TPAI. He presently serves as vice chairman of the North American board, ITA, and is a member of the Tube Producing Council of the TPAI.

Royalton Industries designs, manufactures and supplies machinery to the metal forming and coil processing industries. Equipment includes tube and pipe mill entry equipment, coil packaging equipment and coil processing equipment.

Royalton Industries Inc – USA
Email: Lsteinmeyer@royaltonindustries.com
Website: www.royaltonindustries.com

Rafter ships tube sizing mill

RAFTER Equipment Corporation has shipped a new RT-4500S tube sizing mill to a major North American pipe producer. The mill will be a replacement for an existing sizing mill that is to be decommissioned. The mill was designed to utilise existing roll tooling and drive train components.

Rafter manufactures tube and pipe mills, roll forming machines, cut-off machines, auxiliary and other related tube and pipe mill machinery. Additional services include rebuilding and upgrading mill equipment.

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

indometal 2013

INDOMETAL 2013 – Messe Düsseldorf Asia's brand new trade fair for the metal and steel industries in Southeast Asia is set to take place in Indonesia from 20 – 23 February 2013 at Jakarta International Expo. The 4-day exhibition is designed as a platform for metal and steel businesses to tap into Indonesia's vast markets.

"We are proud to announce that we are further expanding our presence in Southeast Asia, offering our customers and partners even more opportunities to widen and strengthen their presence in Indonesia and the region," says Gernot Ringling, managing director of Messe Düsseldorf Asia. With a population of 240 million and its ideal geographical position, Indonesia presents the largest market in Southeast Asia and the fastest growing economy after China and India. "We trust that these factors combined with growing domestic demand, investment in capacity addition and favourable government regulations will benefit all participants at indometal 2013," he added.

Moreover the steel industry in ASEAN registered a double digit growth of 16.8% in 2010, mainly due to the high growth rates in Indonesia, Malaysia and Thailand. The integration of Southeast Asia's economies into a single production base, the ASEAN Free Trade Area (AFTA), is yet another attraction of the region as tariff barriers are eliminated among its member countries.

indometal 2013 addresses all partners involved in the metal and steel industries from raw materials, processing and equipment to production and logistics. In order to provide transparency and to offer improved orientation the organisers have divided the range on display into six main segments.

With the theme 'Forging Ahead' the debut of indometal 2013 is jointly organised by Messe Düsseldorf Asia and local exhibition organiser PT Wahana Kemalaniaga Makmur (WAKENI).

Messe Düsseldorf Asia
Email: info@wakeni.com
Website: www.indometal.net

Innovative tubing

POLYVANCED GmbH, Germany, produces over 50 million metres of tubing per year at the Ceská Lípa works. Key sectors served by the company are the automation, automotive, drinking water, robotics and drive engineering industries.

"Everyone is talking about nanotechnology because in tubing it is a really promising issue for the future," according to polyvanced research chemist Andre Epmeier. "We are not only concerned with surface coatings here, but with a complete change in material properties using remarkable new nanotechnologies, for example in the direction of conductivity, permeability or fire inhibition." The challenge is to optimise the materials that polyvanced uses, to open up nanotechnology opportunities.

polyvanced GmbH – Germany
Website: www.polyvanced.com

OTO Mills reorganised business structure

OTO Mills is continuing its plan of growth and is redesigning its organisational and business structure. Appropriate acquisitions and investments – and the creation of a new operating unit for the production of forklift trucks – have provided an opportunity to reconfigure the company's identity in a group model that takes advantage of internal synergies that are in turn made available to all customers.

The evolution involves changes in corporate identity and the way it communicates its brand. The organisational change remains aligned with the management philosophy that has guided OTO Mills with continued success over many years.

Since 16 September 2011 OTO SpA assumes the role of parent company to which it refers three business units and one 100 per cent owned subsidiary: OTO Mills for the production of tube mill lines, OTO lift trucks for the production of forklift trucks, OTO Steel for the plant of Motteggiana specialised in metalworking, and OTO Automation for the former Elletre of Sovizzo (VI), which has become now completely owned by OTO SpA.

With more than 300 employees, a total area of 85,000m^2 of which 35,000m^2 is covered, and a production that is 100 per cent made in Italy, OTO SpA continues to consolidate and develop its own know-how over time.

Transforming and adapting to the requirements that the market expresses, the company is offering itself to customers as a partner of great reliability and excellence.

OTO Mills – Italy
Email: info@otocompany.com
Website: www.otocompany.com

Successful project commended

HYDRATIGHT'S attention to detail, professional approach, safe working practices and leak-free start-up performance so impressed senior Petrofac staff that a senior company engineer sent a letter of commendation following a recent project in Kuwait.

Hydratight was asked to assist in Petrofac's two-year Kuwaiti construction project for the Kuwait Oil Company – a 40" gas pipeline from KOC's North Kuwait Gas Booster Station to the Mina Ahmadi Refinery in South Kuwait. Construction is now complete and the pipeline is ready for commissioning.

Though Petrofac's main sub-contractor was responsible for bolting and tensioning work on the pipeline, the company awarded Hydratight a contract for fixing several hundred joints on 30", 36" and 40" lines directly. "We were in touch with Petrofac from the early stages of the project and made it clear that not committing sufficient resources to jointing and tensioning could be a false economy," explained Murali Narasimhan, Hydratight's Kuwait and India manager. "We suggested what the right specification should be and the potential cost of getting it wrong, and the company's engineers agreed."

In a letter of appreciation, Petrofac project construction manager Mr K Pradeep wrote, "Hydratight demonstrated a professional approach from the start and handled the job with professional work practice and the deployment of a capable team. Safe work practices resulted in zero safety issues and contributed to our overall safety objectives. We believe this is an important reference installation for Hydratight in Kuwait."

Petrofac has since suggested other projects on which Hydratight might help, and is also showing interest in Hydratight's innovative joint-integrity management system, to manage jointing maintenance on a major water injection project in 2012-13.

Hydratight has also been recognised by Singapore Takada Industries, a major contractor on Exxon Mobil's Jurong refinery in Singapore. Hydratight Singapore received an award from Takada for its efforts and contribution towards achieving 2.5mn project man-hours without a single occurrence of time lost through injury.

Hydratight's work on the project included bolting and on-site machining services. "The award was very welcome and gratefully received because Takada too is passionate about safe working and has received many similar awards for its excellence in this field," said Mark Foggin, Singapore business unit manager. "Likewise this trophy recognises our own commitment to safety at all levels and in all services. It's the result of a great team effort by all concerned."

Hydratight – UK
Fax: +44 121 5050 800
Website: www.hydratight.com

The Hydratight award

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Second line for SAW spirally welded steel pipe production

HANNIBAL Pipes SA, which started operation last May in the south of Spain, has entered into the second phase of its investment, with the installation of a new production line for manufacturing small/medium diameter SAW spirally welded steel pipes.

The line, with production range from 219 to 609mm (8" to 24"), will mainly supply pipes serving as centre pipes for concentrated solar power (CSP) projects.

Hannibal Pipes is already carrying out several projects supplying more then 100km of SAW spirally welded centre pipes for CSP investments within the Iberian Peninsula. The new production line, already under installation, is expected to start production by January 2012, adding around 20,000 tonnes/year to the existing installed capacity of 90,000 tonnes/year. Spain is a leader in CSP technology, with more than 50 projects approved by the government, and it exports its technology. The country added 400MW in 2010, taking the global CSP lead with a total of 632MW, and as of April 2011, another 946MW of capacity was under construction with a total new capacity of 1,789MW expected to be in operation by the end of 2013.

SAW spirally welded centre pipes are a key element in CSP technology due to stringent requirements/parameters in terms of roundness and parallelism tolerance and for subsequent treatments received by pipes before final installation.

The new line purchased by Hannibal Pipes allows high precision and was designed to meet such demanding specifications in cooperation with technical partner Byard Spiral Mill, one of the main suppliers of equipment for SAW spirally welded steel pipe production.

Hannibal Pipes SA is active in the manufacture of SAW spirally welded steel pipes for water, oil and gas, solar, piling, infrastructure applications with diameters between 219 and 2,540mm (8" and 100") and thickness up to 25mm. Located in the south of Spain, in an area directly connected through railway with Cartagena Port, Hannibal Pipes also designs and manufactures a large range of steel special pieces, including bends, T connections, sleeves and couplings.

Hannibal Pipes SA – Spain
Email: info@hannibalpipes.com

New group unites coatings companies

THE Axson group, created in 2011, brings together BS Coatings, Revocoat and Axson Technologies to become a leader in high performance operational polymer formulation.

"Our three businesses together represent a major asset for Axson's customers who will now have access to a broader range of solutions," commented Charles Churet, chairman of Axson. "And every customer will benefit from the synergy of the expertise, R&D facilities and worldwide presence of these three businesses."

Axson specialises in solutions for design, creation, assembly and protection in industrial transport, energy, water, sports and leisure, construction and infrastructure markets. With 25 subsidiaries and 16 production and R&D sites, Axson has a presence in most industrial countries in Europe, Asia, the Americas, the Middle East, India and Africa, and also has a well-established parallel retail network.

Axson is further strengthening its global presence with the construction of a new Revocoat formulation plant in Kolomna, Russia, for the local automotive market. It will also be a shared platform for future developments of the group's three businesses. "This new plant will enable us to double our production capacity compared to the existing plant and also meet growing local demand in the automotive sector," said Mr Churet.

Axson has also announced BS Coatings' acquisition of equity in SIPCO (Saudi Industrial Paint Company).

The joint-venture with the Saudi group UNIVEST plans to develop SIPCO's industrial paints by introducing technologies for the production of BS Coatings' pipelines under the Eurokote® and Endoprene® brands for the Middle Eastern market.

Axson – France
Website: www.axson-group.com

Representative named at CML

CML USA, Inc, a manufacturer of tube, pipe and profile bending and metalworking machinery, has announced the addition of Gary Parks to its sales force.

Mr Parks will serve as Ercolina's new manufacturer's representative responsible for the northern portions of California and Nevada. He brings with him 27 years of metalworking and fabricating sales experience.

CML USA Ercolina – USA
Fax: +1 563 391 7710
Email: info@ercolinacnc.com
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Gary Parks

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T&H Lemont delivers “dual capacity” high frequency quick-change welded tube mill

T&H LEMONT has recently installed a new, dual capacity, quick change tube mill system. This mill will produce standard mechanical rounds as well as hollow structural shapes.

The dual capacity tube mill system was developed by T&H Lemont in conjunction with a long time, repeat customer. The customer approached T&H Lemont with the need to increase production of a wide range of structural products in a limited production area. The dual capacity mill allows for a greater range of production sizes in a minimal amount of floor space.

In effect, the dual capacity mill gives a pipe and tube producer the ability to produce a range of pipe and tubing normally produced from two different sized mills. With a dual capacity mill, the entire entry and exit equipment is designed to be universal, as are the mill bases and drive systems. The “dual capacity” of a mill is achieved by two different size sets of quick change subplates designed to mount on a single base system and utilise a universal drive system.

One set of subplate mounted driven stands (T&H Model WU35M-12) with 3.5" shafts was designed for producing tubing from 1.25" to 5" with wall thickness from 0.095" to 0.25".

The second set of subplates with 6" shafts (T&H Model WU60M-12) was designed to produce tubing from 2.5" to 8" diameter with wall thickness from 0.125" to 0.5". The distance between the stands was optimised for the products produced on each set of subplates. Each set of subplates included three driven squaring clusters to form the shapes. Production was increased and change-over times minimised by the T&H AutoSet automatic stand adjusting system. This motorised, programmable system allows the operator to make “push-button” roll stand gauge changes.

Additionally, this mill was designed to utilise an overhead crane system to assist in the change out of the subplates. The subplates are held to the base by a special hydraulic clamping system. This allows the subplates to be connected rigidly and precisely to the mill base and, when necessary, disconnected from the base quickly and efficiently.

T&H Lemont – USA
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Website: www.thlemont.com

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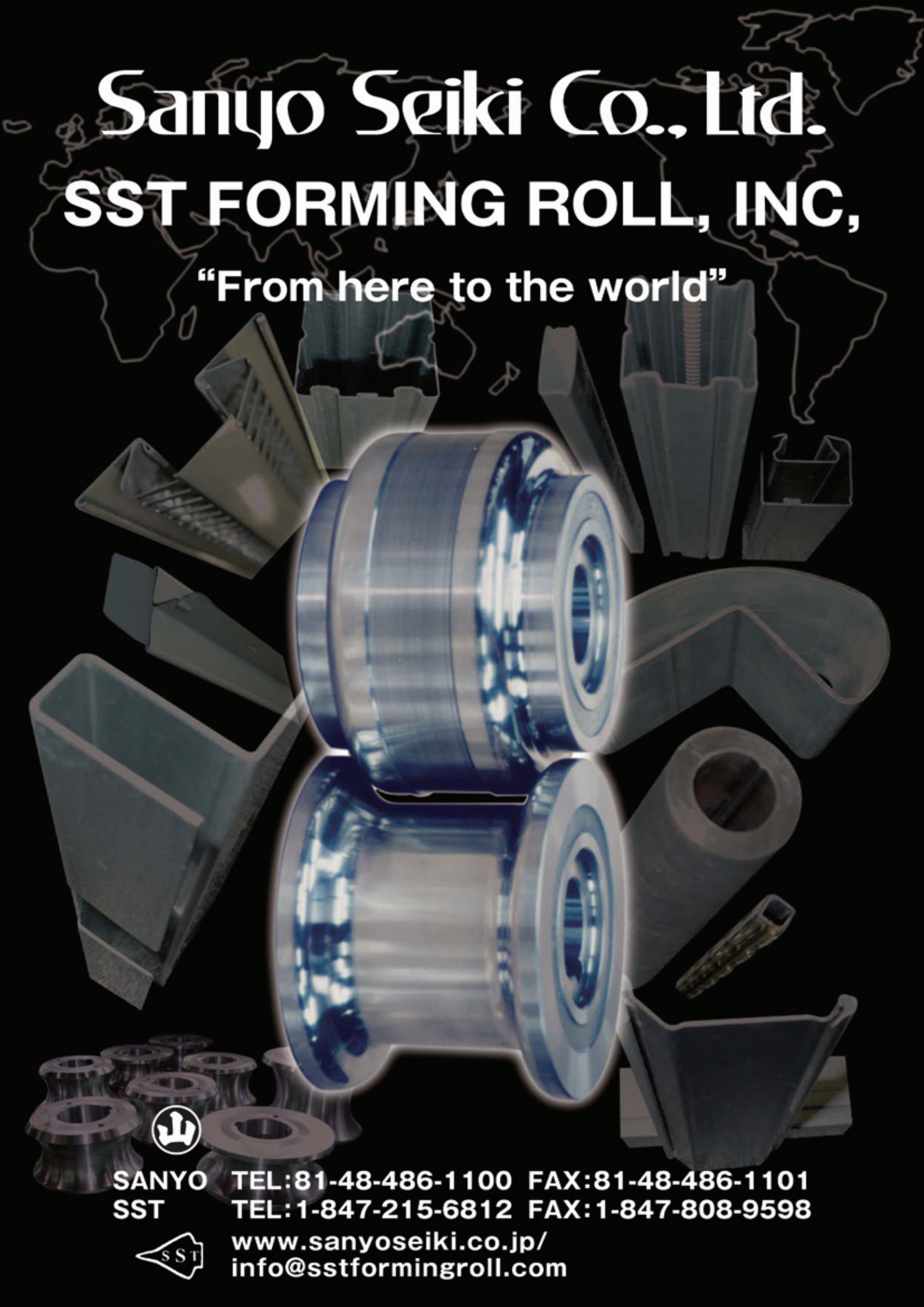

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info@sstformingroll.com

OMS manages pipe measurement and fit-up logistics for Subsea 7

SPECIALIST pipe measurement technology company for the oil and gas industry, Optical Metrology Services (OMS) Ltd, has completed a pipe measurement and fit-up project for Subsea 7 on the Exxon Mobil-operated Oso gas/condensate field off the coast of Nigeria.

Using its Smart-Fit™ software, OMS avoided any pipe fit-up problems, providing Subsea 7 with fast, good pipe fit-ups ready for the welding stage. Smart-Fit uses pipe measurement data to predict and control fit-up, before the pipes are brought into the bead stall for welding. This prevents production delays due to poor fit-up and manages the assembly of problem pipes to maximise welding productivity.

Onshore in Nigeria, two OMS engineers used OMS' PipeChecker™ laser-based measurement tool to measure the geometry of the internal walls of more than 1,500 pipe ends. The pipes were then delivered by barge to Subsea 7's pipe laying vessel, Polaris. Onboard, OMS engineers used Smart-Fit to sequence the pipes for best fit-up.

Pipe measurement data was made available to a Smart-Fit station onboard Polaris. This comprised a laptop located prior to the firing line. Each pipe in turn was identified and logged into the software, which then analysed the fit-up, enabling OMS engineers to mark the best rotational (and datum) position on each pipe end.

In the bead stall, these marks were aligned to achieve the best rotational position so that pipe misalignment was minimised. Any problem pipes that would not have fitted at the specified Hi-Lo were also indicated in advance so that they could be re-sequenced or removed. Production delays due to mismatched pipes were therefore avoided. Dr Richard Gooch, director of technology at OMS said: "In order to meet stringent acceptance criteria for the welds on this project, Subsea 7 asked OMS to manage pipe measurement and fit-up, both onshore and offshore during the pipe laying process. We are very pleased to report that this project was extremely successful. Everything worked perfectly and we managed to avoid any pipe fit-up problems, which resulted in no delays to the pipe welding process or repairs."

This project consolidates OMS' position as the leading provider of solutions for pipe fit-up, including stringent CRA applications. The Oso oil field is located offshore in the Bight of Biafra and is Nigeria's largest offshore gas/condensate project. Offshore facilities include eight platforms. A 35-mile seabed pipeline transports the condensate to storage tanks located onshore at the Qua Iboe Terminal.

OMS – UK
Website: www.omsmeasure.com

Marmon/Keystone invests in saws

THE installation of two horizontal band saws at Marmon/Keystone's Atlanta branch was recently completed, for a total of three new saws at the facility in 2011.

An Amada PCSAW 530, with a capacity of 20" OD, and an Amada HFA700 CII, which can handle material up to 28" OD, are both fully operational. The saws feature high speed, close tolerance cutting with pulse-cutting technology. An Amada PCSAW 330 that was purchased earlier in 2011 has a 13" OD capacity. The new equipment was acquired in order to position the location for future growth. "These upgrades will increase production, allowing us to take on new business and provide better service for existing customers," reported Russ Kilby, Atlanta branch manager. Plans are also in the works for an enclosure to shelter the new equipment.

The company has also installed two horizontal band saws at its Spring Valley, Illinois warehouse: an Amada HFA530CNC, with a capacity of 21" OD, and an Amada HFA700 CII. The dual column, high-speed saws each feature close tolerance cutting.

"This new equipment will improve our output and help us satisfy our customers' production requirements," said Kevin Fogarty, Chicago district warehouse manager. The company now operates a total of four saws to meet customer demands in Spring Valley, Marmon/Keystone's newest service centre, situated just west of the Chicago Metro area.

Marmon/Keystone LLC – USA
Email: sales@marmonkeystone.com
Website: www.marmonkeystone.com

Expanding sales

BUTTING, Germany, has strengthened its sales team, with the appointment of Simon Howell as manager for the Middle East. Mr Howell worked with Butting as a key supplier for more than twenty years, supporting the completion of a number of demanding projects in the oil and gas industry.

The Butting group's strategy of becoming geographically closer to the customer for particular services or products was also to be implemented in the Middle East. By asking Mr Howell to join them, the company gained an experienced figure from the oil and gas industry to intensify the exchange with customers in the region.

H Butting GmbH & Co KG – Germany
Website: www.butting.com

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STELLAR

Laser firm to open site after £800,000 investment in East Midlands

UK firm SSC Laser Cutting is anticipating 2012 to be its most lucrative year to date after announcing the introduction of a new East Midlands manufacturing site.

SSC, which specialises in both flat bed and tube laser technology, will accelerate its national expansion by establishing the new manufacturing site. The firm, based in Hixon near Stafford, has invested £800,000 in two new Bystronic Byspeed Pro 3015 flat bed lasers, and will install one of the machines at Castle Donington.

The company had challenged its sales offices in Sunderland and Castle Donington to compete for the new machine on the basis of who had performed the best at the end of the company's financial year. With the other machine to be installed at the manufacturing centre in Hixon, company directors subsequently appointed Castle Donington in the East Midlands as the new manufacturing site.

Sales director Andy Evans commented, "We've been a customer of Bystronic since our inception in 2000 and we've developed an extremely strong partnership in that time. We renew all of our machinery on a five-year basis, so one of the machines will be installed at HQ to replace the oldest machine there. The other will be installed at Castle Donington. Currently the site employs three people and is used purely as a commercial office." The company was anticipating the site being up and running as a new manufacturing base at the start of 2012.

Following the end of the financial year on 31 August, SSC Laser Cutting announced a record annual turnover of over £5m, £1m up on the previous financial year. The order of the two new flat bed laser machines continued two years of significant investment in the business, including the recent installation of an £800,000 Adige LT8 tube laser cutting machine and a new state-of-the-art business management system.

SSC Laser Cutting – UK
Fax: +44 1889 270242
Email: sales@steelservicecentre.co.uk
Website: www.steelservicecentre.co.uk

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Slab caster order from Indonesia

PT Gunung, Indonesia, has awarded SMS Siemag, Germany, an order for the supply of a single-strand slab caster for operation at its Bekasi works in the Indonesian province of West Java.

The caster, with an annual capacity of 1.2 million t of slabs, will produce 220 and 250mm thick slabs that are between 800 and 2,100mm wide. The range of grades will comprise structural steels as well as pipe and heavy-plate grades.

PT Gunung's new caster will produce high-quality slabs for further processing in its own Steckel and heavy-plate mill. In the past, slabs were bought out. Now a higher added value accompanied by a better quality will be achieved.

The caster will be equipped with modules from the Intelligent Slab Casting (ISC®) package, which will ensure optimal plant productivity and slab quality.

These modules will include a hydraulically powered resonance oscillator, a mould with remote-adjustable narrow faces for changing the slab width during casting, as well as a mould monitoring system.

The horizontal part of the strand guide system will use position controlled Cyberlink segments.

Dynamic soft reduction in combination with the metallurgical process module dynamic solidification control (DSC) to control secondary cooling will allow the production of segregation-free slabs.

SMS Siemag's scope of supply includes the engineering, mechanical equipment and hydraulics plus the X-Pact® electrical and automation system, which will be commissioned according to the 'Plug&Work' concept. Commissioning of the caster is scheduled for the middle of 2013.

SMS Siemag AG – Germany
Website: www.sms-siemag.com

Contract awarded

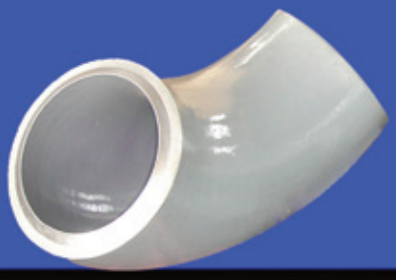
TECHNIP has been awarded by Valiant Causeway Limited a lump sum contract, worth approximately €33mn, for the Causeway field development.

This field is located about 450km northeast of Aberdeen, Scotland, at a water depth of 150m.

The contract covers engineering, procurement, installation and commissioning of rigid and flexible pipelines, subsea equipment as well as umbilicals, which will be manufactured by Technip's wholly owned subsidiary DUCO under a separate contract.

Technip's operating centre in Aberdeen will execute the contract. Rigid pipelines will be welded at Technip's spoolbase in Scotland, while the flexible pipelines will be manufactured in France.

Technip – France
Website: www.technip.com

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Rosendahl to reveal new developments

ROSENDAHL Metal Tubes & Hoses provides manufacturing solutions for smooth and corrugated tubes and hoses with diameters from 4mm to 200mm at walls of 0.1 to 4mm with highest demands regarding precision and corrosion resistance.

The main technological competencies are in the fields of metal forming, welding (TIG, laser and plasma welding), in-line heat-treatment, tube cold working, calibration and corrugation of circular round products for solutions for processing high-alloyed stainless steels, nickel-base alloys, copper, aluminium and titanium.

At Tube Düsseldorf 2012 Rosendahl Metal Tubes & Hoses will present new advancements and technology highlights, including the latest developments for the application fields of solar tubes, heating tubes, hygienic and process tubes, automotive industries and turnkey solutions. Rosendahl Metal Tubes & Hoses will especially focus on solutions for processing of titanium.

Its staff will be pleased to welcome visitors in Hall 06, Stand No G19 to answer questions. Furthermore its business unit Rosendahl Cable & Wire will be presenting its products at wire Düsseldorf 2012 in Hall 09, Stand No A60.

Rosendahl Metal Tubes & Hoses – Austria
Website: www.rosendahlaustria.com

Dr Jeffrey Packer joins STINA's board

THE Steel Tube Institute of North America (STINA) has announced that Dr Jeffrey Packer has agreed to serve on the board of its HSS committee. In this capacity, Dr Packer will advise board members on a variety of issues relating to steel hollow structural sections (HSS).

Dr Packer serves as the Bahen/Tanenbaum Professor of Civil Engineering at the University of Toronto, Canada. He is a licensed professional engineer in Ontario and the UK, a Fellow of the American Society of Civil Engineers, a Fellow of the Institution of Civil Engineers (UK), and has served on the editorial boards of several journals. The Steel Tube Institute was formed in 1930 when a group of manufacturers joined forces to promote and market steel tubing.

Steel Tube Institute of North America
Website: www.steeltubeinstitute.org

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5/8" slitting line commissioned

HERR-VOSS Stamco is a designer and manufacturer of slitting, cut-to-length, tension levelling, precision roller levelling and other coil processing equipment. The company has completed the commissioning of a 5/8" x 76" wide slitting line for Atlas Tube at its Harrow, Ontario facility.

The line was designed and fabricated in Herr-Voss Stamco's Pennsylvania facilities, and is capable of running 5/8" thick 80,000psi yield steel at speeds up to 300fpm. The line also handles coils up to 80,000lb. Features of the line include a quick change slitter head injection system and quick load separator arbors for efficient tooling set-up changes, as well as Herr-Voss Stamco's unique threading clamp design that allows for rapid and easy insertion of multiple strands into the recoiler gripper slot.

The line will allow Atlas Tube to process in-house the material it needs to feed its existing tube mills. "As we investigated ways to become more efficient in our production of steel tube and improve our delivery of service to our customers, we turned to Herr-Voss Stamco," commented John Higgins, executive vice president, operations at Atlas Tube. "We believe that their state-of-the-art slitter will help us make the performance improvements we desired."

Atlas Tube, a division of the JMC Steel Group, was founded in Harrow, Ontario in 1984 and has been manufacturing hollow structural sections (HSS) for over three decades. The company has five production facilities, producing in excess of 1.4mn tons of HSS tube annually. Its steel tubing products are used in demanding applications including commercial and industrial building columns, solar support structures, sports stadiums, bridges, mobile construction equipment, railcars and oil rigs.

Herr-Voss Stamco – USA
Email: sales@herr-voss.com
Website: www.herr-voss.com

Atlas Tube – Canada
Email: sales@atlastube.com
Website: www.atlastube.com

SEUTHE

Meet us at the corporate booth of the ASMAG Group in hall 6 / booth A02. We look forward to talking to you!

Tube Düsseldorf

SEUTHE

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www.seuthe.com

ASMAG Group

ASMAG Group

experience & excellence

SEUTHE became a part of the ASMAG Group in 2010 allowing the group to now offer the whole process for the production of precision steel tubes under a single umbrella: from coil to finished tube.

ASMAG

ASMAG is a leading manufacturer and supplier of machinery and equipment for the international steel tube industry. The product range covers pointing machines, drawing machines, straighteners, multiple sawing lines, testing equipment and stacking and bundling systems. For the non-ferrous metal industry ASMAG provides innovative solutions for copper tube production with continuous drawing machines, spinner blocks, level winders and finishing machines. The strengths of ASMAG are the efficient engineering, the high quality of manufacturing and the reliable personal support service.

www.asmag.at

Cheltenham Induction Heating changes its name to Ambrell Ltd

AMBRELL, a manufacturer of induction heating systems, has announced that it is changing the name of its UK operation from Cheltenham Induction Heating to Ambrell Ltd.

Ambrell acquired Cheltenham Induction Heating in 2005. The acquisition resulted in an integrated organisation that has benefitted from the synergies that each operation offered.

Ambrell's European operations have expanded considerably since the 2005 acquisition, as has its brand recognition, so it was decided to bring its UK operation under the parent brand although the name change will not impact day-to-day operations at the UK location. All contracts remain valid, the operations in Cheltenham are unchanged, and Cheltenham Induction Heating's customers will continue to receive the same level of service.

"Given the continued growth we're enjoying across Europe and the world, it made sense to bring Cheltenham Induction Heating under the Ambrell brand," said Ambrell vice-president of business development Bruce N Stewart.

"We exhibit at a wide range of tradeshows and events, have customers with locations in multiple countries, and by changing the Cheltenham Induction Heating brand to Ambrell Ltd, it will minimise confusion across the continent and maximise our marketing investments."

Ambrell products are CE certified and manufactured in an ISO9001:2008 certified facility to ensure quality.

Prospective customers can leverage the company's Applications Lab to ensure systems are built to their heating requirements.

Ambrell has installed over 10,000 systems in more than 50 countries.

Ambrell Ltd – UK
Fax: +44 1242 224146
Email: salesuk@ambrell.com
Website: www.ambrell.com

Water resources to serve children in India

BLACK & Veatch, a global engineering, consulting and construction company, is providing clean, safe drinking water to impoverished children and their families, supported by Children International, a US-based humanitarian organisation, by funding construction of water wells in India. The company's Building a World of Difference Foundation funded the construction of four tube wells near Kolkata, India, where approximately 300 families and 250 children attending a nearby school are benefiting from new sources of water.

"Each of these wells will provide clean drinking water to families who would otherwise not have it," said Dean Oskvig, president and CEO of Black & Veatch's global energy business. Mr Oskvig also serves as the chairman of Children International's board of directors.

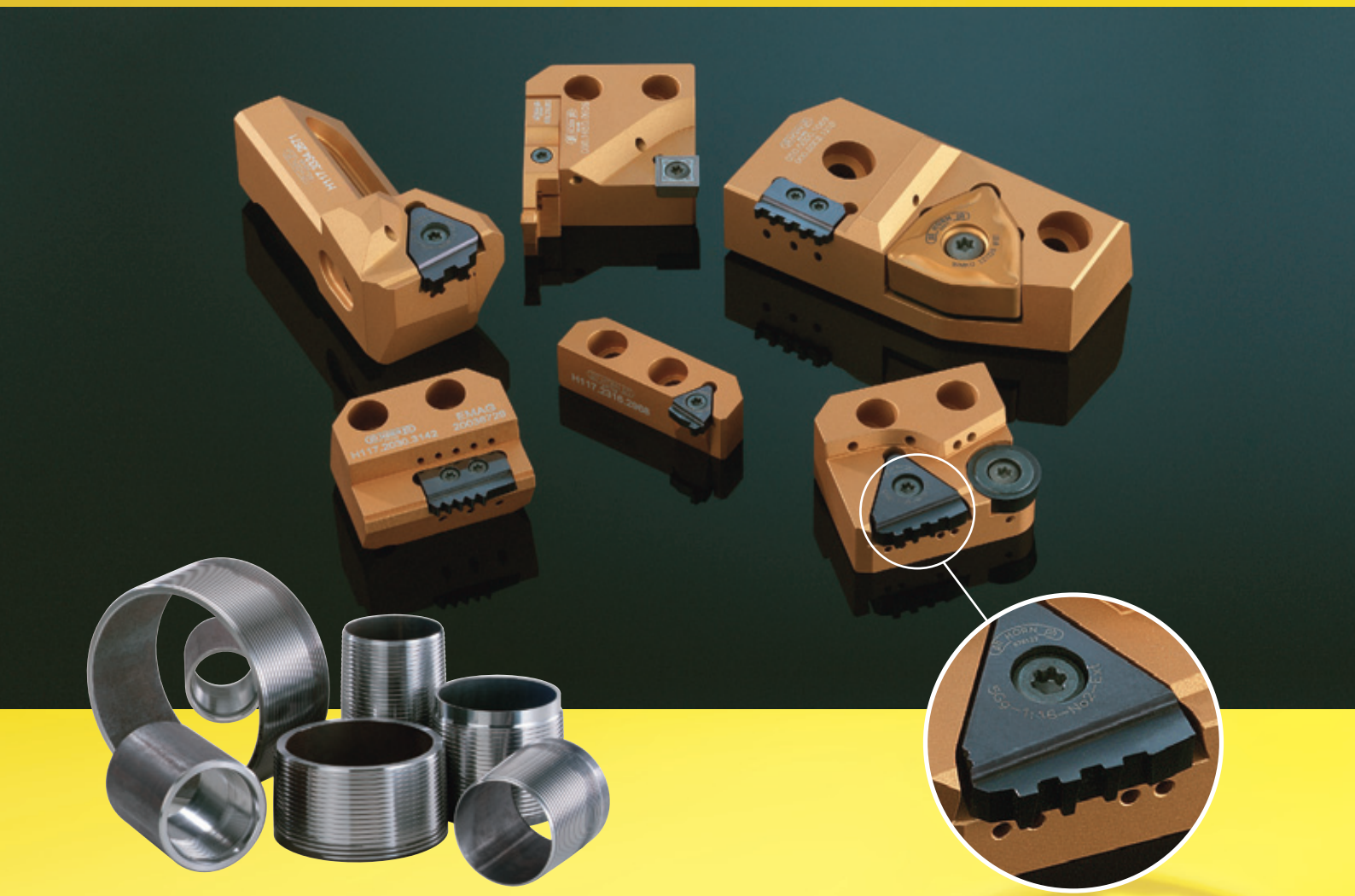
In India building tube wells is a good method to provide clean water to communities. A tube well is a type of water well in which a long 5" to 8" pipe is bored into the water table. The lower end is fitted with a strainer, and a pump at the top lifts water to fill a concrete reservoir to facilitate bathing or washing. The wells are then used as a community water source for families lacking running water.

The Building a World of Difference Foundation is committed to improving the infrastructure of communities where Black & Veatch works, as well as focusing on the betterment of education, health and human services, the environment, and public safety and emergency services. This commitment is also underscored by the fact that many of the children and families who will benefit from the tube wells live on less than $1.25 a day, in greatly under-developed, poverty stricken areas. Children International provides children around the world with medical and dental care, educational support and critical life-skills to help them become healthy, self-reliant adults.

Black & Veatch – USA
Website: www.bv.com

Children International – USA
Website: www.children.org

HORN - THE LEADERS IN GROOVING TECHNOLOGY



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Tolexpo 2011 sees big growth in visitors

TOLEXPO, the international show for sheet metal, coil, tube and section equipment, took place in Paris, from Tuesday 15 to Friday 18 November 2011.

The event was a success for two major reasons, said the organisers: a growing number of exhibitors compared to Tolexpo 2009, and the quality of and satisfaction expressed by visitors who were primarily decision-makers with real purchasing power.

Tolexpo 2011 confirmed its position as a key event dedicated to sheet metal, coil, tube and section equipment. Tolexpo continued its work by achieving its major objectives to bring the market together and develop loyalty and to represent the sector effectively.

More than 200 exhibitors were present at Tolexpo 2011. As well as French companies, a large number of international manufacturers who had not exhibited in France for a number of years, and others who had never exhibited in the country before, chose to take part in Tolexpo to reinforce their market presence.

Today, 45.2 per cent of companies exhibiting are from outside France, whereas at the first Tolexpo the figure was just 10 per cent. This strong growth is a result of the specific attention paid by Tolexpo to this point in its development objectives.

Australia, Belgium, Bulgaria, Denmark, Finland, Germany, Italy, Japan, the Netherlands, Portugal, Spain, Slovakia, Switzerland, Turkey, United Kingdom and the US are among the countries represented at Tolexpo 2011.

The number of visitors reached 11,180 (compared to 10,418 registered in 2009): an increase of 7.3 per cent.

20 per cent came from abroad (compared to 15.96 per cent in 2009), much to the satisfaction of exhibitors, the majority of whom spoke of a high level of interest on the part of their potential clients. According to exhibitors, and to visitor analysis, the majority of visitors had real purchasing power and clear ideas about the specific solutions they required, generating a significant amount of business and resulting in the signing of several contracts at the trade show itself.

The major objective is to create a technological showcase which will bring the expertise of sub-contractors together with that of production equipment manufacturers.

Last but not least, the ongoing, complementary partnership with Midest, the global sub-contracting show and Maintenance Expo, the maintenance solutions show, made the show a unique event bringing together the entire industrial production chain under one roof: equipment and investments with Tolexpo, expertise with Midest, and services with Maintenance Expo.

The next in the series will take place in November 2013.

Tolexpo 2011
Website: www.tolexpo.com

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Expansion of seamless tubular products

SUMITOMO Corporation has acquired a 19.47 per cent interest in V&M Two LLC, a manufacturer of small diameter seamless steel pipe based in Ohio, USA, from Vallourec SA.

Development of unconventional energy resource has recently been growing in the US, including oil and gas shale plays, for which production is expected to expand over the medium- to long-term. Concurrently, demand for the small diameter seamless OCTG used in these shale plays is increasing.

V&M2 will manufacture these pipes and supply them to the major shale plays such as Marcellus Shale in Pennsylvania, one of the largest OCTG consuming areas in the US.

V&M2 has commenced construction of a production facility to manufacture small diameter seamless steel pipes on a property adjacent to the premises of V&M Star LP, another Ohio-based seamless steel pipe manufacturer, in which Sumitomo owns a 19.47% interest. The initial investment amount of the new steel pipe mill is approximately $650mn.

It is scheduled to be completed for operational launch by mid-2012 and planned to go into full commercial operation by the end of the year with an annual output capacity of 350,000 tons.

By taking a stake in V&M2, Sumitomo aims to enhance its seamless tubular products business in the United States and strengthen its long-term alliance with Vallourec. In relation to this, V&M2 is planning to integrate its business with that of V&M Star in the future. Sumitomo intends to leverage this integration to expand its business in the US market.

Sumitomo Corporation – Japan
Website: www.sumitomocorp.co.jp

Helping hand

OKLAHOMA-based Samson Investment Company and a number of its peers in the energy industry – including several pipe companies – joined together late last year to offer a helping hand to families in need. Samson was one of the local sponsors of the inaugural Oilfield Helping Hands Oklahoma Golf Tournament, held at Meadowbrook Golf Course in Tulsa.

Through fundraising events Oilfield Helping Hands assists oilfield families in critical need of financial support. OHH focuses on raising money and keeping costs down to help someone in the immediate oilfield community. Funds raised during the golf tournament – totalling over $30,000 – will be donated to members of the Oklahoma-based oilfield families who are in critical need of financial assistance due to major medical crises and other life-altering events.

Oilfield Helping Hands – USA
Website: www.oilfieldhelpinghands.org

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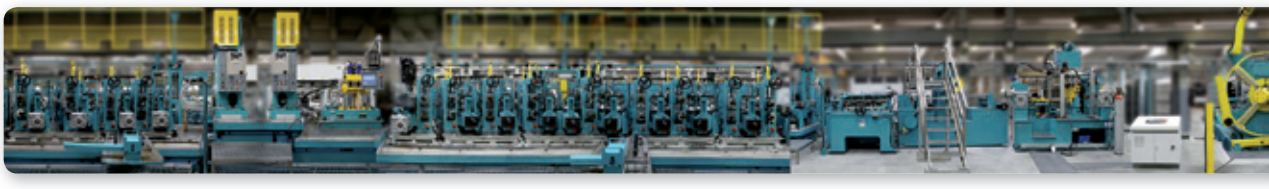

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BP Pipelines adopts software management platform

ASSET Guardian Solutions Ltd, a specialist in software asset protection for the process and manufacturing industry, has signed up BP Pipelines to its proprietary software management platform.

The Asset Guardian tool set provides process and manufacturing organisations with a software management solution enabling them to minimise the risks associated with process-critical safety software and related functions. The solution also ensures that companies are in compliance with complex ISO and IEC standards, government directives, and industry best practices for the "configuration and change management" of process critical systems.

Given that up to 90% of UK companies have no secure back-up of process-critical application software, one of Asset Guardian's most common uses is as a disaster recovery tool. By managing software and business critical information through a central platform, users can help to minimise system downtime incurred by software failure.

Asset Guardian has already been rolled out to many parts of BP but this latest contract will ensure that the integrity of BP Pipeline's process software will be managed on one platform and securely accessible anywhere via the BP network.

The company's three US control centres operate onshore and offshore systems, handling the transport of crude oil, refined products, natural gas liquids and chemicals.

Commenting on the contract win, Sam Mackay, chief executive of Asset Guardian, said, "We are delighted to be partnering with such a significant player in the global energy industry. This marks another significant milestone in the short history of Asset Guardian and will enable us to continue our impressive growth record.

"We pride ourselves on being able to deliver solutions to our clients that can deliver real business benefits in driving operational efficiencies and minimising the risks involved in managing software for companies with complex processes operating in high risk production industries."

Established in 2004, Asset Guardian provides solutions to more than 260 users across a range of process and manufacturing industries including oil and gas, power generation, pharmaceutical, and food and beverage.

Asset Guardian Solutions Ltd – UK
Email: sales@assetguardian.com
Website: www.assetguardian.com

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SAGE FORMING SECTION (ABF)

SAGE FORMING SECTION (CAGE)

WELDING SECTION

UNIFORM RIGIDITY SIZING STANDS

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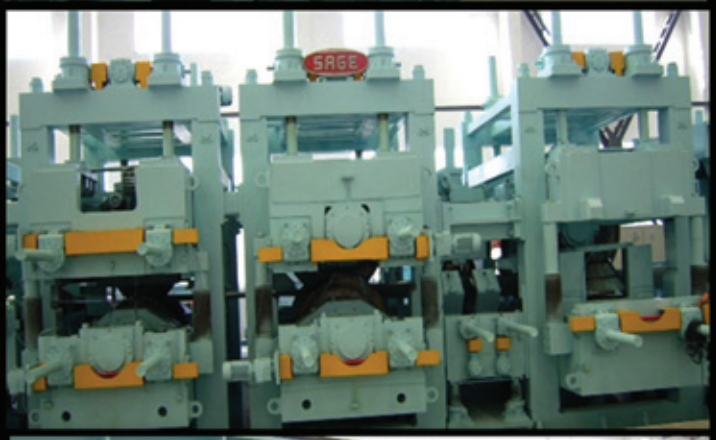
FEATURES

Five MULTIPLEs with multiple materials: carbon steel, stainless steel; multiple specifications:ϕ245-711mm，200*200-550*550; multiple shapes: round pipe, square pipe, rectangular pipe; multiple materials: coil plate, flat plate; multiple welding methods: HF welding, TIG welding, SAW.

Five NEWs with new forming type: Sage Forming (SGF) ; new structure: sizing uniform rigidity; new welding type: with motive force; new pressure keeping: without roll changing; new shape transforming: combined rolls for forming square and rectangular pipes.

Specification changing without changing rolls in break down forming ; quick rolls changing for fin pass forming and sizing section; square and rectangular pipe combined rolls; quick specification changing within 1-2 hours.



SAGE GROUP 三高集团

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Website: www.csage.com

FABTECH 2011 breaks all records

FABTECH 2011 shattered records set by previous shows, with the number of buyers walking the floor, educational conference attendance and the overall square footage of exhibit space. The recently concluded four-day exposition and conference at Chicago's McCormick Place welcomed 35,457 attendees; a 35 per cent increase over 2009 – the last time FABTECH was held in Chicago.

FABTECH is North America's most comprehensive event for metal forming, fabricating, welding and finishing companies. The 2011 show had more than 1,300 exhibitors, filling a record 522,000 net square feet and attendees from more than 80 countries.

"Exhibitors were enthusiastic about the activity level on the show floor and are looking ahead to 2012," Mark Hoper, FABTECH show manager, said. "Returning exhibitors were happy that leads were up from shows of the past few years and numerous first-time exhibitors proclaimed that the decision to exhibit was a great choice for them."

Many long-time exhibitors described FABTECH 2011 as their best show ever.

"We've been exhibiting at FABTECH for at least 20 years, and in my 10-year tenure, this show was our busiest. We received a record number of leads, and we were able to get our message in front of thousands," Betsy Van Duyne, marketing manager,

Hypertherm, Inc said. "The results from this show should prove to sceptics that manufacturing is alive and well in North America!"

The many new exhibitors were also impressed with the value they received from the show.

"We were first time exhibitors at FABTECH, and it was an overwhelming experience," Jim Gillespie, marketing manager at Fast-Rite International, Inc, a distributor of fasteners, stampings, fittings and assemblies, said.

"We have over 500 leads to process, and already have begun receiving orders. Considering it typically takes a year to complete a new-customer sale, we're quite happy."

Buyers were exposed to more than 500 new products and more than 75 new "green" products and technologies – a new feature on the FABTECH agenda. All products featured as "green" had to qualify as being more energy efficient, reducing waste and or providing a safer and healthier environment for employees, customers and the community.

According to Chris Kuehl, PhD, economic analyst for FMA and moderator of FABTECH's State of the Industry session, "Attendees were preparing for a better year in 2012 and were investing to be ready for it. They were engaged and were finding ways to do things better, faster and more efficiently."

Attendee Al Popovich, owner, Accurate Design and Fabrication, Custer Park, Illinois, is one attendee for whom FABTECH opened new opportunities. "We found some excellent new equipment and met manufacturers we weren't aware of before. It will definitely make a difference in our future business decisions. Knowing what is available outside our usual capabilities should open some markets to our shop." Mr Popovich's only concern was the limited time he had available to attend the show. "There's no way to see everything you want in one day!"

FABTECH 2011 was the first show at McCormick Place to take advantage of the recently reinstated work rules which allowed exhibitors to perform many tasks themselves that previously would have been union carpenter or electrician jurisdiction work.

"Exhibitors cited the improved labour conditions and the new cost savings as key to their decisions to bring a record number of machines, equipment and multi-storey displays," John Catalano, show manager explains. "The new policies strengthen FABTECH's commitment to Chicago for future shows."

The 2012 show will be held in Las Vegas in November and returns to McCormick Place in 2013.

FABTECH 2011
Website: www.fabtechexpo.com

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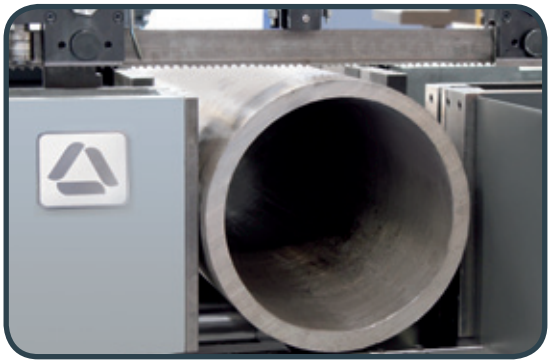

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Hall 6, Stand B20

Tube® Düsseldorf

ABB award for AWL-Techniek

DURING the most recent ABB Robotics Partner Seminar in Sweden, AWL-Techniek received the award for 'best achievement in long-term partnerships and business development in welding solutions'.

Brand van 't Hof, technical director of AWL, received the appreciation from Per Vegard Nerseth, director of ABB Robotics, for the many years of close cooperation in the field of robotic welding. Moments earlier, Mr van 't Hof had given a presentation to the international group on AWL's latest developments in laser welding and on working with ABB. Laser welding demands a very high degree of accuracy and stability in regard to 'motion performance'.

AWL and ABB have together developed various R&D activities specifically for laser welding in order to ensure the correct performance.

ABB Robotics organises annual international partner seminars to inform robotic-system integrators about the latest developments in the field of industrial robots. Approximately 300 interested parties attended the European version of the seminar in Västerås, Sweden, where production of the ABB robots is located. The programme of the fourteenth partner seminar was again focused on new technologies, new markets and new applications.

AWL is an innovative and internationally orientated partner for large multinationals in the area of joining technologies. These technologies are being integrated in challenging projects for the automotive industry and other metalworking industries.

AWL-Techniek BV – The Netherlands
Fax: +31 341 411822
Email: info@awl.nl
Website: www.awl.nl

Brand van 't Hof (left) receives the ABB award from Per Vegard Nerseth

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Quaker

In-line thickness measurement for steel/ metal profiles by dynamic double scan

ZUMBACH Electronic has enhanced and extended its line of systems for accurate, non-contact measuring systems for precision profiles made of steel, copper or any metal. The dynamic double scan (DDS) method is the solution.

Accurate thickness measurement of precision profiles in the production line, eg cold rolling or drawing, has always been a difficult task.

While tactile systems are subject to wear or damage on the contact points, all optical systems have the problem of large errors, as soon as there is slightest torsion of the profile relative to the optical sensor. A forced mechanical guiding is often prohibitive because of damage to the product.

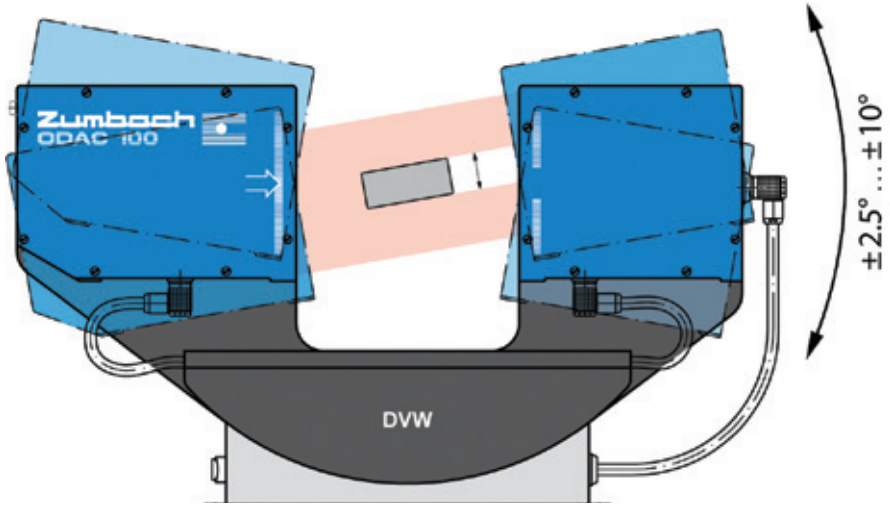
Vision systems based on the light cut principle can be an alternative but are often too expensive.

Zumbach, which has a long record with ODAC® laser scanners for diameter control of wires, cables and steel products, offers a new, elegant and efficient solution at moderate cost.

With a high-speed laser head, mounted on a new pivoting device, the relevant thickness is detected and measured by Dynamic Minimum Value Detection. This method delivers highly accurate readings, fully independent of the product orientation or variable torsion. High measuring rates of up to 2,000/s and sophisticated processor software are an essential part of the system.

The system is basically composed of an ODAC F laser head, a DVW pivoting device for the dynamic scanning and a USYS processing/display unit. If the width is also of interest, ODAC-XY heads with two axes capture thickness and width simultaneously. Various laser head models and DVW devices are available to cover each particular application and size.

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



Zumbach is offering a new, elegant and efficient laser scanner

i-Reverse left and right tube bender

THE Soco i-Reverse tube bending machine is designed for complex components requiring both left and right hand bending on the same machine. The i-Reverse 30 is especially suitable for complex parts and shapes such as automotive head rests, fuel lines, and heating and cooling systems.

The tube bender is equipped with five electric servo CNC axes and three bending stacks, and uses Soco's DGT (direct gear transmission) technology and industrial PC touch screen control with user-friendly Microsoft Windows-based interface.

The five servo electric/proportional servo controlled axes are: feeding (Y), rotation (B), bending (C), bend head horizontal movement (X), and bending die rotation (C1). The machine may also be provided with automatic loading and unloading and seam detection system to totally eliminate manual handling of the tube, providing full automation and uninterrupted production of parts.

Langbow Ltd has been sole UK distributor for Soco machinery for over 10 years, with over 400 installations to date. Langbow provides full back up with five-year warranty and annual servicing on all new Soco machines.

Langbow director Mark Smith commented, "Soco goes from strength to strength with the sheer depth of its machine range from simple NC and budget CNC machines to 1D CLR boost bending and up to 12 axes all electric machines with double shearing cut off. We are all extremely excited by the level of enquiries we are now getting particularly for new machinery.

"Not surprisingly, the last couple of years have seen a dip in confidence in UK manufacturing and fabrication industry where capital equipment is concerned, but there is now a noticeable increase in the level of interest shown in machinery where savings can be made in labour and increased efficiency. The i-Reverse offers these features and we are confident it will prove very popular."

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Email: sales@langbow.com
Website: www.langbow.co.uk

Coating systems and pipe handling

SELMERS, a privately owned company from The Netherlands, specialises in the manufacture of plants and equipment for internal and external pipe coating, pipe cleaning and pipe handling. Established back in 1966, the company has grown into a renowned supplier of comprehensive pipe coating systems, especially of tailor made equipment for onshore and offshore pipe coating and pipe handling facilities.

Selmers represents a highly educated and experienced team of engineers, perfectly skilled to provide innovative and reliable custom-made equipment solutions. Selmers can design and engineer in-house, having short communication lines and optimum interfacing for individual equipment parts.

This enables Selmers to produce reliable and efficient pipe coating plants at a competitive price level and optimum support to their customers.

The Selmers product range comprises an extensive external multi-layer and internal lining pipe coating plant programme, with AO abrasive blasting equipment, ovens, chromate and acid wash units, liquid and powder epoxy equipment and in-house made extruders.

Selmers also features an offshore programme aimed at pipe handling/firing line equipment for pipe lay barges, field-joint blasting and coating systems (hot mastic, FBE, 3-layer PE) and multi-jointing facilities for pipe spool bases (rollers, line-up systems, pipe pushers).

Selmers produces efficient pipe coating plants

In addition to these programmes, Selmers offers concrete weight and cement mortar coating equipment, rebar powder coating lines, in-situ equipment, containerised configurations, quality control equipment and specials on customer specs.

Last but not least in the programmes are self-propelled coating removal and re-lining machines for in-situ pipeline rehabilitation purposes. Selmers' product range is compliant with all necessary international standards, supported by a highly qualified engineering department (utilising CAD/INVENTOR) and a state-of-the-art quality management system.

Equipment is offered with full project support from first design, engineering, construction, manufacturing up to installation, commissioning and after sales.

Selmers BV – The Netherlands
Fax: +31 2512 20777
Email: sales@selmers.nl
Website: www.selmers.nl

New solid-state welder range

EFD Induction introduced a new range of its Weldac solid-state welders at the Fabtech event in Chicago. The range features Weldacs in the 50-225kW power range at frequencies of 150-500kHz.

"The big news is that all the benefits of existing high-power Weldacs are now available from a smaller, lower-powered system," said Peter Runeborg of EFD Induction. "These benefits include the unrivalled uptime made possible by Weldac's patented switching technology and its use of rugged IGBT transistors."

The new Weldac 50-225kW range is in production, with systems already ordered in Europe and the USA. "These smaller Weldacs are especially attractive to fabricators for whom welding is an important element in a larger manufacturing process," said Mr Runeborg. "Such customers need reliable, easy-to-operate and cost-effective welding solutions that can also meet stringent quality and safety standards."

The range is covered by EFD Induction's five-year warranty on inverter modules, which covers all Weldac inverter modules, driver cards included.

EFD Induction – Norway
Email: sales@no.efdgroup.net
Website: www.efd-induction.com

A model from the new Weldac 50-225kW range

AddisonMckee cuts costs not corners

ADDISONMCKEE of Lancashire, UK, designs, manufactures and supplies tube bending and endforming technologies, and has manufactured a new eB 80 ES RB model machine for supply to Dinex in China. The new machine represents a significant alternative to the existing world renowned DB 75 machine.

A key to reducing the cost of the new machine lay in removing the ball screw providing the boost and allowing the gearbox and motor instead to provide the force required for boosting. Hence the new machine enables freeform bending for the full length of the bed.

Given the cost of floorspace at any facility, the new machine's modular design also has significant benefits if bed length flexibility is important. The standard machine itself is two metres long but offers the capability to increase in length by bolting two sections together to extend the bed when required, converting the machine easily and cheaply to a three/four metre model.

Back in 1984 the company introduced its Mark 1 control system incorporating the very first touch screen. And today the new Mark 7 system takes convenience and flexibility one step further than ever before by enabling a single control system to operate with both hydraulic and electric machines.

In response to overwhelming demand from its European customers, AddisonMckee has restored the manufacturing facility at its HQ at Bamber Bridge in the UK, a move which underscores the company's commitment to its European partners, not least by significantly reducing costs.

With two manufacturing facilities in the US and the UK, AddisonMckee can offer something its erstwhile competitors are unable to: namely, an eminently flexible supply chain to market.

The company now has no less than 55 engineers committed to research and development with service personnel on hand in every continent. While the new owners themselves come with the benefit of a wealth of business and industry experience, not least in the key emerging markets of the Far East.

While it is true that many things have changed at AddisonMckee, many things have also remained the same.

For example, AddisonMckee's commitment to its core values of quality, durability, timeliness, price, integrity and flexibility has never wavered. Nor has its passion for providing its customers with unique solutions for highly complex tubeforming problems whether it be in muffler assembly and sub-assembly machinery, catalytic converter making solutions, hydraulic presses, inspection systems, cell automation solutions, production cell integration or lubricants.

Many of the core people at the company's Bamber Bridge facility have been with AddisonMckee not just throughout the recent twists and turns of the recession, but for many, many years.

As AddisonMckee CEO Alastair Tedford remarks: "The company has emerged stronger than ever with an extremely healthy order book. As a management team, we believe this is due both to the restoration of our manufacturing facility here in the UK but also to building on the company's core values to offer customers a better service than ever before. What this means in practical terms is continuing to pursue a programme of innovation in new product development but coupled with a major initiative to drive down costs for our customers."

AddisonMckee – UK
Email: paspinall@addisonmckee.com
Website: www.addisonmckee.com

Reika compact machine generation

REIKA GmbH & Co KG is currently experiencing a large demand in machines for value added process, particularly in the automotive sector.

"The Compact machine generation has celebrated great success," said Reika managing director Hans-Jörg Braun.

"For example, our lines for short lengths and precision cuts used in the production of blanks for fittings are extremely popular. It is mainly low maintenance and operation costs the customers appreciate," said Mr Braun. The compact series is setting new standards: tool lifetime of the roller blades is approx 150,000 cuts before regrinding. Another advantage of the compact series: "Pipe surfaces are not damaged by our machines or sticky saw chips," says Hans-Jörg Braun. "In addition, they guarantee extremely good tolerances."

Reliability of the Reika machines is also pionieering. Modern quality components are combined with years of proven Reika-standard modules. A central machine bed, a fully encapsulated production cell and the absence of a hydraulic system are other features of this machine series.

Customers benefit from this rigorous and practical implementation of Reika's experience and know-how as well as process-safe control of user needs. The output of the compact machine generation is up to 1,900 pieces/hour – depending on material and application. These values are reached by short cycle and changeover times and the cutting technique. Last but not least, customers receive a defined handling of material with optimum quality assurance.

Reika GmbH & Co KG – Germany
Website: www.reika.de

Reika has experienced great demand from the automotive sector

PROFILMEC GROUP

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DIVISIONE SIDERURGICA

PROFILMEC GROUP

Profilmec Group industries have been operating since 1961, we are specialized in the manufacturing of high-frequency electro-welded cold rolled steel tubes and profiles.
This experience, coming from years of success, has given us a leadership in our sector.

A POOL OF SPECIALISTS FOR THE CUSTOMER

Our Product range is wide and diversified, with the possibility to customize the product on customer needs. The diameter range is from 8 to 120 mm, with thickness from 0,5 to 2,5 mm.
Our tubes are certified UNI EN ISO 9001:2000 and ISO TS 16949.

The materials employed are hot rolled pickled steel (standard and special), cold rolled steel (standard and special), aluminised steel, hot galvanized steel, aluminium
All products can be supplied with special finishing and packaging, decided in partnership with our customer.

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ELLIPTICAL
SPECIAL DRAWING SHAPES

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DIVISIONE SIDERURGICA

PROFILMEC GROUP

The entire group lays on a total surface of over 450.000 sqm, of which 140.000 covered. The global production is approximately 3.000.000 mt/day, about 1.450 tons./day. The main sites of the Group are in the North of Italy, one in the West-side, in the Turin/Cuneo zone, and another one in the East in the Pordenone zone.

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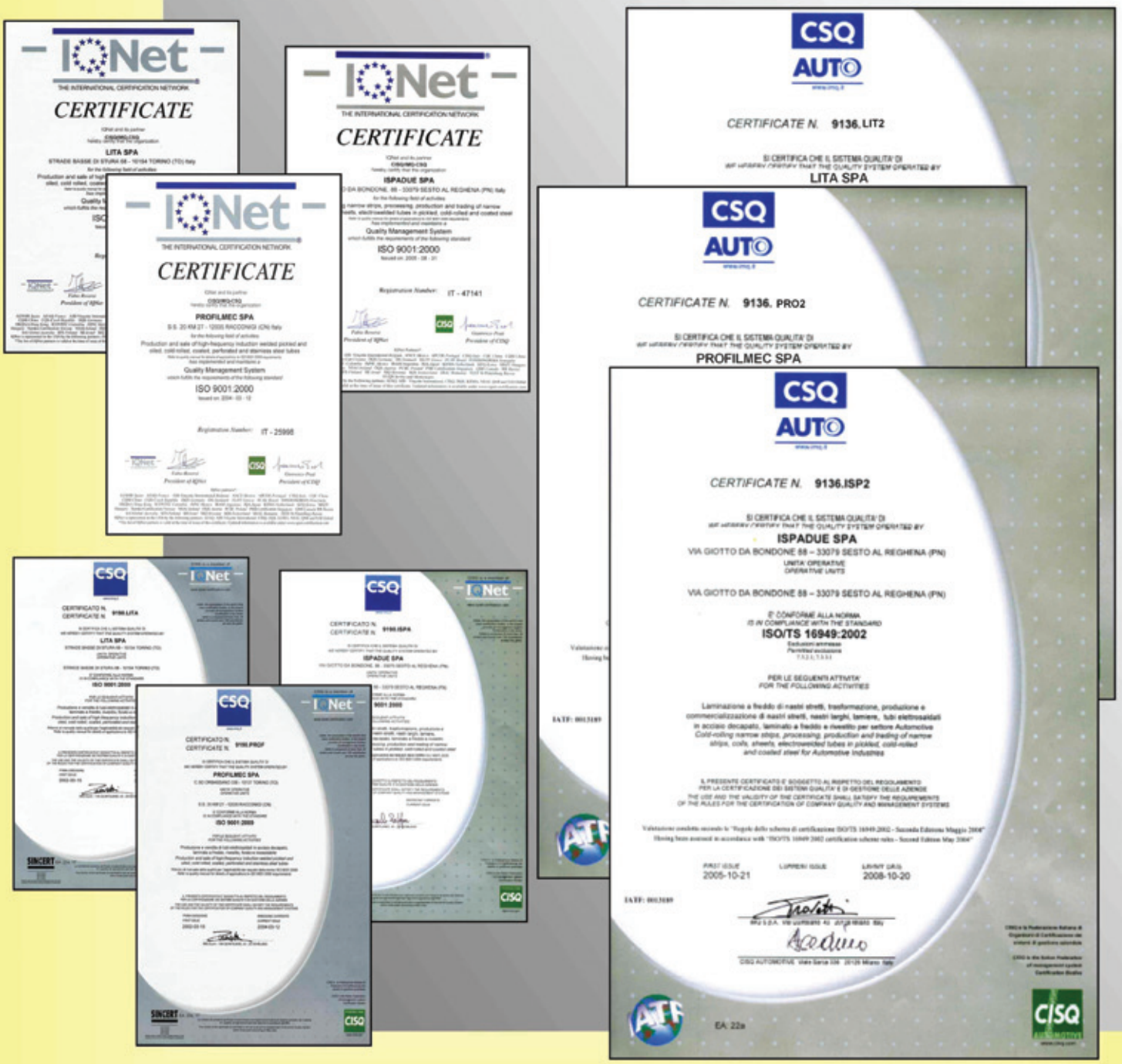
PROFILMEC GROUP

The Profilmec Group believes in the importance of quality certification in todays markets. For this reason, all the companies belonging to the Group are certified in compliance with UNI EN ISO 9001 (updated ISO 9001:2000). In 2005 Ispadue also obtained the certification ISO/TS 16949, specific technique for Automotive Industry. In 2007 Profilmec and LITA obtained the same acknowledgment.



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DIVISIONE SIDERURGICA

Floor-mounted seam milling machine

LOOKING back 20 years ago when the Gräbener company was running its own pipe mill the product range encompassed steel piles of a maximum possible production length. This was the reason why Gräbener Großrohr began developing milling machines for high-quality and economical circumferential and longitudinal weld seam preparation on the outer surface of shells prior to being submerged-arc welded.

Nowadays, pressure vessel and pipe manufacturers find it hard to imagine life without the special milling machine types for circumferential and longitudinal weld seam preparation manufactured by Gräbener Maschinentechnik GmbH & Co.

KG (GMT), a member of the Graebener Group. The 150 machines developed and produced over the years have become state-of-the-art when it comes to provide vessel shells or pipes, prior to welding, with precise seams at a reasonable cost level. Now Gräbener took the next step on the ladder by developing a special longitudinal seam milling machine for the production of wind tower segments. The machine can be erected on the bare shop floor and is particularly useful because it does not need a foundation pit.

The new floor-mounted longitudinal seam milling machine is designed to be used by manufacturers of offshore wind tower segments (monopiles). The production sites of such companies are usually situated on the waterfront, thus profiting from an advantageous infrastructure, the only disadvantage being the sandy underground of such sites.

Considering this, the demand for a floor-mounted milling machine, which does without an expensive foundation pit, was obvious.

As a consequence, the milling unit of the machine had to be tilted by 45 degrees. This milling position allows an erection of the machine on the bare shop floor. Not to forget that there are still applications requiring the traditional version of the machine being erected in a foundation pit and having a milling unit working in 6-o'clock position.

In the case of the floor-mounted longitudinal seam milling machine, the workpieces such as pipes with external diameters of up to 8,000mm and lengths of up to 4,000mm are placed, aligned, and clamped on a pipe support with adjustable pipe rotators.

For better monitoring, a camera travelling along with the milling process – which can reach a depth of 90mm – is installed which displays the process on a screen installed in the operator's area. For achieving a constant milling depth during the milling operation, the machine is equipped with a milling height adjustment device for automatic height copying.

Gräbener – Germany
Email: m.butz@graebener-group.com
Website: www.graebener-group.com

Lump-free production

THE smallest lumps on the surface of hoses and tubes reduce their quality and often lead to a rejection of the complete production batch. Lump detectors, such as Sikora's Lump Series 2000, are used during the production of hoses and tubes, for detecting online surface defects to assure quality.

The Lump Series 2000 includes 2- and 3-axis measuring systems for product diameters from 0.25 to 35mm. The gauge heads detect at any speed lumps and neckdowns from 0.5mm length and 0.01mm diameter deviation. The devices distinguish between lumps and neckdowns, and report faults if the defined tolerance limits are exceeded. By the use of a powerful signal processor the number, height or depth and length of the fault location are evaluated, digitally displayed and stored.

A highlight of the devices is the double sensor technology. With the help of light sources in combination with light sensors, they detect defects even under difficult conditions such as dirt or vibrations of the product. With the double sensor technology it is possible to reliably detect surface faults at a production line speed of up to 3,000m/min. The diodes beam through the measuring plane and project the measuring object as shadow image on the opposite sensors. Depending on the exposure (shadow), the photodiodes give a signal, and the signals of the diodes are compared in a differential amplifier. This method is insensitive to extraneous light and vertical movement of the cable, so reliable results are continuously achieved. The Lump Series 2000 offers serial interfaces such as RS485 and RS232. Optionally, a Profibus-DP interface or industrial field busses such as EtherNet/IP-, DeviceNet or CANbus for direct connection to a PC or the display and control device Remote 2000 are available.

Sikora AG – Germany
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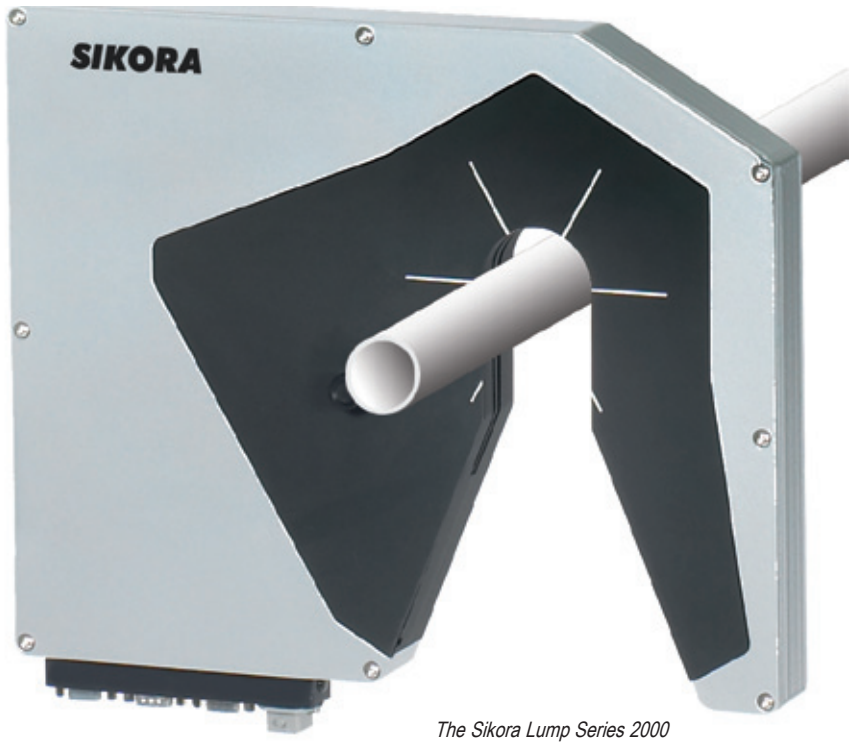

The Sikora Lump Series 2000

Large diameter tube inspection

ACOUSTICEYE, a pioneer in non-invasive tube inspection for the global heat exchanger market, has announced the introduction of new capabilities for ultra-fast inspection of tubes up to 4" inner diameter in any shape or material.

Achieving speeds as fast as 10 seconds per tube, AcousticEye's Dolphin G3™ features patented acoustic pulse reflectometry (APR) technology, enabling accurate and reliable non-invasive inspection of even the most challenging tube sizes and configurations. An advanced yet easy-to-use tool, Dolphin G3 overcomes the limitations of many conventional inspection techniques. With its simple operation, automated analysis and report generation, there is far less dependency on operator expertise.

Commenting on the announcement, Yoav Harel, CEO of AcousticEye, said, "With the breakthrough performance of our new large diameter solution, it is now possible for the first time to inspect boilers, fin fans and other heat exchangers with the speed and accuracy needed to significantly increase operational efficiency and cost savings."

In successful field tests at several industrial sites, Dolphin G3 was able to identify defects not found by traditional inspection methods, such as holes, blockages, erosion and pitting, in a variety of hard-to-inspect tubes including u-bends, boiler units and heat exchanger types with difficult access points. In some cases, tubes that were previously impossible to inspect were possible using AcousticEye's non-invasive APR solution. The inspection results provided customers with component critical information for proper assessment of tube condition at a fraction of typical inspection cycle times and without the need for extra inventory of probes and standards.

AcousticEye International
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Orbital tube-tubesheet welding

AXTON Incorporated, located on Annacis Island in the South Arm of the Fraser River Delta, near Vancouver, British Columbia, Canada, has been manufacturing heat exchangers and other industrial equipment since the 1980s. Its list of projects includes the structural engineering and fabrication of the Vancouver 2010 Cauldron for the Vancouver 2010 Olympic Games. In 2003 Axton purchased a Model 227 orbital welding Power Supply and Model 6 orbital tube-to-tubesheet weld head from Arc Machines Inc, California, USA. Although orbital welding is generally considered to be welding of tube or pipe, orbital welding is defined as "machine or automatic welding in which the arc rotates around a stationary weld joint" and this includes orbital tube-to-tubesheet welding. While Axton had some previous experience with orbital welding, they gladly accepted the opportunity to refresh their skills by having an AMI factory trainer come to their facility to train their lead welders.

Axton is an international company that exports a significant amount of its production to countries outside of Canada including Mexico, Africa and others worldwide. Industries served include mining, oil and gas, chemical, acid manufacture, petrochemical, power, transportation and pulp and paper. It is currently fabricating a large stainless steel exchanger for export. The tubesheet on this unit has 990 tubes 1 $^{3}/_{4}$" (44.45mm) diameter with a wall thickness of 0.084" (2.1mm). The vessel is 50 feet (15.24m) long and 140" (3.55m) in diameter with tubesheets on both ends.

The Model 227 weld power supply is microprocessor controlled and stores weld programs, or schedules, consisting of all the programmable weld parameters in the power supply memory. The weld schedule specifies primary and background amperage, travel speed (rotation), pulse times, wire feed speed and other parameters. Thus, if other factors such as tube end preparation, cleanliness and purge flow are constant, there is a very high degree of repeatability from weld to weld.

The weld head features a chill follower linked mechanically to the torch that is spring loaded to the ID of the tube. This causes the torch to maintain a constant distance from the tube OD even when there is some degree of ovality in the tubes. The chill follower as well as the entire torch block is water cooled, which removes heat from the ID of the tube. This allows the application of additional heat to the weld resulting in better penetration without melting through the tubes. The power supply's arc gap control (AVC) enables the torch to maintain a constant distance between the tungsten electrode and the weld joint.

The Model 6 is installed using a separate locating fixture that mounts on the tubesheet. Efficiency is improved by having two fixtures so that the welding operator can position the second fixture while the weld head is completing the weld while mounted on the first fixture. There is virtually no downtime between welds. The Model 6 is a full-function weld head with wire feed capabilities that can weld joints with the tubes flush to the tubesheet surface, joints where the tubes project above the tubesheet surface or where the tubes are recessed. All the tubes are tack-welded in place prior to orbital welding.

The weld sequence is initiated by the welding operator either directly from the power supply or from the operator pendant. The welding operator monitors the welding through the weld lens on the Heads-Up-Display (HUD) on the operator pendant. The patented HUD displays weld parameters such as Amps, wire feed and AVC. The operator can adjust selected parameters from the pendant while observing the effect of the change on the weld puddle through the lens of the HUD.

Orbital tube-tubesheet welding (above and below)

After welding, the welds get a post roll and dye penetrant and air pressure tests at low pressure. Tube-to-tubesheet welds are inspected to ASME (Section VIII). Axton has maintained ASME certification for more than twenty-five years and achieved ISO 9001 registration in 1997, and completely qualified to meet ASME, ISO or customer specifications.

Arc Machines Inc – USA
Website: www.arcmachines.com

Pipe handling and clamping

KISTLER pipe rotators are used for clamping, rotating, and tilting of pipes in manual and automatic welding, mainly in the field of pipe construction, whether prefabrication or assembly on site. Many machines have been supplied for tube-to-tube butt-welding processes.

There are three machines in the 'U' range, the U150 (20mm to 200mm diameter pipe), U500 (20mm to 400mm diameter pipe) and U1000 (25mm to 800mm diameter pipe). Kistler's pipe rotators, with a patented clamping roller system, have advantages over traditional devices:

- They can be used for pipes with elbows, tee-pieces, or other offset loads
- A wide range of pipes can be clamped. The infinitely variable rotary speed is not affected by the size of a pipe because of its separate drive unit
- Quick precise centring and clamping without a chuck or clamping shoe
- Flexible pipe handling – pipe can be clamped at its centre of gravity
- Tilting moments and supports are irrelevant in most cases
- Possible to centre two pipes with the same diameter
- Various combinations are possible, including clamping and driving of a main spindle.

Standard pipe rotators are designed to rotate work pieces 360° (forward/stop/reverse) with variable speed control and forward and backward tilt from horizontal. Rotation and tilting may be performed independently or simultaneously.

The tilting section consists of the drive and roller box, holding column, clamping arm, and pressure roller. Manual vertical height adjustment of the clamping roller system is included as standard on all units.

All the machines have optional extras from directional foot pedals to Diablo pipe supports.

Kistler 'U' range pipe manipulators are sold exclusively in the UK by YPH Ltd of Preston.

YPH Ltd – UK
Website: www.yphltd.co.uk

Kistler's U150 model pipe rotators

High quality used machinery worldwide

UNIVERSAL Tube & Rollform opened its doors with the aim of being the number one supplier of used tube, pipe and rollform machinery in the world. Its presence in this industry has always been strong, working with companies both locally in the USA and worldwide. Located in Perrysburg, Ohio its warehouse contains one of the largest inventories of used tube mills and rollformers available for inspection that you will find anywhere in the world.

It has over 125,000 square feet of used machinery in its warehouse and customers can schedule a visit and take a look around at all it has to offer in tube mills, rollformers, cut-offs, HF welders, straighteners and much more.

Located under one roof with Universal Tube, Universal Controls builds new drive systems, die accelerators, and other accessories to retrofit new or existing machinery in almost any industrial environment. With its combined knowledge Universal can offer a complete turn-key system from initial design to start- up. The unique relationship with Universal Tube enables it to offer a wide array of cost-efficient services included at one low cost.

The company specialises in used tube mills and rollforming lines with the ability to provide:

Used and rebuilt machinery with new components for any application

- Retrofit new or existing machinery
- New control systems
- Custom engineering
- New drive systems
- Home of the U-Trak length control system (as used in the new HavenTrak Flying Shear)
- Installation services available
- Start-up and training services available
- Import and export services
- Cash paid for surplus machinery
- Trade-in or consign your surplus machines
- Members of the machinery dealers national association, TPA, FMA, SME and BBB

Universal can offer many different types of tube mills or rollformers to fit your specific needs. Customers can fax or email a drawing of the part they need to make and the team will go to work putting together a complete specific quotation. Also offered is a machine rebuilding and painting service or machines can be sold as-is. The company will pay cash for its customers' surplus machinery, one machine or an entire plant.

A trade-in of obsolete machinery can be considered in exchange for other machines or services provided. The company will also do consignment deals where customers retain ownership of the machinery until the date of sale. Universal will clean, paint and advertise your machines and send you a cheque when it is sold.

It specialises in complete machine reconditioning. Whether it is a single machine or a complete line, Universal would be happy to send you a quotation for this service and they are uniquely qualified to assess the current condition of your machinery and offer expert advice for upgrades. Its experienced staff can clean, paint, rebuild, install and train your staff making certain your machine is running efficiently. Together with Universal Controls Group it has the ability to put new controls, drives and motors on all machines. The experience and services the company provides helps it to stand out from your average used machinery dealer.

Universal Tube & Rollform – USA
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Website: www.universalcontrolsgroup.com

Improvements in production process

AS an answer to the increasing demand from customers for shorter lead times on bending tools OMNI-X has purchased and installed a brand new heat treatment device and CNC turning centre supplied by Nakamura. Both devices help to speed up production but also to improve quality of OMNI-X bending tools.

The nitriding device has been installed at OMNI-X facility in the Czech Republic in 2011 while the turning centre has already been installed for a few months, integrated to semi-automatic cell dedicated to production of mandrel links. The Nakamura turning centre with its incredible speed, repeatability and reliability looks to be the right choice to work in often 24 hours continuous operation.

This machine also offers systems that help to achieve a good surface of machined parts.The heat treatment device is real hi-tech equipment that offers several different types of treatments to apply on surfaces of tools like bend dies, clamp dies, and pressure dies in higher quality and shorter cycle than most conventional nitriding devices. The quality of nitride layer is mostly evaluated according to its hardness, depth and compactness.

Perfect quality surface layer is not only harder it also improves friction property, generally important to achieve a longer lifecycle of tools. Already first internal tests show improvements in all these three factors while the process itself has been shortened to approximately 8-12 hours. This should have a positive impact on lead times of some smaller tools as it used to take approximately two days no matter what the tool size. However, this device is planned to be in almost permanent use due to the internal dimensions of the furnace and the help of subcontractors will be still necessary.

OMNI-X CZ – Czech Republic
Website: www.omni-x.cz

The CNC turning centre

Screw caps with sealing ring

PÖPPELMANN GmbH & Co KG has added a new screw cap to its Kapsto® range. The GPN 804 protects and seals outer threads of pipes and tubes, as well as connectors on components. Sealing-rings made from mechanical and chemical resistant elastomer are inserted into the screw caps.

The company says that this is a viable alternative to the standard product GPN 800 for use during storage, transport, assembly and finishing processes where a heightened protection against ingress and discharge of liquids is required. A non-slip knurling on the outside of the cap aids quick and easy fitting and removal.

The yellow caps are made from largely chemical and impact resistant PE-HD (high density polyethylene) and are available in most established metric threads, a variety of American standard and fine threads, and certain pipe threads. Additional sizes as well as heat resistant types are available on request.

Pöppelmann GmbH & Co KG – Germany
Fax: +49 4442 982 112
Email: info@poeppelmann.com
Website: www.poeppelmann.com

GPN 804 screw caps feature an inner sealing ring for protection against ingress and discharge of liquids

Pre-weld pipework equipment and tools

PIPE Ltd is a manufacturer and supplier of pipework manufacturing equipment. Its comprehensive range includes pipe bevelling machines, pipe cutting machines, pipe welding alignment clamps and pipe jack stands. With its extensive knowledge in this field, the company has progressed into the manufacture of dedicated purging systems and accessories to enable high quality welding of exotic materials.

Having seen the problems faced by pipe welders when required to weld exotic materials, Pipe Ltd now manufactures a range of weld-purging systems to remove oxygen from the weld chamber as quickly as possible, allowing the welder to produce high quality, oxide-free welds.

The latest addition to this range is the patented 'Rapid Purge' system. Utilising a 'donut' design twin inflatable bladder housed in a special Nomex and Kevlar mix heat-resistant material, the 'donut' and 'thru-bore' design of the system means that the area to purge is localised to the weld root, reducing both gas usage and purging times. For example, a 36" pipe will purge down to 0.1 per cent oxygen in less than 10 minutes.

Whether 8" or 80" pipe, due to the materials used these lightweight yet rugged systems allow easy withdrawal from the pipe once deflated, even round bends and elbows. Used in conjunction with PIPE's range of weld purge monitors, the systems enable the welder to produce high quality welds in very little time and with no oxidisation.

PIPE Ltd – UK
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Email: sales@pipe-ltd.com
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PIPE's Rapid Purge range

Simple to operate orbital welder

THE food processing, dairy, and beverage industries utilise large quantities of stainless process piping. The welds must be uniform and completely penetrated. One development that has resulted in increased use of orbital welding are clean-in-place (CIP) systems. To allow cleaning of equipment without disassembly the weld surfaces must be smooth enough to avoid entrapment of product or cleaning residue. These industries require sanitary/hygienic tubing systems, but do not necessarily have to weld to a "code".

The Magnatech orbital welder

Although they do follow general guidelines and good manufacturing practices (The 3A Sanitary Standards; AWS D18.1 "Specification for welding of austenitic stainless steel tube and pipe systems in sanitary (hygienic) applications") few government agencies worldwide have adopted these as mandatory standards. Certain companies have adopted them, but there is no industry requirement. The perceived high equipment cost often deters the use of orbital tube welding as the primary joining process. Surveys have shown that the price of an orbital welding system is 2-3 times higher than a fabricator or contractor, servicing these industries, is willing to pay. The complexity of the welding systems on the market dictate on-site training, adding further cost.

To offset this concern over equipment cost and simplify the orbital tube welding process, Magnatech has introduced an innovative solution to orbital tube welding with its modular, EZ Orbital Welding System. The Model 517 is a tube welding controller that integrates the operation of a standard, commercial GTAW power source with the weld head. The customer can use his existing power source, allowing him to weld both manually and automatically. The Controller has an intuitive symbol-based, touch screen user interface. Operation is as simple as selecting tube size and wall thickness, and pressing the start switch on the head. The operator can adjust set parameters by a percentage override to accommodate tube lot variations. The Model 517 operates a new line of tube welding heads with digital control of rotation speed regulation, ensuring perfect repeatability.

Magnatech LLC – USA
Email: info@magnatechllc.com
Website: www.magnatechllc.com

Eliminating double-blanking problems

THE Sheet Seeker® Fanner by Industrial Magnetics Inc helps increase production speeds by magnetically separating oily, sticky or polished sheet stock, thereby eliminating the difficult and time consuming task of trying to manually pry apart sheets in manual applications and preventing "double-blanking" in automated applications.

Up to 60 per cent lighter than standard sheet fanners of the same fanning strength, the Sheet Seeker's powerful magnetic circuit forces steel sheets apart and automatically indexes with the stack to ensure optimum fanning down to the last sheet. Capable of fanning from 30 gauge sheets to 12 gauge plate, the Sheet Seeker's light-weight design and convenient top-mounted carry handle allow for user friendly transport within the facility.

IMI also has additional Sheet Fanner models capable of handling both ferrous or non-ferrous sheet stock, in a wide range of sizes and gauges, utilising permanent magnet, electromagnetic and air fanning technology. More information can be found on the online Sheet Seeker® Page, including product options and order online capability for many models.

Industrial Magnetics – USA
Email: imi@magnetics.com
Website: www.magnetics.com

Sustainability and performance in HDPE pipe applications

SABIC has launched the Vestolen A RELY family of tough, sustainable bimodal high-density polyethylene (HDPE) materials for pressure pipe applications. The portfolio offers converters energy savings and enables environmentally responsible pipe installation.

The company has also developed a new strain hardening method, a fast and accurate method for evaluating the slow crack growth resistance behaviour of HDPE. This method avoids the use of detergents that can pose an environmental hazard, and avoids the use of valuable drinking water.

"Our new SABIC® Vestolen A RELY products in combination with the strain hardening method – that measures their performance – are key deliverables in SABIC's global strategy to supply the pressure pipe industry with breakthrough technologies," said Jean Engels, business manager HDPE SABIC. "SABIC takes great pride in proactively developing materials and methodologies that meet current and emerging industry needs, particularly in the areas of sustainability and cost effectiveness. We also welcome new partners who can help us drive development of new pipe solutions utilising our high-performance HDPE materials and extensive technological resources and expertise."

The first two grades within the Vestolen A RELY range – one designed for low sagging and the other engineered for high resistance to slow crack growth – contribute to the eco-responsible production and use of pressure pipe. With these materials, converters can reduce energy. Developers and contractors can select trenchless pipe installation such as guided boring and horizontal directional drilling that reduce impact on the environment.

Both new materials are classified as PE100 grades, demonstrating compliance with the highest industry standards for HDPE pressure pipe.

Vestolen A RELY 5924R delivers low sag performance for large-diameter pipes and pressure pipes with a low standard dimension ratio (SDR). This grade has an internal pressure approval for PE 100 that complies with the EN12201 and EN1555 standards, underscoring its quality and performance for transporting potable water, gas, sewage and other liquids.

Vestolen A RELY 5922R offers resistance to slow crack growth propagation in high-pressure pipe applications and can therefore be used with advanced trenchless pipe installation technologies such as re-lining, horizontal directional drilling and guided boring. Its resistance to slow crack growth is demonstrated by results of the FNCT (>8760h) and pipe notch test (>8760h, DIN and ISO 13479). This grade also has an internal pressure approval for PE 100, meeting EN12201 and EN1555 standards.

The RELY products are produced at SABIC's state-of-the-art HDPE plant in Gelsenkirchen, Germany, which was designed to put less stress on the environment than traditional facilities. The plant cuts electricity usage by 8 per cent, air emissions by 85 per cent and sewage by 50 per cent, and uses SABIC's own proprietary catalyst technology.

The primary slow crack growth resistance testing methods for HDPE for pressure pipes have had significant drawbacks, including high cost, long durations of a year or more and uncertain reliability. SABIC's new strain hardening method correlates well to traditional methods that assess the slow crack growth behaviour of HDPE. The method is typically able to determine the intrinsic slow crack growth behaviour via a simple tensile test at 80°C. Advantages of this test method are low measurement variation, absence of surfactants and notches, small amount of required testing material (<50g) and testing times of only a few hours.

The strain hardening method can be easily implemented at accredited laboratories, and the company anticipates that it will become the standard for HDPE slow crack growth testing.

SABIC Vestolen A RELY 5924R and 5922R are available globally. Additional grades within the product line are due for release in the near future.

SABIC – Saudi Arabia
Website: www.sabic.com

SABIC Europe – The Netherlands
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Website: www.sabic-europe.com

Challenges met by AUMA

A ROBUST actuation solution capable of performing at high altitudes has been supplied by AUMA to the Collahuasi copper mine in a mountainous region of northern Chile. Sixty modular electric actuators automate valves controlling materials that travel through pipelines starting 4,300m above sea level.

The mine is one of the world's largest non-ferrous projects, set in an area with a rich copper mining history. Commissioned in 1999, an expansion programme at the mine has given a long-term capacity of 500,000t/yr of copper.

Process facilities include a 60,000tpd sulphide concentrator and a 50,000tpa cathode copper oxide heap leach-SX-EW facility.

After grinding, the ore is treated by flotation and concentrate regrinding to produce a high grade concentrate that is transported 200km in a slurry pipeline from the mine to a port. AUMA's actuators with three phase AC motors and gearboxes are installed at the pipeline's 'choke station', so-called because material needs to be slowed down after it has accelerated in transit.

Challenges met by AUMA's actuators included climatic environmental conditions, very low temperatures at night and extremely high temperatures during the day.

Economical three phase motors carrying alternating currents and corrosion protection were important product features that benefited the application. A track record for AUMA supplying modular electric actuators for mining installations includes an installation at the 'Los Bronces' mine, also located in Chile.

AUMA Riester GmbH & Co KG – Germany
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Website: www.auma.com

Orbital welding

GULLCO'S Pipe Kat® automated pipe welding system with integrated wire feeder unit incorporates a 40 IPM welding carriage design with quick action mounting for ease of installation. The carriage is equipped with a high speed return feature for faster repositioning of the carriage.

The Pipe Kat is also equipped with a linear oscillator with adjustable weave width and weld joint centreline adjustment, and all electronic motorised functions incorporate jog settings. The system comes with a main control box with 7,620mm (25ft) umbilical, wire feed spool capacity of 4.5kg (10lb), with a maximum wire speed of 89-226cm/min (35-633 IPM) and a wire size range of 0.8 to 2mm. The welding torch uses standard consumables.

Gullco International Ltd – Canada
Website: www.gullco.com

"Based on our experience with T&H mills, we expect to see increased production, profitability and competitiveness."

- Joao Groth, Director of Production

T&H Lemont

An Inductotherm Group Company

When Joao Groth, Director of Production at Brazil's Aços Groth needed a new mill, he interviewed five companies before choosing the WU40-11 High Frequency Structural Mill from T&H Lemont. "I was impressed that the T&H mill not only had the capabilities I was looking for, but also included the tooling," said Joao. The mill significantly increases their competitiveness, making Groth one of only six companies in Brazil that can produce tubes up to 6" in diameter and ¼" thick. Established in 1987, Aços Groth is a major producer of carbon steel tube products in Brazil and parent company of Brazil's National Tubes. Now in the process of purchasing WU20M-11 High Frequency Mechanical Mill for National Tubes, Joao said, "Based on our experience with T&H mills, we expect to see increased production, profitability and competitiveness."

For more information, call 708-482-1800 or visit www.thlemont.com, fax 708-482-1802 or email: wheller@thlemont.com

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Celebrating 15 years of offering tube fusion machines

PIT Bull® machines from pipe fusion expert McElroy are designed to butt fuse thermoplastic pipes together for use in water, gas, mining, wastewater, geothermal, landfill methane recovery and other industries.

The most popular model is the Pit Bull 14, which fuses the common 32 to 110mm pipe size ranges. The 14 and other Pit Bulls are designed to butt fuse lengths or coils of pipe, as well as tees, ells and other fittings. The machine's semi-automatic locking cam system maintains force during the cooling cycle. The company says that contractors have often praised the Pit Bull's ability to go in-ditch to fuse pipe joints.

To celebrate the 15th year of the Pit Bull line, and to answer customer demand, McElroy released the Pit Bull 26, which is designed to fuse pipe sizes from 63 to 180mm DIPS. Customers' requests for a Pit Bull-style fusion machine for the growing pipe installations in the 63 to 180mm pipe size range required McElroy to design the new rugged and reliable fusion machine.

"The Pit Bull fusion machines have stood the test in their 15 years in existence," said company president Chip McElroy. "They represent everything that McElroy fusion machines are known for including quality fusion joints, productivity on jobsites, durability, performance and premier engineering. It's no surprise that the Pit Bull 14 is our best-selling fusion machine and has been for the majority of these 15 years."

McElroy's Pit Bull 26


Pit Bull 14 in operation

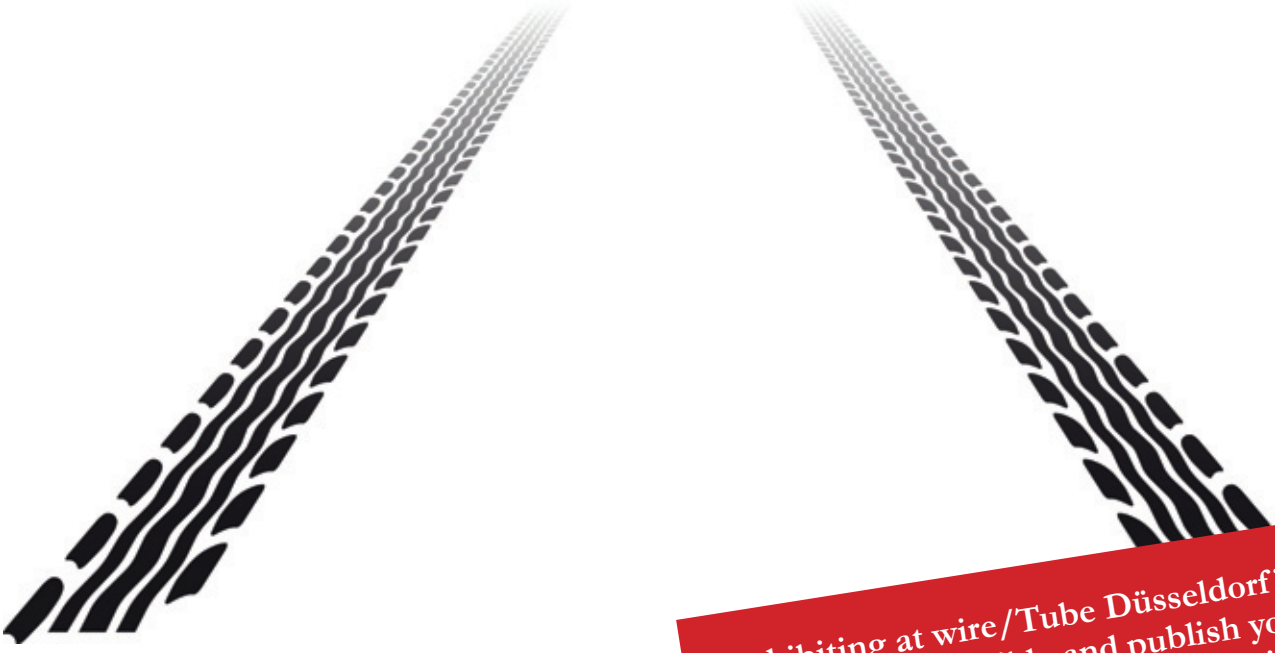
While the Pit Bull 14 and 26 are two of McElroy's best-selling models, the Pit Bull line extends to larger diameter machines that include the Pit Bull 250 (63 to 250mm), 412 (110 to 340mm) and 500 (180 to 500mm).

The most notable change to the Pit Bull line over 15 years has been the tools and training that have grown and developed around the products. McElroy has supplemented the fusion machine with a series of productivity tools that improve various aspects of the fusion experience, as well as developing training courses devoted to small-diameter pipe fusion operations and troubleshooting, taught through McElroy's training division, McElroy University.

The company also offers the 14 and 26 fusion machines as part of a productivity package that pairs a Pit Bull fusion machine with two PolyPorters™ and a Manual Fusion Machine Stand. The PolyPorter productivity tool combines the mechanical advantage of a dolly with the functionality of a pipe stand, while the Manual Fusion Machine Stand brings the fusion operations to a more comfortable height for the operator.

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

No need to cover the tracks!



Exhibiting at wire/Tube Düsseldorf?
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www.neureuter.de

www.neureuter.de/wire2012
www.neureuter.de/tube2012

Solutions for corrugated tubes

ROSENDAHL Metal Tubes & Hoses provides solutions for smooth and corrugated tubes and hoses with diameters from 4 to 200mm, with walls of 0.1 to 4mm, with high demands regarding precision and corrosion resistance.

The main technological competencies are in the fields of metal forming, welding (TIG, laser and plasma welding), in-line heat-treatment, tube cold working, calibration and corrugation of circular round products for solutions for processing high-alloyed stainless steels, nickel-base alloys, copper, aluminium and titanium.

At Tube Düsseldorf the company will present new advancements and technology highlights, including the latest developments for the application fields of solar tubes, heating tubes, hygienic and process tubes, automotive industries and turnkey solutions, with a particular focus on solutions for the processing of titanium.

Rosendahl's cable and wire business unit will be presenting its products at the concurrent wire Düsseldorf event, in Hall 9, Stand A60.

Rosendahl Maschinen GmbH – Austria
Email: office@rosendahlaustria.com
Website: www.rosendahlaustria.com

Circular saw specialist

TSUNE manufactures a range of high performance carbide circular sawing machines and carbide saw blades. The versatility of its technology means that Tsune sawblades can be custom produced to fit any customer requirement.

Established in 1917 in Toyama, Japan, Tsune now operates three separate facilities, manufacturing a comprehensive product range which it exports to Europe through its partners.

To provide support for the interest in Tsune and its products, UK-German partners Sawcraft UK and SCS Peter Brommer launched a website – www.scs-pb.de – to coincide with Tsune's presence at EMO 2011. September's EMO exhibition in Hanover heralded the first opportunity to visit a Tsune exhibition stand on European soil, and the company's first exhibition outside Asia and North America.

Tsune Seiki Co Ltd – Japan
Website: www.tsune.co.jp

Sawcraft UK
Fax: +44 121 561 5691
Email: sales@sawcraft.co.uk
Website: www.sawcraft.co.uk

Extruded pipe tool

AS pipe applications are required to perform in increasingly demanding conditions, engineers are challenged to develop solutions that offer enhanced performance. To do so, they are searching for new online resources that offer innovative material solutions and quick access to experts that can solve their pipe application development needs.

Victrex Polymer Solutions has launched a new website, www.victrexpipes.com, which functions as a convenient resource to learn about pipe and tubing products extruded from high performance Victrex® PEEK™ polymer. The site showcases the benefits of Victrex pipes, which offer an alternative to metals and other polymers in a broad range of markets and applications. The site also enables direct contact with technically skilled members of the pipes team.

Representing the latest advances in both material and manufacturing technology, Victrex pipes open up a host of new application opportunities in demanding operating conditions found in the oil and gas, industrial and aerospace sectors.

The ability of Victrex pipes to withstand high temperatures, corrosive conditions and aggressive chemical environments provides opportunities to increase asset availability and reliability in the increasingly harsh conditions in today's oil and gas industry and demanding industrial environments. In the aerospace sector, manufacturers are increasingly driven by the need to design lightweight, optimally fuel-efficient aircraft, and Victrex pipes, as a lightweight alternative to metals, offer the potential for significant weight reduction.

The new website has been designed to inform users about the properties and benefits of the Victrex pipes range, and how they can help solve specific challenges within a given industry. It also offers access to Victrex's comprehensive library of technical literature and datasheets. The site is designed to be an informative, 'go-to' resource that will be of immediate interest to key decision makers, designers, engineers and OEMs.

Victrex Polymer Solutions – UK
Website: www.victrexpipes.com

Software systems for production and control

IN today's market, where margins for error are very low, businesses need not only a successful strategy but also highly efficient production and logistic processes, with controlled costs for each article and stage of the process, according to Stain, Italy. It says it is vital to measure all operating processes in real time and with reliable data in order to identify and measure all the hidden costs, which require timely corrective and preventive actions if they are to be minimised.

This is not referring to evident costs, which have obviously been eliminated; but instead refers to the numerous little wastages that are not eliminated simply because we are unaware of their existence. Recovering efficiency can no longer involve a single major point of improvement, because if this had already been done Stain would not be in the marketplace now.

Stain has made and installed MES solutions for steel mills, pipe manufacturing, plastic moulding and drawing, die-casting, taps and fittings and machining for over 20 years. Its experience has taught it that gaining in overall efficiency is the sum of numerous small improvements throughout the production process.

It is therefore fundamental to measure all the production and logistic processes at the factory in real time to discover hidden costs, which cannot be eliminated until they have been identified and measured accurately.

For example, companies often fail to take into account that the incidence of micro-stoppages is a major factor in achieving a significant improvement in efficiency.

If a machine stops for more than a hour, everyone knows about it, but if the cycle time is altered by a mere three seconds in a minute to meet process requirements and someone forgets to reset the standard time, you risk discovering it much later when you read the written report the following day, and the loss is 5 per cent on the total number of items produced during the shift. To eliminate these hidden costs in production and logistics Stain has developed the STAIN+ suite based on Siemens PLC technology, which automatically gathers machine data and integrates it with ERP, with automated production and logistic flows via a fully modular user-friendly solution. STAIN+ is a set of tools that provide a lens for discovering hidden costs in the various departments, and collecting machine information automatically and in real time, and a gauge for measuring the benefits achieved by corrective actions implemented in view of continuous process improvement.

STAIN+ is a comprehensive, modular suite integrated with packages that include data collection and production progress monitoring, automatic identification of each bin using barcode or RFID technology, computerisation of logistic flows in the departments, allowing the real-time management of stocks and work traceability, tool management (spindles, implements, inserts, dies and moulds), quality and statistical process control (SPC), and preventive and corrective maintenance.

Stain – Italy
Website: www.stain.it

Detecting punctual flaws

ISEND SA has developed its own technology to develop, manufacture and maintain non-destructive testing (NDT) equipment based on eddy current technology. ISEND is entirely engaged with the continuous investigation and innovation to be able to offer a constant improvement of its technology and its equipment to companies from the iron and steel industry but also from other industries such as automotive, energy and petrochemical.

ISEND SA has developed a wide range of different inspection systems with the best features on the market. Its equipment is able to perform an on-line inspection of semi-finished products, as well as an inspection of finished products off-line. Each one has been specially designed for one kind of defect and product category.

The Encircling Inspection System is the most versatile system of the ISEND's range to control punctual flaws in all varieties of bars, tubes or wires using eddy current technology. The system consists of an encircling magnetisation unit or an encircling support which houses an encircling coil.

This encircling coil, independently of their size and form, involves the material inspected. As a result, it allows controlling the entire product perimeter with accurate results. During the inspection there is no contact between the probe and the material controlled. Cylindrical canyons are used to protect the coil from the product vibrations.

Moreover, this system can be complemented with the ROTODiscover® inspection system, which is able to detect longitudinal defects.

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Peeling, grinding and straightening

ZUMBACH Electronic, Switzerland, has extended its well-known range of ODAC® laser scanners for non-contact inline diameter measurement for large size solutions.

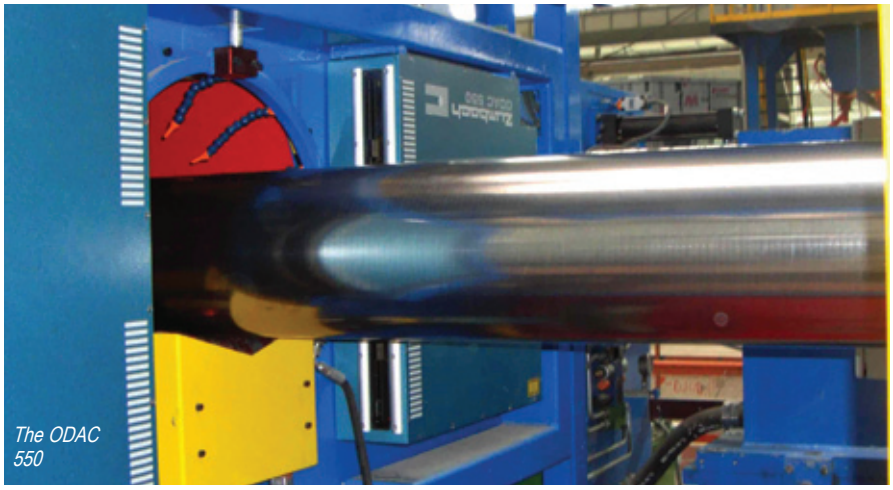
With the ODAC 550 it is now possible to measure large steel bars, tubes, rolls, etc up to 500mm or more at accuracies of a few metric microns and rates of up to 2,000 measurements/s. Any other material like titanium, brass, alloys or plastic works as well.

This was made possible by the development of a revolutionary optical scanning technique with a highly parallel and seamless measuring field (no dead zone).

This technology also allows mounting emitter and receiver far apart from each other, depending on the available space conditions.

Typical processes where the system offers new solutions are peeling, grinding, polishing, straightening as well as in quality control lines (NDT). The dimensional data for diameter and ovality can be fed out directly to the user's network or also displayed in real time for the operator by USYS processors and for feedback to the machine. Complete accessories like secondary protection enclosures, cooling devices, air purging, air knives, etc are available for heavy duty environments.

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



The ODAC 550

Wuppermann expands machinery line

THE Wuppermann group has extended its range of products following the acquisition of a production plant in Malomice, Poland. The site previously belonged to the Alpos group. Wuppermann's technical products division can now offer black steel tubes alongside pickled, galvanised and stainless steel tubes. Production resumed under the name Wuppermann Polska sp zoo, and the new managing director is Konrad Waszak, who was previously employed by Alpos.

"Our aim is to build up our business in Eastern Europe, which is why this acquisition is of such strategic significance for Wuppermann," commented Dr CL Theodor Wuppermann, chief financial officer and spokesman of the board of management of Wuppermann AG. "We have been producing in the Czech Republic for ten years now and we are continually expanding our site there. This latest acquisition raises our profile in the East European steel market and continues our policy of growth."

Alongside pickled, galvanised and stainless steel tubes, Wupperman can now offer black tubes

The plant in Malomice has two tube production lines that manufacture black and galvanised tubes. A steel strip system supplies material to the plant's tube production lines. It is also used to process customer orders for steel strips. A tube saw system permits tube processing.

"The new production site in Poland adds black steel tubes to our product range. We can now supply the complete range of welded steel tubes to all Wuppermann customers," said Dr Arnd Schaff, member of the board of management and responsible for the technical products division.

The production plant was part of the insolvency estate of the Slovenia-based Alpos group, and became insolvent in December 2010. The Wuppermann group's product portfolio includes flat rolled steel products, tubes, tube components and sheet metal parts made of steel, stainless steel and aluminium for the electronics industry, the shop-fitting and machine construction sectors, the medical technology sector, the furniture, food, packaging and solar industry, water and waste water technology and white goods. The group has twelve production plants in Europe and more than 1,200 employees.

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Website: www.wuppermann.com

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www.somoproduzione.com

Hydraulic bending systems for tubes

INTERLAKEN produces hydroforming press systems for use in tubular part production or materials research applications. The systems are computer controlled hydraulic press systems with data acquisition that uses a high-pressure liquid to hydroform materials. Interlaken's hydroforming press systems are designed to embrace both tube and sheet hydroforming applications. Gas forming systems are also available.

The hydroforming press systems are equipped with Interlaken's UniPress control system for reliable and precise control over the hydroforming process. Easy to use Windows compatible interface software enables users to build motion and force profiles designed to fit specific forming needs. The multi-channel closed loop control system is easily programmed to handle event as well as time dependencies.

The control system offers dynamic mode switching which enables the user to switch between a variety of feedbacks such as force, position, internal pressure and other system variables.

Hydroformed parts are stronger and weigh less due to structural integrity and fewer welds or add-on pieces. In addition, costs are reduced and time is saved by eliminating secondary operations, reducing scrap, lowering material and manufacturing costs, and increasing design flexibility. With superior control over forces and motions, Interlaken's Hydroforming Press provides a greater overall quality of formed parts.

A dual operation mode provides flexibility. The Learning/Research Mode determines tool and die specifications, measures and optimises processes, and programs forces and motions. The Production Mode runs the optimised profile while monitoring and recording process variables.

Interlaken Technology Corporation – USA
Email: dprill@interlaken.com
Website: www.interlaken.com

Flux cored product range widened

HAVING started flux cored wire production in 2009; Gedik welding has been widening its product range via R&D restructuring that includes butt and seamless flux cored wire production technologies.

The advantages of flux cored wire are high deposition rate, smoothness seam, easiest functionality in every position and less distortion and stress as compared to shielded metal arc welding. Ever-changing and improving industrial applications create the demand for flux cored wires.

Gedik – Turkey
Website: www.gedikwelding.com

Full-length pipe expander

FONTIJNE Grotnes has developed over the years into a specialist in the design and construction of pipe-ends and full length pipe expanders for the pipe industry. The Fontijne Grotnes' expander guarantees a constant, reproducible process regarding diameter and mechanical properties. The design maximises the radial forces in order to obtain maximum output in relation to pipe dimensions.

A full length pipe expander is an essential part of the production process in a pipe mill. The pipe expander process makes the welding of the pipeline in the field, even cut pipe sections, much easier. Fontijne Grotnes is constantly improving and preparing the full length pipe expander process for new market demands, like higher outputs, thicker wall thickness, higher material grades up to X120, stricter ovality and straightness tolerances.

Straightening System is a development of Fontijne Grotnes, which is especially designed for small pipes ranging from 16"-30". This system controls the straightness of the pipes in all directions within ½ -API- and DNV-standards.

Fontijne Grotnes – The Netherlands
Email: k.holsteijn@fontijnegrotnes.com
Website: www.fontijnegrotnes.com

The Fontijne Grotnes pipe expander

Modular handling for tubes

EUROMAQUINA has further developed its modular handling equipment for tubes and bars, such as entry tables, roll-ways, silent cradles and others.

As Euromaquina is also an expert in revamping finishing machinery, the company offers integration in line of existing machinery for automatic production without big expenses.

The company's own emulsion filtering unit FILTRA-4 (which can be found at the website address: www.filtra4.com) helps with maintenance free, high quality emulsion in tube production or bar finishing lines. A complete integrated project has been just set up in Peru.

Euromaquina – Spain
Website: www.euromaquina.com

We will exhibit at Tube Düsseldorf 2012 STAND 6E30

OTO®

Through continued investments in technology and innovation, Oto Mills has become the only manufacturer in the world capable of producing tube mills with a complete range from 4.75mm to 660mm outside diameter.
The creation of a more complete package of products and services for customers by offering lift trucks and stackers from 16 to 52 tons and the acquisitions of excellent companies has driven the reconfiguration of the corporate structure while maintaining the original values and corporate philosophy that has led Oto Mills for many successful years.

Since September 2011 OTO S.p.A. has assumed the role of parent company containing three business units and one 100% owned subsidiary: OTO Mills manufacturing Tube Mills Lines, OTO Lift Trucks producing Forklift Trucks, OTO Steel, the Motteggiana plant, which produces welded structures and OTO Automation Srl the former Elletre S.r.L. of Sovizzo (VI) which is completely owned by OTO S.p.A.

With more than 300 employees, a total area of 85.000 square meters of which 36.000 square meters is covered, with products completely made in Italy, OTO S.p.A. continues to consolidate and develop its own know-how over time.
Transforming and adapting to the requirements of the market, OTO S.p.A. is offering itself to customers as a partner of great reliability, excellence and innovation with the aim of making history together.

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info@otocompany.com

OTO automation S.R.L.
Via del Commercio, 15
36050 Sovizzo (VI) Italy
Tel. +39 0444 376811
Fax +39 0444 376812
info@otoautomation.com
www.otoautomation.com

Materials technology for offshore oil and gas industry

SANDVIK Materials Technology is a developer and producer of advanced stainless steels, special alloys, titanium and other high-performance materials. Its products are offered on an ex-stock basis from its UK distribution centre or on short delivery times from other European distribution centres. The company showcased some of the latest material solutions for the oil and gas industry at Offshore Europe 2011, at the International Exhibition Centre, Aberdeen.

Examples of the company's expertise in stainless steel and advanced materials development were displayed with products in highly corrosion resistant hyper-duplex, super-duplex and duplex grades, through to titanium special metal grades. "Many of the materials we offer are specifically developed to satisfy the highly corrosive environments found throughout the world in demanding oil and gas exploration," commented Haydn Eagle of Sandvik. "Our expertise and continuous research and development have led to the introduction of products that not only satisfy the operational requirements of E&P installations, but also help to reduce the real lifetime operational costs."

Sandvik recently introduced the hyper-duplex grade Sandvik SAF 3207 HD™, offering higher yield strength while providing the capability to withstand increased pressure. This enables thinner wall umbilicals, which in turn reduce reel sizes, helping to lower installation costs.

A full range of material grades is also available across the company's comprehensive wirelines programme, now available in bright finish for increased operational efficiency and life, particularly for extreme conditions that place significant operational demands on slicklines and logging cables. The company's materials technology was emphasised in the range of products displayed at Offshore Europe, including seamless and welded pipe, fittings and flanges, bar and hollow bar, billet, welding products and services. Other specialised products represented on the stand included control lines and chemical injection lines, downhole casing and production tubing, powder metallurgy components, Sandvik ClikLoc™ rapid action connector and umbilicals.

Sandvik Materials Technology UK
Email: sales.smtuk@sandvik.com
Website: www.smt.sandvik.com

Sandvik's stand for Offshore Europe 2011

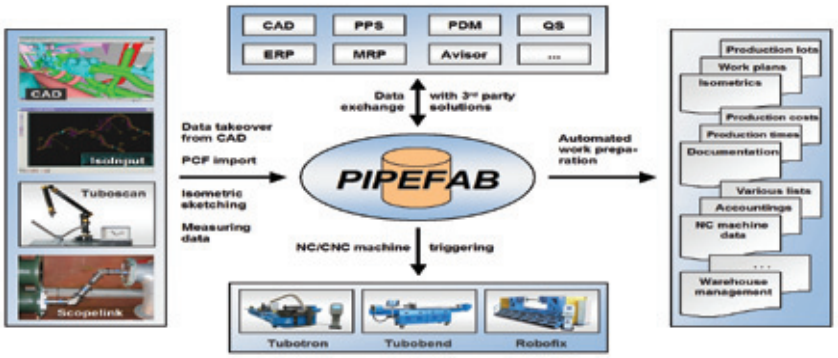
Life cycle management for pipelines

PIPELINE construction is labour and cost intensive, but there are definitely possibilities for rationalisation. These are not only due to the installation of economical production machines; they are also a result of the optimal organisation of the value-added processes by the well-aimed application of intelligent software systems.

Both disciplines must be seen together, however, if the greatest possible benefit is to be achieved. With pipe bending and pipe processing machines and system and software solutions, custom-made to meet the special demands in pipeline construction (eg in the shipbuilding and offshore industry or plant engineering), Tracto-Technik (TT) has solutions for these optimisation processes.

With the modular-designed Pipefab production management software pack, TT provides a branch solution for pipeline construction with far-reaching CIM functionality, which integrates all areas of the life cycle of pipelines digitally – from engineering to material management and production to assembly. The basic idea behind the Pipefab development was to reproduce demands from the practice in efficient systems and link them to universal solutions.

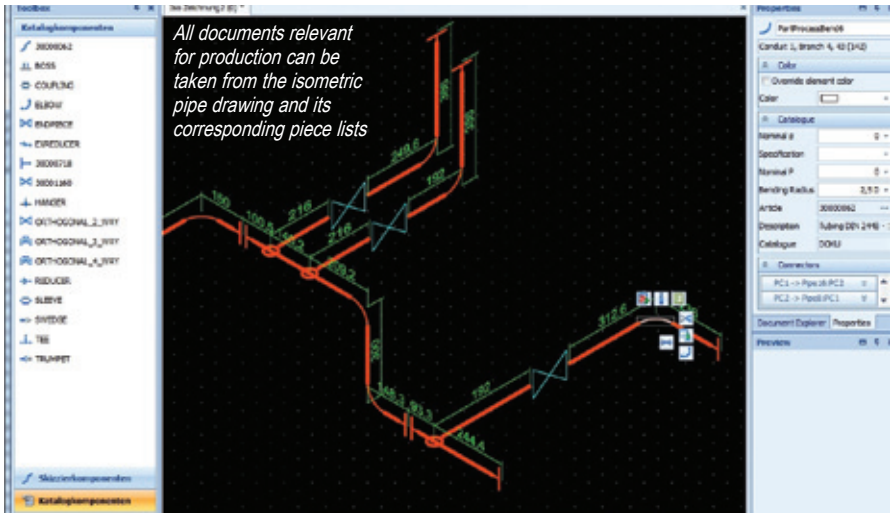
The establishment of a P&ID (piping and instrumentation diagram), pipeline plans and isometric pipeline drawings is part of the single construction and planning steps. These isometric drawings can easily be uploaded in Pipefab from the different 3D-CAD systems used for constructing pipeline systems via interfaces. It is also possible to generate isometric pipe drawings from the measured data of different kinds of 3D pipe measuring systems (eg measurement of defective pipes which are going to be replaced) or to generate them directly with the help of an isometric drawing module integrated in Pipefab.



Pipefab supports the entire lifecycle of pipes and pipeline systems, combining engineering and production technology

The isometric pipe drawings are stored in a central database, and they represent the basic data for production. Among others, the software draws up work plans and spools, takes over the calculation of production times and costs, performs storage management (including the functions of material requirement planning); it issues bending, sawing or flame cutting lists and provides CNC data for the available processing machines in production.

The optimisation process starts with the pipe prototype held ready at the pipe inventory. The storage management module for the control of the pipe inventory, conveying system and sawing unit integrated in Pipefab also includes a blank optimisation function which can minimise the sawing waste and so optimise material consumption by calculating the delivery lengths and remaining pieces. An additional preview function for material requirements shows up possible shortage in quantity and allows acquiring the necessary pipe material in good time. By combining single production units from the central Pipefab database, production orders (production lots) are generated.



All documents relevant for production can be taken from the isometric pipe drawing and its corresponding piece lists

Tracto-Technik GmbH & Co KG –
Germany
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Website: pipebending.tracto-technik.com

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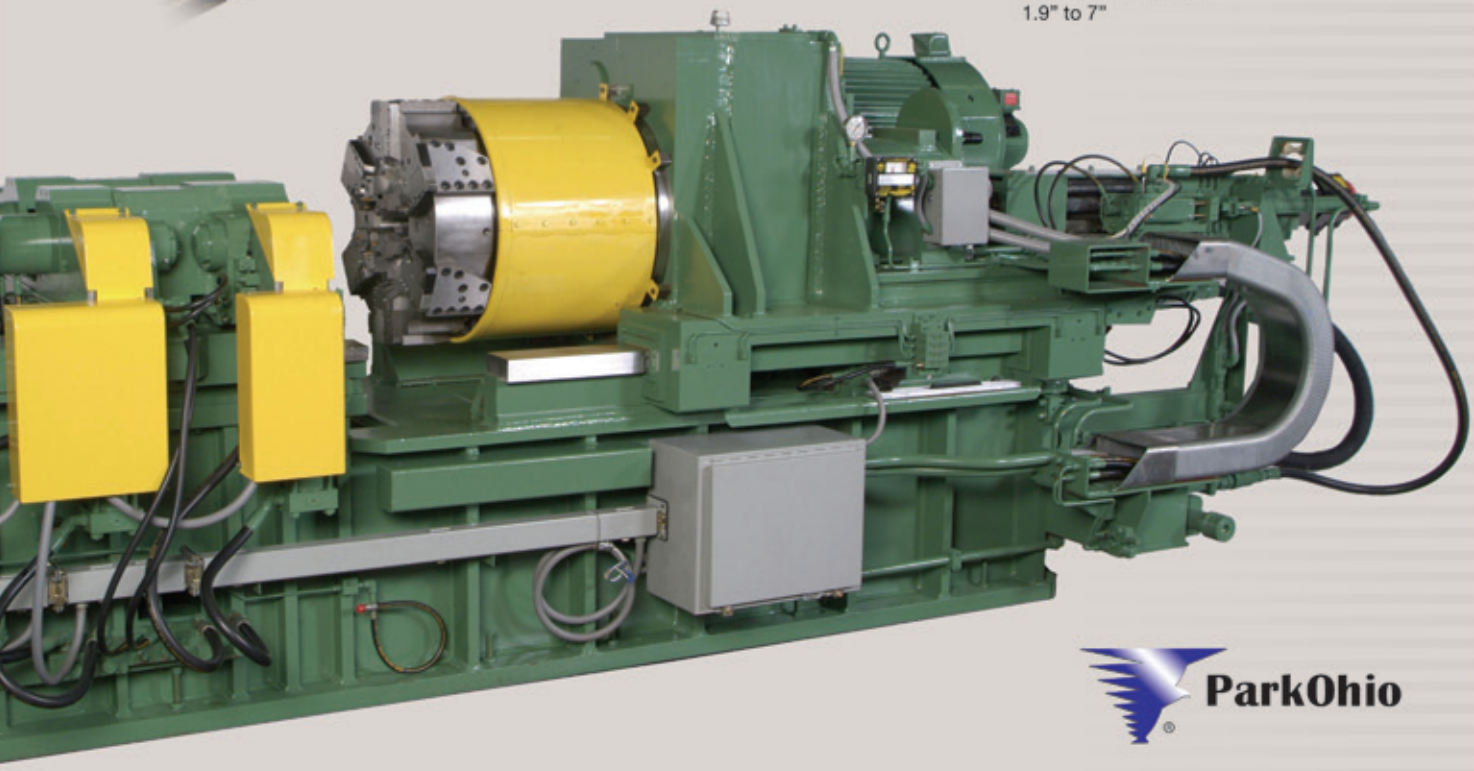
2 3/8" to 7"

MODEL

RTP07-2

48.3mm to 177.8mm
1.9" to 7"



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www.pmc-colinet.com

Corrosion mapping scanning solution

BUILDING on the success of the Corrosion WheelProbe, a new semi-automated solution for corrosion mapping applications has been developed by Sonatest Ltd. The Veo & Corrosion WheelProbe (CWP) scanning system is a new enhancement in response to clients' requests, providing an easier way of providing 100% coverage.

The system consists of the veo 16:64, a phased array flaw detector, a 64 element Corrosion WheelProbe and a CWP scanner. The Corrosion Wheel Probe is a tried and tested solution for corrosion mapping by many companies in the pipeline and oil and gas sectors. The scan width of a Corrosion WheelProbe (CWP) is close to 50mm in one pass and it can be used on pipe diameters from 4" to 42". The conformable tyre allows coupling to rough surfaces, and the design allows for consistent, reliable inspection in both depth and amplitude. This amplitude mode enhances the possibility of finding small pit type defects, which do not normally give a good ultrasonic response, however results show excellent indications of internal condition.

The CWP is fitted to an adjustable connector, equipped with a second encoder, and allows for multiple adjacent scans with a good overlap for complete coverage. The distinct advantage of the CWP Scanning System is in the relative simplicity and complete autonomy from the need for additional power sources on the inspection site. Ease of portability along with the speed of set-up and deployment is also a key advantage for the user in the field.

Sonatest Ltd – UK
Fax: +44 1908 321323
Email: sales@sonatest.com
Website: www.sonatest.com

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MicroGroup enhances capabilities

MICROGROUP is a manufacturer of precision metal components and assemblies, as well as a manufacturer and distributor of stainless steel tubing and fittings through the All Tube business unit. The company's primary focus is meeting individual customer needs by offering a wide range of in-house manufacturing operations and engineering services that allows them to more effectively manage projects from prototype to commercial quantities.

The company's new AgieCharmilles Cut 30 brings added capacity and new capabilities to its electric discharge machine (EDM) centre. EDM is a non-traditional, non-contact method for creating complex geometries and features which cannot be machined by more conventional manufacturing processes and, because it is a non-contact operation, does not impart any mechanical forces.

This makes EDM a suitable method for machining thin-walled or fragile parts. According to Alex Magyar, vice president of operations for MicroGroup, the new machine is MicroGroup's 22nd machine utilising this technology: "What attracted us to this machine were the improved cycle times, ability to hold tighter tolerances and the capability to machine a longer part versus older machines."

"This is another example of MicroGroup's commitment to investing in the technology that is consistent with our goals of delivering speed and precision to our customers," commented Bill Bergen, MicroGroup's president and CEO. "Continued investment into equipment and infrastructure remains an important part of ensuring we are positioned to help our customers remain successful; particularly on today's smaller, more difficult and exacting components with increasingly tighter tolerances for assembly and higher quality expectations."

MicroGroup – USA
Fax: +1 508 533 5691
Email: info@microgroup.com
Website: www.microgroup.com

Purge monitor

HUNTINGDON Fusion Techniques has introduced a new dedicated Weld Purge Monitor.

Having developed the models MKI to MKV in a particular style, the company has embraced advanced technology to create a new instrument, designated PurgEye™100, which offers significant advances. Features include integrated auto-calibration, requiring just the press of a button to calibrate both at ambient and at the lowest oxygen reading, and providing instant calibration at 0.01% O_2.

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

The innovation from the
global market leader for seam welding technology:

Overground Long Seam Milling Machine

NEW CONCEPT!

For wind tower and vessel shell production

- **no foundation necessary, therefore even mobile application possible**
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Sectional view of a milled weld seam

GRAEBENER MASCHINENTECHNIK

www.graebener-group.com

57250 Netphen-Werthenbach/Germany – Am Heller 1 – Phone +49 2737 989-200

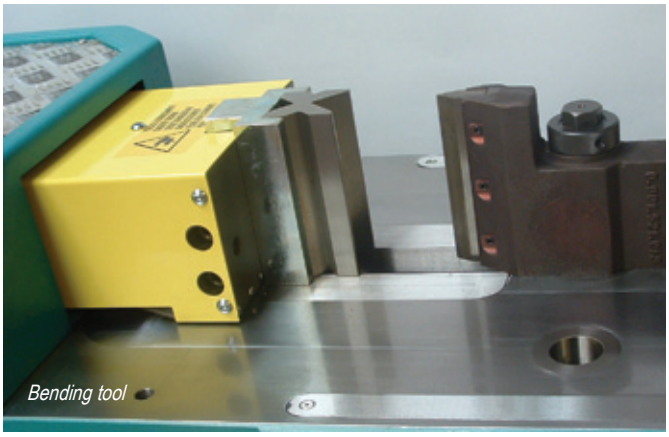
Universal horizontal presses

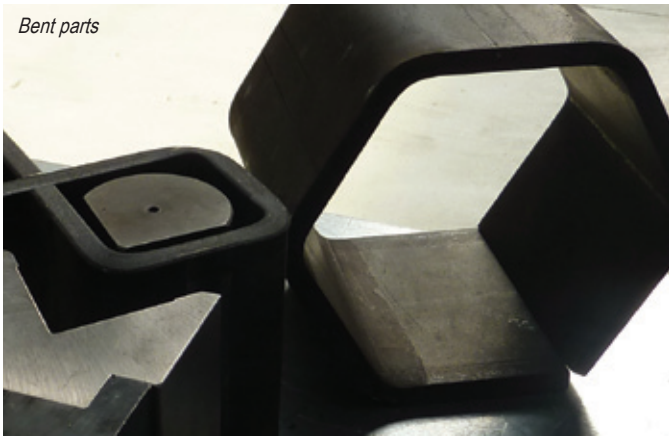
APOLLO'S range of horizontal presses are hydraulic machines controlled by a gearbox supplying pressure to a cylinder. They are designated universal because their tools may be simply changed to bend, punch or shear any shape of material.

The self-lubricating cylinder is located on the same axes as the working arm and allows full use of the hydraulic strength emitted. A driven-pump self-lubricating system, protecting slides from dust and slags with gaskets, makes the machine reliable and prevents the need for frequent servicing. The strong bases of the universal presses are heat-stabilised to prevent strains over time and subsequent clearances in the slide unit.

The equipment can be changed by using three helical hooking pins, allowing an operator to act within a few tenths of a second, while keeping the machine running. According to the type of tool used, the length of the stroke of the working slide may be changed and idle running times may be cancelled. Available in four different models, the presses can be adapted to be used in automated processes. They can be connected to an automatic NC layer-on for mass punching and shearing operations, after entering the related programming data on the keyboard.

Apollo Srl – Italy
Fax: +39 0536 851273
Email: info@apollosrl.com
Website: www.apollosrl.com


Bending tool


Bent parts

Automatic Krebs viscosity test

ELCOMETER has launched the new Elcometer 2250 Krebs Viscometer. Featuring a unique automatic test mode, the Elcometer 2250 measures the viscosity of paints, varnishes, adhesives, pastes and liquid inks at the touch of a button.

With a fixed spindle speed of 200rpm, – accurate to ±1%, the Elcometer 2250 offers users both a fully automatic or manual Krebs viscosity test, displaying the viscosity on screen in a choice of Krebs units, grams or centipoise.

Reliable and consistent results can be achieved using the instrument's 'Automatic' mode – ideal for continuous testing. Simply position the sample on the support and press 'Start'. The drive head automatically moves down until the spindle is immersed in the sample at the correct position. After a pause to let the sample settle the test will begin and, once complete, the head automatically returns to the start position allowing the sample to be removed.

The Elcometer 2250 can also be used in 'Manual' Mode – ideal for testing when using non-standard container sizes.

Elcometer is a leading manufacturer of high quality inspection equipment, with specialised divisions dedicated to coatings inspection, concrete inspection and metal detection.

Elcometer – UK
Email: sales@elcometer.com
Website: www.elcometer.com

Hydraulic 4 roll plate rolling machine

CARELL Corporation has introduced a new HTH 20-150 four roll, double initial pinch, plate bending machine designed for manufacturing efficiency by using an automated work cycle for the production of cylindrical and radius segmental parts. The machine is designed to rapidly produce radiused and cylindrical parts from start to finish at the touch of a button in a cost-effective manner.

Machines are engineered for high-speed continuous production with easy set up using durable mechanical and electric limit devices. Add an auto loading and ejector system and the Hi Tech unit becomes a powerful production tool for increasing throughput while reducing handling time to an absolute minimum.

Carell Corporation – USA
Website: www.carellcorp.com

THE 13th GUANGZHOU INTERNATIONAL TUBE & PIPE INDUSTRY EXHIBITION

Show time: 19 - 21 June, 2012

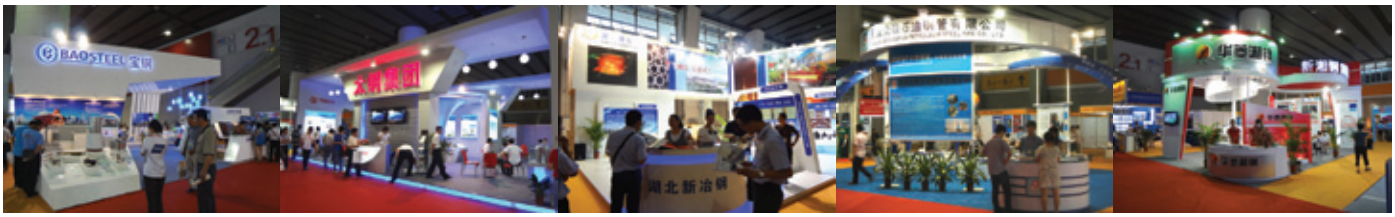
Venue: China Import and Export Fair Pazhou Complex

www.tubechina-gz.com

In the past twelve years, the exhibition successfully played its role in industry trade boost. It has attracted 200,000 professional purchasers, been attended by over 30 countries business departments, and been issued by more than 300 medias. "The 13th Guangzhou International Tube & Pipe Industry Exhibition" will be held at Pazhou Complex-the largest exhibition center in Asia.

Take a panoramic view around the world, this exhibition will play an important role & bring great business opportunities again.

Hope vendors & visitors could catch this great opportunity to win a good year.



INVITATION

Scope of exhibiting

1. Raw materials, tubes and accessories
2. Tube manufacturing machinery
3. Rebuilt and reconditioned machinery
4. Process technology tools and auxiliaries
5. Measuring and control technology
6. Testing
7. Specialist areas
8. Trading stockists of tubes
9. Pipeline and OCTG technology

Promotion

1. Advertising in the related authoritative magazines in Germany, USA, UK, South Korea, India, Russia, Japan etc.
2. Continuous nationwide report & advertising on TV, publication & newspaper.
3. 300,000 free visiting tickets to target customers by our expanding department.
4. Leaflets about the exhibition which will be distributed by local professional associations (academies), commercial section of foreign embassies in China and relevant international organizations in China.
5. Leaflets about relevant exhibitions at home and abroad.

Advertisement

The official journal is perfectly printed with A4 art papers（210mm×285 mm）and distributed to exhibitors and visitors. Enterprises are welcomed to make advertisement in our journal or by other ways. The details see as follows:

Cover: USD1200	Admission ticket:USD2500/10000pcs	Inside front cover/inside back cover: USD5000
Back cover/marked page USD6000	Color page: USD3000	Press kit：USD5000/5000pcs

Procedures of participation

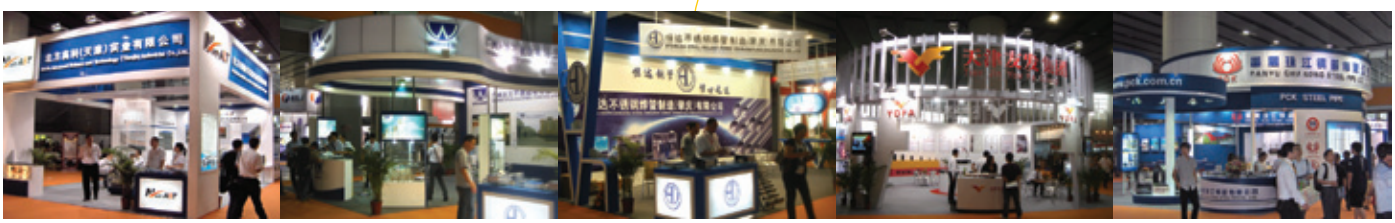
1. Post or fax the filled & stamped application to us.
2. Participation fee should be transferred into our company account & swift receipt should be fax to us within one week after receiving the stand confirmation.
3. The contract will officially become effective after receiving participation fee. The booth can not be subleased or loaned to any third party for any reason.
4. The location of booth will be allotted according to application date and size.

Exhibition charges

Brand Hall (minimum area of 36sqms): 380 USD/sqm raw space rent + 5 USD/sqm construction management fees
Overseas Exhibitors Standard Booth: USD3800/booth (9sqms)
Included Basic Fittings: booth boarding, fascia board with company name, one table, two chairs, carpet , garbage can , two daylight lamps ,air condition
Product Release Conference & Technical Seminar: 800 USD/section (120mins)

Service

1. Help exhibitors arrange the conveyance of exhibits.
2. Help arrange the lodging and ticket for exhibitors in prior and preferential.
3. Help the exhibitors open the news release meeting and trade meeting on site.
4. Invite the domestic and international expert hold the forum of high level profession.
5. Help the exhibitors collect the concerning market information and data.



Approved By: The Department of Foreign Trade & Economic Cooperation of Guangdong Province

Organizers: Guangzhou Julang Exhibition Design Co., Ltd

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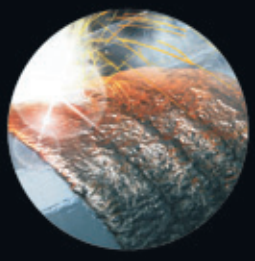

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NOV Tuboscope

Handheld EDXRF spectrometer

SPECTRO Analytical Instruments, a supplier of analytical instruments for optical emission and XRF spectrometry, has introduced the next-generation Spectro xSORT handheld energy dispersive X-ray fluorescence (EDXRF) spectrometer. The new instrument comes in a smaller, lightweight package that offers better analytical performance, and incorporates many new features.

The new xSORT is designed for high-throughput elemental testing and spectrochemical analysis of a wide range of metals and other materials in the field. It is suitable for applications including positive material identification (PMI) and environmental screening, recycling of alloys, precious metals, and aluminium, plus mining and compliance screening.

"Users were requesting more speed, higher accuracy and greater operating simplicity in the field," commented Dirk Wissmann, senior product manager. "For many jobs, such as material verification, our new instrument delivers highly reliable analyses in two seconds. And for more complex matrices such as in environmental screening, Spectro xSORT achieves very low detection limits without the need for complex sample preparation."

The xSORT is also available with time and cost-saving features such as an integrated video camera for precise spot testing and visual memory storage. Also available is an integrated global positioning system (GPS) that allows users to quickly return to previously checked locations without time-wasting resurveys.

For metals and most alloys, Spectro xSORT delivers grade identification and material verification within two seconds of clicking its trigger.

Spectro Analytical Instruments GmbH
– Germany
Fax: +49 2821 8922200
Email: spectro.info@ametek.com
Website: www.spectro.com

Spectro xSORT handheld spectrometer

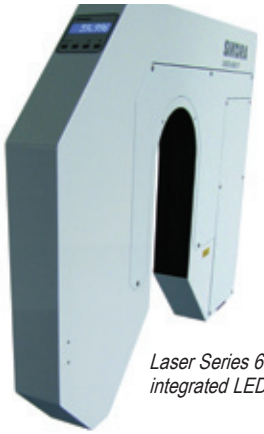
Gauge heads with integrated display

SIKORA engineers have developed a new technical feature for the company's Laser Series 6000 diameter gauge heads: an integrated LED display with control panel option.

This allows the operator to read the diameter measuring value directly from the gauge head.

In addition, the LED display informs about events such as dirt in the measuring range, and gives messages if the product is out of the measuring range. With the use of an externally connected control module, the operator can set up the current diameter nominal value up to four digits after the decimal point. Via the line speed or the extruder rpm the module controls the diameter automatically to the newly set value.

Sikora AG – Germany
Fax: +49 421 48900 90
Email: sales@sikora.net
Website: www.sikora.net



Laser Series 6000 now features integrated LED display

Solution for 3D design and manipulation of folded metalwork and tubes

LANTEK has enhanced its Flex3d software for the design, folding/unfolding and 3D cutting of tubes, profiles and sheet metal parts, as part of the latest 2011 version of its software.

The new features incorporated into Flex3d represent an advance for the sheet metal industry, providing it with a more flexible solution with comprehensive functionality, capable of being tailored to meet the needs of individual users.

Lantek Flex3d has the power to manage large-scale projects and incorporates advanced 3D design technologies in its architecture. Lantek has also significantly improved the software's CAD data exchange capabilities, with claimed speed improvements of 300 per cent.

Flex3d V2011, like previous versions, is fully integrated with all of the company's other applications, simplifying and easing the management and coordination of manufacturing processes. The new developments introduced by Lantek are a response to the demands of companies within the industry, enabling them to increase productivity and keep ahead in the market.

Lantek Flex3d comprises eight specific modules, enabling the user to: perform folding and unfolding tasks; work with tubes or profiles; carry out integrated design and manufacture with SolidWorks®, Autodesk Inventor®, Solid Edge®, CATIA®, Creo Elements/Pro® and Siemens NX®; automate the programming of laser and waterjet five-axis sheet metal cutting machines; and design and cut standard profiles using the Lantek Flex3d Steelwork module.

In the 2011 version of Lantek's software, all the modules incorporate new intuitive functionality that makes 3D design and manufacture faster and easier for the user. Within the Flex3d product family the company has focused on three modules in particular.

Flex3d Tubes, developed for the design and cutting of tubular components, includes: new geometry macros; the ability to automatically assign specific cutting technology to each machining parameter; improved simulation of five-axis cutting; and more automated nesting capability. These new features make it easier for users to visualise the real results of their tube cutting operations.

Flex3d Steelwork, intended for the design and cutting of steelwork profiles, is easier to use. Customisation enables engineers to tailor the system to their requirements and now includes automatic screw and countersink management to ISO standards, as well as to the special requirements of each company. Machining operations can be visualised and checked faster and more efficiently in the new version.

Flex3d 5x, aimed at programming 3D sheet metal cutting machines with five-axis heads, benefits from some important improvements. Totally compatible with the main 3D design systems used in the sheet metal industry, the software enables users to import parts in virtually any format ready for five-axis cutting.

Intuitive commands lead the user through the programming phase, greatly simplifying the process. Other innovations include new workbench positioning methodology, automatic machining algorithms, and fast and flexible verification and simulation, all designed to improve productivity and reliability.

Mario Rodríguez, product manager for Flex3d, commented, "The developments in the latest versions of our software have produced a powerful, flexible, agile and enormously intuitive solution that makes 3D part design and manufacture easier, in a process that can be tailored to the needs of individual companies.

"The new version is a major step forward for the industry and is evidence of Lantek's commitment to producing innovating systems which include the latest technology, to help in the simplification of design and manufacture, and to improve competitiveness within the metal processing sector."

Lantek Sheet Metal Solutions
– Spain
Email: info@lanteksms.com
Website: www.lanteksms.com

OCTG machining

OVER the past decade, Danobat has emerged as one of the major suppliers of individual machine tools and complete turnkey lines to equipment manufacturers in the OCTG (oil country tubular goods) segment of the oil and gas industry. Customers for Danobat's products include some of the most important OCTG manufacturers.

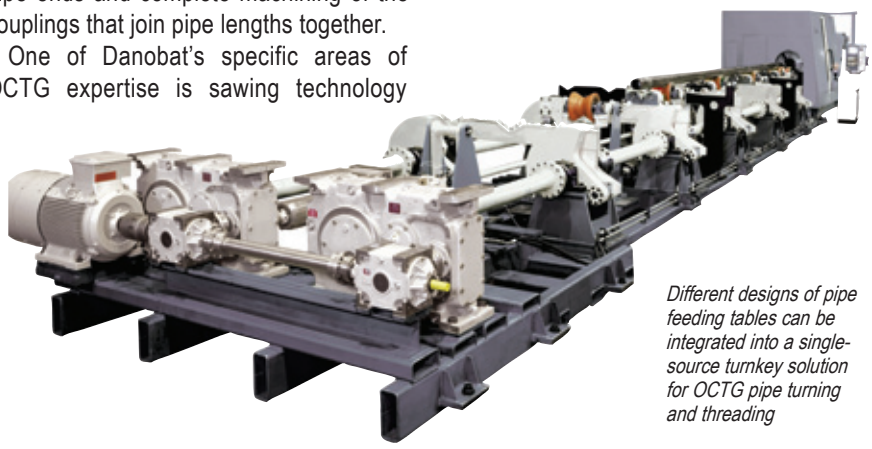
For anyone involved in the machining of difficult-to-machine materials such as high specification corrosion resistant alloys, the last thing they need is a problem with a finish machining operation that could result in damage to a high value component and delays in meeting delivery dates. The challenge that Danobat has addressed is the design and development of machine tools and systems capable of dealing with increasing pipe thicknesses; tougher, more corrosion-resistant materials; and the demand for greater types of threads for pipe ends and couplings, all prompted by the fact that drilling is reaching deeper and deeper beneath the earth's surface.

Danobat machine tool technology embraces the machining and threading of pipe ends and complete machining of the couplings that join pipe lengths together.

One of Danobat's specific areas of OCTG expertise is sawing technology for drill pipes, a process that involves two Danobat CP sawing machines that move along a slide in order to adjust the pipe length as required. Powerful software optimises the machining process, integrating adaptive intelligent cutting and blade deflection control to automatically adjust blade speed and downfeed for optimum performance, straightness of cut and maximum blade life.

Once cut to length, individual pipes can be thread to API, GOST or premium standards by rotating the pipe in Danobat TT and TT-B horizontal lathes. These machines are designed on a modular basis using finite element analysis, with the five models in the TT range covering pipe diameters up to 20". The main features of these lathes, which offer the choice of headstock on either the left or right side, are four-axis simultaneous thread cutting and spindle motor power up to 170kW, depending on the model.

Danobat – Spain
Fax: +34 943 743 138
Website: www.danobatgroup.com



Different designs of pipe feeding tables can be integrated into a single-source turnkey solution for OCTG pipe turning and threading

New Otto Fuchs commission

HERTWICH Engineering GmbH, part of the SMS group, has successfully commissioned two two-chamber melting furnaces at Otto Fuchs in Meinerzhagen, Germany. The annual production is 50,000t, and the furnaces are equipped with regenerative heating systems that help to reduce energy consumption and emissions. The new Ecomelt melting furnaces from Hertwich Engineering are charged from above. They operate with integrated scrap preheating and use the immersion melting process, which enables them to achieve high metal yield.

SMS Meer GmbH – Germany
Email: info@sms-meer.com
Website: www.sms-meer.com

Sawing machines ensure high quality

MASCHINENFABRIK Liezen und Gießerei GmbH (MFL), Austria provides customised sawing and milling equipment for tube manufacturers all over the world.

The company's cold circular sawing machines are used for cutting stainless steel, high and low alloyed steel, structural steel and non-ferrous metals in the form of billets, tubes, profiles and plates. The machines are equipped with carbide tipped saw blades that ensure high performance and a long service life by less costs.

The cutting machines are classified into single cut sawing machines and layer sawing machines. The single cut sawing machines are able to cut billets and single tubes with a diameter from 30 to 800mm. The layer sawing machines are used for cutting of seamless tubes, I- and U-beams, sheet pilings and angles.

The sawing machines are designed for heavy duty applications and have a main drive power range from 22 to 200 kW and a servo motor controlled feed drive. The Step 7 programmed sawing machines are operated via a visualised operator surface by a personal computer or operator panel. MFL is able to offer stand-alone machines as well as complete sawing lines with inlet and outlet equipment according to the customer's requirement.

During more than ten years of experience MFL made its name for being a competent and experience partner for sawing and milling technology and provides technical know-how combined with latest state-of-the-art technology.

MFL will be present at Tube Düsseldorf 2012 to present its latest technologies and advances.

Maschinenfabrik Liezen und Gießerei GmbH – Austria
Email: saegen.fraesen@mfl.at
Website: www.mfl.at

MFL layer sawing machine HK 2200 L160

Top quality tube welding equipment

PROTEM owes its international recognition to values that it has protected since its creation. These values are illustrated by its knowledge and professionalism. More than 15,000 pieces of Protem portable machining equipment are used all around the world.

During the last 30 years, Protem designed more than 500 specific pieces of equipment according to its customers' needs.

It also specialises in designing and manufacturing portable pipe-end preparation tools such as pipe bevelling, tube cutting and surfacing machines ranging from 3mm up to 3,600mm OD.

Protem's portable pipe end preparation tools guarantee a high quality and accurate pipe end preparation of pipes of different alloys (such as carbon and stainless steels, duplex and super duplex alloys). For this pipe end preparation, Protem offers a large range of products, for example pipe bevelling machines of the US-series.

The quality of welding will always depend on the quality of the weld edges preparation. Different types of joints allow to prepare tubes in order for them to be assembled – butt weld preparation: V bevel; X bevel; and J bevel.

The welders are facing problems such as tubes that are not perfectly round and which have a more or less important ovalisation. For such cases, Protem bevelling machines can be equipped with copying carriages and ovalisation trackers.

Protem bevelling machines are portable. They are light, reliable, easy to use and they allow a perfect preparation with no thermally affected zones. They are fitted out with tool-holder plates able to bear several tool-holders. These machines allow the operator to perfom simultaneously welding preparation operations and to get a regular land, an appropriate counterboring if necessary, a bevel as required. Their sturdy design is suitable for the machining of tubes with great wall thickness.

Protem GmbH – Germany
Email: info@protem-gmbh.de
Website: www.protem-gmbh.de

RFID chip in magnets

INDUSTRIAL Magnetics, Inc has increased the lift capacity, or holding values, on its line of PowerLift™ lifting magnets, and included an RFID chip for maintenance tracking and reporting.

PowerLifts are strong and compact, permanent, rare earth lift magnets that give the user the ability to turn the magnetic circuit on/off manually with a positive 'lock-on/off' handle mechanism. This not only ensures that the magnet is fully engaged for safe lifting but also prevents accidental disengagement to the off position.

Industrial Magnetics Inc – USA
Website: www.magnetics.com

Honing machines and solutions

DELAPENA Honing Equipment, a long-established British machine tool manufacturer, has seen resurgence in its business since the company passed into private ownership in 2006.

Established in 1927, the company has its headquarters and factory in Cheltenham and is run by owner and managing director David Arthur, who commented, "I am pleased to say that, partly as a result of introducing innovative NC machines equipped with the latest Siemens control to take the 'black art' out of honing, our turnover grew by over 50 per cent in the year to June 2011.

"Manufacture of a larger variety of tooling and abrasive consumables also contributed to this success. Our goal is to double the size of the business over the next three years as a platform for moving even more strongly into global markets in the second half of the decade."

The company's customer base incorporates international engineering names that have standardised on Delapena products for their honing requirements. Delapena's commitment to the global marketplace has resulted in a joint venture in India and a subsidiary in the USA.

Manufacturing resource planning software has been installed to streamline this important function. Last financial year saw further capital investment that added two vertical machining centres and a CNC lathe to the shop floor and strengthened the design department with new CAD software. The introduction of lean manufacturing and Six Sigma methodologies, amongst other benefits, has seen reductions in component manufacturing times through re-engineering for CNC production.

Virtually all components for the honing machines are now produced in-house rather than subcontracted, resulting in quality parts, lower costs and shortened lead times, giving full control over availability. Sheet metal fabrication for the machine build is also carried out on-site. All of the tooling, including 'specials', is made internally, not only for Delapena machines but for other manufacturers' honing equipment as well.

One of the latest new products is the high precision E2000S-XL long-series, small bore honing machine for fully programmable processing of gun barrels and other tubular components. A machine is currently in build for a rifle manufacturer, which will reduce a 5-hour manual honing cycle to a 21-minute automatic operation.

The established E1000S and E2000S NC models are now equipped with the latest Siemens Simatic touch-screen control and remote diagnostics. A larger E3500S vertical machine has been introduced for highly accurate and repeatable honing across a wider spectrum of vertical applications. All of the machines are available with automated component loading/unloading options.

There is still demand for manual honing, so Delapena has retained its Speedhone and Tubehone horizontal machines, while the vertically acting Powerhone is popular for such applications as honing ships' engine cylinder liners, compressor housings and aircraft components.

Delapena E1000S fitted with the latest Siemens control system

Delapena's business encompasses design and manufacture of accurate and repeatable honing machines and accessories; stocking of consumables and honing oils for rapid delivery; design, manufacture and refurbishment of standard and special tooling including many legacy tools for which drawings are still held; pre- and after- sales support, including applications engineering, customer training, spares and service; and commitment to the ongoing training of its own personnel to ensure a high level of expertise for the future.

Delapena Honing Equipment Ltd – UK
Fax: +44 1242 221246
Email: sales@delapena.co.uk
Website: www.delapena.co.uk

The two new vertical machining centres in use on the shop floor at Cheltenham

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Steel

A plunge in spot iron ore prices moves British-Australian miner Rio Tinto to adjust the terms of its sales contracts in China

Chinese manufacturing activity hit a five-month high on 24 October. The report in the HSBC purchasing managers index buoyed the Australian dollar to a six-week high: its strongest level against the US dollar since 12 September.

Matthew Johnson, an interest rate specialist with the Swiss financial services company UBS, told Jason Cadden of the *Sydney Morning Herald* that the rally in the Australian dollar was also helped by news from the US. This was the report that President Barack Obama will tackle an American housing crisis by means of new rules to ease refinancing for homeowners with little or no equity in their property.

Also on 24 October, however, Australian Associated Press took note of another aspect of the reciprocal Australia-China relationship. As Beijing tightened credit in September, the anti-inflation measure had the intended result of slowing economic growth after a galloping quarter. Steel mills cut back accordingly, and the spot price of iron ore plunged from a record level of about US$180 per metric ton to below US$150. Chinese steel makers locked into quarterly iron ore contracts thereupon began clamouring for lower prices on their supplies.

In an apparent response to the pressure from China, Rio Tinto – Australia's biggest iron ore miner – reconsidered its pricing mechanisms. Rio Tinto chief executive Tom Albanese announced that "current market weakness" was accelerating a move to shorter terms and prices closer to spot. The company would implement a "portfolio sales approach with a range of pricing periods linked to quoted spot indices," Mr Albanese told an analysts' briefing in Sydney.

In accommodating its Chinese customers, Rio Tinto can probably afford to take the long view. Chinese demand accounts for some 27 per cent of its sales, and China's 9.1 per cent economic growth in the third quarter will help boost profit at Rio. The company in September said that it looks for steel demand to rise in China and India, and reiterated its long-term bullish outlook for aluminium, copper and iron ore.

Rio Tinto Group expects its iron ore business "to grow substantially" over the next five years, with annual capacity rising to 333 million metric tons in 2015. There are plans to increase the workforce at the Pilbara mine in Western Australia by 50 per cent over that period, according to Sam Walsh, CEO of the London-based company's iron ore unit.

"Iron ore and coking coal are the two crucial ingredients for making steel, and steel is the crucial ingredient as emerging economies urbanise and industrialise," Mr Walsh said at a business forum in Perth. "The long-term steel outlook remains positive." (*Bloomberg BusinessWeek,* 24 October)

Of related interest . . .

The drop in spot prices has also affected Vale Do Rio Doce, the world's biggest iron ore producer through its mines in Brazil. On 24 October, the metals market information provider Platts noted a report from Macquarie Commodities Research that Vale was selling iron ore in China on a basis of the average spot price for the quarter. Vale's offer to Chinese steel makers – to price ore deliverable in the fourth quarter based on the average of Platts index values for October-December – had already been confirmed by Platts from a number of steel mill sources that had received the option.

Vale said at a Macquarie Bank event in Shanghai on 21 October that the shift to China-based sales from FOB Brazil had reduced the risk of a backlog through the supply chain. According to analysts at the Sydney-based investment bank, the largest in Australia, this could have impacted mine output, as was seen in late 2008. Vale said that its quarterly contract prices (based on average spot prices in the trailing quarter, with a one-month lag) still apply to its European, Japanese and South Korean customers.

Elsewhere in steel . . .

The Finnish company Outotec Oyj (formerly Outokumpu Technology) announced on 26 September that it had signed an agreement with Mintal Group Co Ltd, a large Chinese manufacturer of ferrochrome and stainless steel, to design, build and deliver a ferrochrome plant to Baotou, in Inner Mongolia. Outotec will furnish engineering, equipment and an operating license for its proprietary Steel Belt Sintering (SBS) technology for a plant with capacity of 700,000 metric tons per year of chromite pellets. The plant, scheduled for commissioning in 2013, will produce 300,000mtpy of ferrochrome.

Closer to home, Espoo-based Outotec has been engaged by the Swedish iron ore mining company and pellet producer LKAB to supply a new pelletising plant for LKAB's Malmberget project in northern Sweden. The plant, which will employ Lurgi travelling-grate technology, is designed for production of 2.5 million mtpy of iron pellets at start-up in 2016. LKAB is a repeat customer. The former Lurgi Metallurgie, acquired by Outotec forerunner Outokumpu Oyj in 2001, built a travelling-grate pelletising plant for LKAB at Malmberget in 1971.

On 28 October the final element of the ArcelorMittal Orbit, the abstract sculpture that stands some 35 storeys high alongside the main stadium for the 2012 London Olympics, was moved into place. The instant landmark is made of ruby red steel – 1,650 tons of it – and features a looping lattice of tubular steel, but otherwise resists description. Designed by the London-based artists Anish Kapoor and Cecil Balmond, the huge piece supposes a point in space that is "orbited" by a dancing line of steel.

ArcelorMittal, of Luxembourg, the world's largest steel producer, is funding up to $30mn of the $35mn project, with the London Development Agency providing the remainder. The 375-foot Orbit, whose two viewing platforms will offer vistas across the city, is twice the height of Nelson's Column in Trafalgar Square and 72 feet higher than the Statue of Liberty. An ebullient Mayor Boris Johnson – who received the backing pledge from another Londoner, steel mogul Lakshmi Mittal, at the 2009 World Economic Forum in Davos, Switzerland – was inspired to make other comparisons.

"It would have boggled the minds of the Romans," Mr Johnson exulted in a statement. "It would have dwarfed the aspirations of Gustave Eiffel. And it will certainly be worthy of the best show on earth, in the greatest city on earth."

Automotive

A lighter, stronger, safer steel is set to be used extensively on next-generation models from Mazda and Nissan

One day after Mazda announced that its 2012 CX-5 crossover will be the first production vehicle ever to feature ultra-high tensile steel, Nissan declared that its cars will do likewise, starting in 2013. Additionally, reported Viknesh Vijayenthiran of *motorauthority.com* (5 October), Nissan said that its cars will use only 1,200 megapascal (mpa) – approximately 174,000 psi – steel versus 1,800mpa for Mazda's.

As well as promising greater safety and improved gas mileage, the rigid and lighter-weight steel provides the two Japanese producers with an alternative to more expensive aluminium. As noted by Mr Vijayenthiran, Nissan's ultra-high tensile steel was developed in collaboration with Nippon Steel Corp and Kobe Steel. The car maker intends to use it in cold-pressed body parts for a projected savings of up to 33 pounds on some models. Key structural parts include centre pillar reinforcements and front and side roof-rails.

For its part, Mazda will use its new steel in the body of the CX-5, and expects to realise a weight savings of 10.5 pounds on the bumpers alone. The stronger front and rear bumpers will absorb energy on impact, thus limiting damage to both vehicle and occupants. Mazda worked throughout with Sumitomo Metal Industries on parts development. The CX-5 crossover is set to launch early in the New Year.

Sweden's Saab wins a reprieve and the prospect of a 'second home market' in China

For a second time in less than two years, Chinese investors have acted on an attraction to the Swedish auto industry. In 2010, the Zhejiang Geely Holding Group paid Ford Motor Co $1.8bn for Volvo. Then, this past October, Saab's parent company, Swedish Automobile, announced that Zhejiang Youngman Lotus Automobile and Pang Da Automobile Trade had agreed to pay $140mn for Saab and its British unit. The offer came just hours before the company faced court action that could have led to its liquidation.

The two Chinese companies had earlier agreed to pay a combined $347mn for a 54 per cent stake in Saab after money troubles had forced the shutdown of its main factory in Trollhattan, Sweden. But negotiations languished, leaving the car maker in an increasingly untenable position.

Martin Skold, a scholar at the Stockholm School of Economics who follows the auto industry, told the *International Herald Tribune* (28 October) that it was too early to declare the last-minute rescue attempt a success. "Saab is in great need of an enormous amount of money," he said, estimating that it would take at least $800mn and possibly as much as $1.5bn to turn the company around. "We'll have to wait to see how much the Chinese are willing to invest in it."

They possibly will be willing to venture a considerable amount. The *Tribune*'s David Jolly observed that, despite its inability to right itself for very long at a time, Saab "has a long-established base of dedicated customers." In the right hands – Youngman's and Pang Da's, perhaps – the famous unshakable bond between a Saab and its owner could be worth much.

Clearly Victor R Muller, the Dutch entrepreneur who acquired Saab from General Motors of the US in 2010, has high hopes for the company under Chinese auspices. In a conference call with journalists reported in the *Tribune*, he said that Youngman and Pang Da are to resume production at the Trollhattan plant; also to start up in China, "which will become the second home market for Saab."

Mr Jolly noted a few interim steps on the way to that goal. The deal requires the approval of authorities in Beijing, and must also pass muster with the European Investment Bank and the Swedish government, both lenders to Saab. Another interested party is GM, whose lingering links to Saab include intellectual property and preferred shares with a face value of $326mn.

Oil and gas

The rush is on to capitalise on growing demand for liquefied gas

Energy companies in the US, Canada and Australia are planning or have begun on more than a dozen projects to liquefy and export natural gas. Writing from Houston, Texas, in the *Wall Street Journal*, Daniel Gilbert and Guy Chazan declared Asia the hottest market. According to the New York-based advisory firm Poten & Partners, Asian demand for liquefied natural gas, or LNG – converted temporarily for ease of transport – is expected to grow 68 per cent between 2010 and 2020.

The US moved a step closer to becoming a major exporter of natural gas when BG Group agreed to buy LNG from a facility on the Gulf Coast to supply Asian and European markets. As noted by

the *Journal* reporters, the deal in October for the gas from Cheniere Energy Partners, the first of its kind in the US, calls for the British energy company to pay Cheniere some $8.2bn over 20 years.

Messrs Gilbert and Chazan wrote, "[This] underscores how quickly the shale gas boom has transformed the US energy landscape, as surging domestic production is prompting companies that built facilities to import natural gas to use them to export the resource" instead. ("BG, Cheniere Forge Gas-Export Pact," 27 October). The agreement is a coup for Houston-based Cheniere as it seeks contracts for its LNG, to be super-cooled for export in ocean-going tankers. The company will break ground on a $6bn facility for the purpose in Cameron Parish, Louisiana, this year. It expects to begin exporting the gas in 2015.

As noted in the *Journal*, it is also significant for BG, which will be able to buy comparatively cheap gas and sell it for much higher prices in Europe and Asia. BG, formerly one of the largest importers of LNG into the US, is now seeking permits to convert a facility in Lake Charles, Louisiana, to export use.

A tale of two crudes – West Texas Intermediate and Brent – and their significance to the cost of filling up the tank of a car

For the many car owners in the US who wonder why the price of gasoline does not go down when oil prices drop, Ben Casselman of the *Wall Street Journal* blog "Real Times Economics" provided an explanation. It begins with the definition of *oil*, which for most Americans (including economists and newspaper reporters) will be West Texas Intermediate, or WTI: the grade of light, sweet crude that is the basis for contracts traded on the New York Mercantile Exchange.

Historically, WTI has been the dominant global oil price, and has closely tracked such other benchmarks as Brent (a North Sea crude that is the basis for the crude contract on the Intercontinental Exchange) and the OPEC reference basket.

But, Mr Casselman wrote in October, over the previous year WTI prices had decoupled from those in the rest of the world. WTI was trading for about $91 per barrel, fully $20 less than Brent. Among the reasons offered for the differential were surging demand for oil in Asian markets, which are more tightly connected to Brent than to WTI; and limited storage capacity at the Cushing, Oklahoma, oil hub where WTI is traded. ("Why Don't Gas Prices Fall When Oil Does?," 25 October)

Why should this matter to American drivers? It happens that US refineries get much of their oil from overseas, and therefore often pay prices that are linked to Brent, not WTI. Mr Casselman noted, "That is especially true of refineries on the coasts, which is part of why a gallon of regular unleaded costs $3.54 in New England and $3.36 in the Midwest. Nationally, gasoline prices generally track Brent much more closely than WTI."

Fortunately for the American motorist, Brent prices have come down from their Spring highs of $125 a barrel, as reflected in a 50-cent drop in US retail gasoline prices. But blogger Casselman again provided context. He wrote, "Brent is still up nearly 18 per cent from the start of [2011], while WTI is nearly flat."

Technology

Virgin Atlantic Airways intends to run scheduled flights on a 50:50 blend of conventional and "recycled" jet fuel by 2015, employing a technology that creates ethanol from the carbon emissions of such manufacturing operations as steel making. The privately owned British carrier says it will use the alternative fuel, which is being developed by New Zealand-based LanzaTech and Swedish Biofuels, on its London-Shanghai and London-Delhi flights "within two or three years."

As reported by Rose Jacobs in the *Financial Times* (11 October), Virgin's fuel is produced by capturing the carbon byproduct of energy-intensive heavy industry for conversion into ethanol by means of microbes found in rabbit gut. The ethanol is then transformed into a synthetic, aircraft-ready "drop-in" fuel. "In a nutshell, what we've gone into is the recycling business," said Sir Richard Branson, founder of the exclusively long-haul airline. An early innovator, Virgin flew the first commercial jet using a biofuel blend in 2008; although, Ms Jacobs noted, no paying passengers were aboard.

Chevron Technology Ventures, a division of Chevron USA (Houston, Texas), has launched a demonstration project to test the use of solar energy in oil production. The feasibility study is being conducted at the Coalinga Field, in California, which began operations in the 1890s. The heavy Coalinga crude does not flow as readily as lighter grades of crude. Chevron taps the sun to heat the heavy crude and reduce its viscosity, making it easier to extract. Currently, this steam is generated by burning natural gas. In demonstration, the solar method reportedly yields about the same amount of steam as one gas-fired generator.

The solar-to-steam initiative utilises 7,644 mirrors to focus sunlight on a 327-foot solar tower that functions as a boiler. The steam produced is distributed throughout the oilfield and injected underground for enhanced oil recovery. The project, which covers 100 acres, devotes 65 acres to the mirrors, and 35 acres to support facilities. According to Desmond King, president of the Chevron unit, the technology has potential to assist oil recovery in areas of the world where natural gas is expensive or not readily available.

BrightSource Energy (Oakland, California) provided technology, engineering, procurement and construction for the project, to be operated by Chevron Technology Ventures.

The South Korean Ministry of Land, Transport, and Maritime Affairs has set itself to promote the development of a new desalination technology, utilising natural gas hydrate, with the potential to produce cheap fresh water in a period of water scarcity in many regions, including Korea. As described in the *Korea Herald* (4 October), the mechanism entails removing gas from methane

hydrate, a crystalline compound consisting of gas molecules surrounded by a cage of water molecules. Hydrate commonly forms during offshore gas drilling when water is condensed in the presence of methane at high pressure and low temperature.

The *Herald*'s Shin Hyon-hee noted that the ministry has pledged $9.2mn over the next five years to the Korea Institute of Industrial Technology, a state-run think tank, to pursue the desalination project. The nascent technology reportedly costs up to 50 per cent less than existing methods that involve evaporation or reverse osmosis. Seoul also hopes to recruit corporate participants to a plan to set up a desalination plant with a daily capacity of 20 tons by 2015.

Business

Bucking the tide, Canada does very nearly everything right

Kurt Badenhausen, who covers "data-driven stories" for *Forbes*, observed that, during the run-up to every US presidential election, countless Americans threaten to move to Canada if their candidate is beaten. While few of them follow through, the 2011 instalment of *Forbes*'s annual "Best Countries for Business" suggests that a move north may exert a stronger attraction than ever to disaffected Americans.

Canada ranks No 1 in the *Forbes* rankings, up from No 4 in 2010, for reasons summarised by Mr Badenhausen. While the US is fearful of a double-dip recession and Europe struggles with sovereign debt issues, Canada's economy has held up better than most. The $1.6tn Canadian economy is the ninth-biggest in the world and grew 3.1 per cent in 2010. It is expected to expand 2.4 per cent in 2011. ("The Best Countries for Business," 3 October)

Canada skirted the banking meltdown that scourged the US and Europe. The Royal Bank of Canada, Bank of Nova Scotia, Bank of Montreal and other banks avoided bailouts and were profitable during the financial crises that started in 2007. As noted by Mr Badenhausen, "Canadian banks emerged from the tumult among the strongest in the world thanks to their conservative lending practices."

Canada is the only country that ranks in the top 20 in ten of the 11 metrics that *Forbes* considered. It is in the top five for both investor protection and the absence of red tape, which measures how easy it is to start a business. Credit goes as well to a reformed tax structure; a Harmonised Sales Tax was introduced in Ontario and British Columbia in 2010, with the goal of making Canadian businesses more competitive. Reduced corporate and employee tax rates also contributed to the country's improved tax status.

"Three-quarters of [Canadian] exports end up in the US each year," wrote Mr Badenhausen. Thus, he said, Canada leans "heavily" on the US economy. But, while unemployment in the US stays stubbornly above 9 per cent, it is 7.3 per cent in Canada. The 25-year Canadian average is 8.5 per cent. Currently the eurozone unemployment rate is 10 per cent.

The US ranked No 10 in Forbes's reckoning, down from No 9 in 2010. The world's largest economy at $14.7tn continues to be one of the most innovative, ranking sixth in patents per capita among all countries. Sweden, No 7 overall, comes in tops for innovation.

Here is the full list of the *Forbes* top ten for business in 2011: Canada, New Zealand, Hong Kong, Ireland, Denmark, Singapore, Sweden, Norway, Britain, the United States.

The US economy

Watchers of the world's largest economy can breathe easier: growth speeds up as consumers and businesses spend more

With Americans returning to consumer mode, at least tentatively, and companies stepping up their investment in equipment and software, figures released 27 October by the Commerce Department showed that the US economy grew in the third quarter of 2011 at the fastest pace in a year. Surpassing its pre-recession peak for the first time, gross domestic product – the value of all goods and services produced – rose at a 2.5 per cent annual rate, up from 1.3 per cent in the prior three months.

"It ain't brilliant, but at least it's heading in the right direction," Ian Shepherdson, the chief US economist for High Frequency Economics, a data analysis firm, told the *New York Times* (27 October). "I want to see 4 per cent. But, given that people were talking about a new recession, I'll take 2.5 or 3, thanks very much."

Household purchases, accounting for fully 70 per cent of the economy, increased at a 2.4 per cent pace in the quarter, more than forecast by economists. Corporate spending, which has been strong throughout the recovery, continued to grow as well, with a 13.3 per cent increase in non-residential building and a 17.4 per cent increase in equipment and software purchases.

The increase in US business investment is at least partially explained by a rush to qualify for a larger government credit. In a compromise fashioned in the highly polarised political climate of Washington, the Obama administration offered to extend for two years the so-called "Bush tax cuts" for all tax brackets. The controversial accommodation to the wealthy – the price of a jobless-benefits extension wanted by Mr Obama – allows companies to depreciate 100 per cent of investment in capital outlays in 2011 and 50 per cent in 2012.

A contributor to the late-October uplift was the agreement by European leaders on steps that included recapitalising the continent's banks. At least in theory, this moved Europe closer to a resolution of the sovereign-debt crisis that Federal Reserve policy makers had identified as a risk to the American economy. Certainly the news was enough to cause US stocks to surge. The Standard & Poor's 500 Index climbed 3.4 per cent to 1,284.59 at the close of trading in New York, extending its biggest monthly rally since 1974.

Dorothy Fabian, Features Editor (USA)

Bending machinery and tools

References to “the tube bending industry” are not unknown in the literature. Whether the text accompaniment, with its guidelines to dimensioning, bend radii, and material elongation limits, quite defines a distinct industry would be a judgement call. But it may be asserted that, if a length of tubing could not be reliably and repeatably bent – that is to say, if sheet metal cannot be made to form and hold an obtuse angle and an acute angle, separated by air – industrial practice as we know it would not exist. Sectors including aerospace, automotive, construction, defence, energy, mining and transportation would be without a key component in their development.

If tube bending is not quite an industry in itself, it is certainly a mega-speciality. The products and services of many of its ablest suppliers will be found in the pages of this section.

AddisonMcKee has introduced innovative new technology to help make its machines leaner, greener and more efficient

Leaner, greener philosophy

AS a designer, manufacturer and supplier of tube bending and end forming technologies, AddisonMckee continues to introduce innovative technology to make its machines leaner, greener and more efficient.

The company's new 'Hydra Green' technology allows its latest end-forming equipment to take advantage of hydraulic power without the constant noise, heat and energy usage associated with traditional hydraulic power units. Whereas traditional hydraulic systems for end-forming machines use an AC motor continuously driving a hydraulic pump, even when the machine is not in use and no oil pressure and/or flow is required, AddisonMckee's new technology is designed so that the pump is in operation only when there is a demand for pressure/flow.

AddisonMckee says that the Hydra Green solution, at the heart of the new HG70 range of end-formers, delivers a number of key benefits over a traditional hydraulic circuit in terms of using 50 per cent less electricity due to the significantly reduced duty cycle of the hydraulic pump, minimising heat emissions and reducing noise emissions by as much as 50 per cent. The system also achieves a major reduction in the amount of hydraulic maintenance required, while the smaller hydraulic reservoir uses 65 per cent less oil.

The technology also allows for enhanced machine motion control by using the variable speed of the servo pump to control oil flow rate and machine speed. With the system sitting in a low energy state when the machine is idle and the pump not generating pressure or flow, operator safety is also enhanced.

AddisonMckee's programme of technological innovation has two main drivers: cutting unnecessary emissions by its machines and cutting costs for its customers. The new eb80 ESRB machine, for example, represents an alternative to the existing DB 75 machine but with cost advantages achieved through removing the ball screw providing the boost and allowing the gearbox and motor instead to provide the force required for boosting, enabling freeform bending for the full length of the bed.

Given the cost of floor space at any facility, the new machine's modular design also has benefits if bed length flexibility is important. The standard machine is two metres long but offers the capability to increase in length by bolting two sections together to extend the bed when required, converting the machine to a three/four metre model.

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Expanded range of bending machines

CLOMEA, Italy, has expanded its range, with two new models of bending machine – CRM140 and CRM130 – and the new numerical control CNW333. The company has also optimised functions and performance of existing models.

The CRM140 and CRM130 are bending machines of high/medium power with three driving shafts, and moving central roller with hydraulic positioning. CRM130 has fixed lower shafts, while CRM140 features variable positions.

The machines are available in eight models, from the basic version fitted with CMP101P console, with programmable positioner of the central roller, up to the most innovative control unit model CNW333. The programming and interface with the user is very simple and intuitive. It can work in one step, and is able to control up to six axes and to program curves up to 36 radii on the same bar.

CNW333 has an automatic control of more than 650 positioning speeds, and can be coupled to hydraulic bending machines with standard engine. The versions fitted with a speed variator enable an automatic calculation of 100 rotation speeds of the rollers.

The automatic calculation of the positioning speed simplifies the execution of the connection between one radius and another, keeping the geometry for the coupling between different curves. The machine is programmable with just two values of the curve to be realised, while the programming of curves with more radii is simplified by pre-setting functions that help the operator to find values for the geometry required.

The machine can work in multi-passage automatically on a single radius, and can import AutoCAD files in DXF format. Network connection to PC allows data exchange and file storage, as well as remote assistance directly with Clomea's technical department.

The company says that particular attention has been paid to the development and testing of the bending rolls and additional devices and equipment, in order to satisfy special projects with more complex curves, such as bending in 3D (on different planes), spirals, coils for cooling systems and heat exchangers.

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Clomea's CMR140 bending machine

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From tube to isometry and vice versa

OBJECT tubing is a frequent application in the shipbuilding industry in general and especially in hydraulics tubing. However, it is a fact that economic efficiency falls by the wayside if tubes are made-up at the object, manually drawn, bent on manual bending machines and built in, because after the bending process it is necessary to cut excess lengths. This means a high loss of material. Moreover, a precise documentation is missing, the spent working time is high and the processed tube does not always fit. Here an advanced, economic solution is in demand that transfluid Maschinenbau GmbH has just designed.

"To guarantee a constant quality of the tubing and to achieve a minimal waste of material with shortest possible clamp lengths and small radii it is important to bend the tubes in a bending centre", explains Gerd Nöker, transfluid CEO. "This not only provides for the ideal quality of the tubing but also makes possible a detailed documentation of the tube data."

But how do these bending tube data come to the CNC bending machine? The provider of solutions transfluid created two different ways to directly compile a tube isometry that, for example, can be made available online (via network or email) or manually (via USB flash drive) to the bending centre and the bending machine. Digital drawing with t control: The easiest method is the use of a digital drawing tablet. transfluid makes available the appropriate programs for creating isometry drawings with its high-performance software "t control", as Gerd Nöker explains: "A customary tablet PC can be used. Our transfluid software enables 3D drawings of the tubes by using a pen on digital isometry paper. An operator can measure the desired geometry directly at the object with the drawing tablet, draw and send it via email to the bending centre." Additionally, there is the possibility to equip the drawn geometry with flanges, welded connections or endforming. By this, not only a simple bending geometry can be sent to the bending centre but a completely ready-to-install component can be pre-finished. For an easy inspection if the drawn geometry matches the desired component a 3D view of the tube is available. With its help the drawer can identify elementary mistakes at first glance.

Flexibility and freedom with precise measuring arm: An optional procedure that transfluid is providing for the safe measurement of a tube (for example, for reproduction) is a special measuring arm with appropriate software. transfluid uses measuring arms equipped with absolute rotary encoders. They are deployed at the object or, for example, attached with magnet feet and provide the advantage that they do not have to be referenced. With these measuring systems the tubes can be acquired by simple scanning of the cylinders between the bends or by scanning of the geometry. The data can be transferred into coordinates and can be sent, for example, by email directly to the bending centre.

For the increase of the mobility of these devices the systems used by transfluid can be additionally equipped with accumulators. The measuring data are sent directly to a notebook computer via a wireless connection. This provides for a maximum of mobility without annoying cables.

Efficient bending technology: transfluid offers the complete range for tube diameters of 4 to 275mm for the processing of isometries to tube geometry. The CNC controlled and also the semi-automatic tube bending machines are able to process the measured or drawn tube data, to perform a bending collision test and to appropriately collimate and bend components that are already equipped with flanges or transformations. By this, the provider of solutions transfluid has designed highly efficient options that enable a long term economic tube bending in the ship building industry.

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Tube bending machines from Italy

DAVI started production of bending machines in 1966, and currently produces over 250 machines per year at its factory in Cesena, Italy. Its range includes machines to create tube from plate and machines to bend tubes.

Since 2005 the company has produced machines using 'roll by wire' technology, with the purpose of running the entire system through digital signals instead of relays and contacts. Digital technology allows Davi to produce machines that are more accurate, user-friendly, high performing and with easy troubleshooting.

Davi plate bending machines can produce tubes from plates with thicknesses from 1 to over 30mm, while its tube bending machines have the capability to bend pipes with diameters up to 600mm (section modulus up to 23,000cm^3).

The rolls are mounted on large diameter shafts, manufactured for high resistance, that are fixed and rotate on sphere auto aligned shaped bearings (pre-lubricated) to obtain a high level of performance. The rolls are elevated thanks to large hydraulic cylinders capable of pressing the section that is being curved with the maximum force required according to the diameter to be formed.

In addition, all the rolls are motorised, ensuring an excellent transit of the profile during the curving process. This is made possible by three hydraulic motors coupled to three orbital gearboxes mounted on each roll. The coupling motor-gearbox is a direct mechanical coupling via a high precision splined shaft, which permits a very high precision connection.

The main characteristics of the machines are high curving speed for high production units; emergency valve to hydraulically stop the machine rotation immediately in emergency; total overload protection; continuous filtering system; and high quality hydraulic component suppliers.

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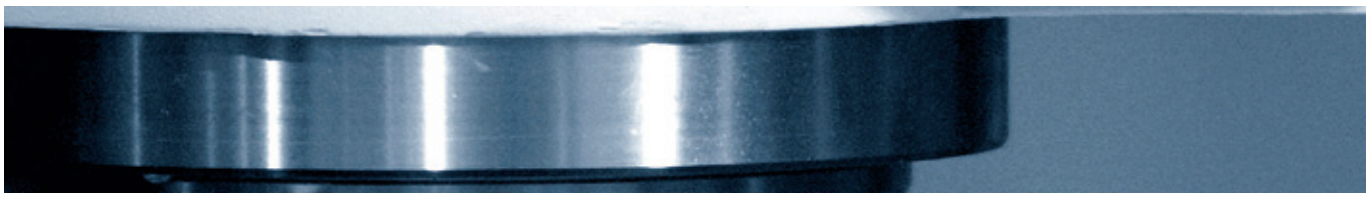

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End forming/roll forming machine

MANCHESTER Tool & Die Inc offers the hydraulically operated Model M10-H-3-R End Forming/Roll Forming Machine, featuring standard MTD components and using the same tooling as the M71-H-3 and 24008 machines. The M10-H-3-R offers the HMI (Human Machine Interface) user-friendly, programmable flexible control system and includes diagnostics for machine maintenance. The end forming and roll forming stations are positioned so the operator can load and unload both clamp areas.

The Model M10-H-3-R end forming machine

A design offering future auto loading and unloading systems allows tube end forms requiring end forming and roll forming processes to be completed without any staging of materials between processes. The M10 can also be designed with a 6-position end form station for tube end forms that require components to be assembled onto the tube before the rolling processes. The machine footprint is 72" wide x 96" deep.

Manchester Tool & Die Inc – USA
Email: testeffen@mtdtube.com
Website: www.manchestertoolanddie.com

Simulation module facilitates correction of bending machines

WITH the launch of software version 4.7, AICON's TubeInspect optical tube measuring system allows the operator to simulate the bending process considering individual correction values, and to verify their effect on accuracy to gauge by means of a virtual gauge check.

With the help of high resolution digital cameras, TubeInspect determines the tube geometry within seconds, and proves accuracy to gauge. The system shows in detail which bending points deviate from the desired values, and suggests correction values. These correction values can be transmitted directly to the bending machine, whereby TubeInspect allows the connection to up to 100 benders.

In some instances the correction values suggested by TubeInspect cannot be transferred one-to-one, for example if they lead to collisions at the bending machine or if corrections are suggested at parts which cannot be affected because of solid bending tools. This is where the new simulation module is of benefit: when TubeInspect evaluates a measured tube as a bad part and suggests correction values, the operator can adapt them at his own discretion, as he knows the actual circumstances and characteristics of his bending machine.

Virtual gauge inspection reveals a bad part

The virtual gauge inspection confirms a successful correction and the production of a good part

The TubeInspect optical measuring system measures tube geometries using high resolution digital cameras

By doing so, the operator does not take any risk, because TubeInspect simulates the results of the changes and shows with a virtual gauge check if the bending process could actually produce a good part. When the right settings are found, another real bending test will take place. This results in fewer bending tests being necessary, which makes the setup process even leaner.

AICON 3D Systems GmbH – Germany
Fax: +49 5 3158 00060
Email: info@aicon.de
Website: www.aicon3d.de

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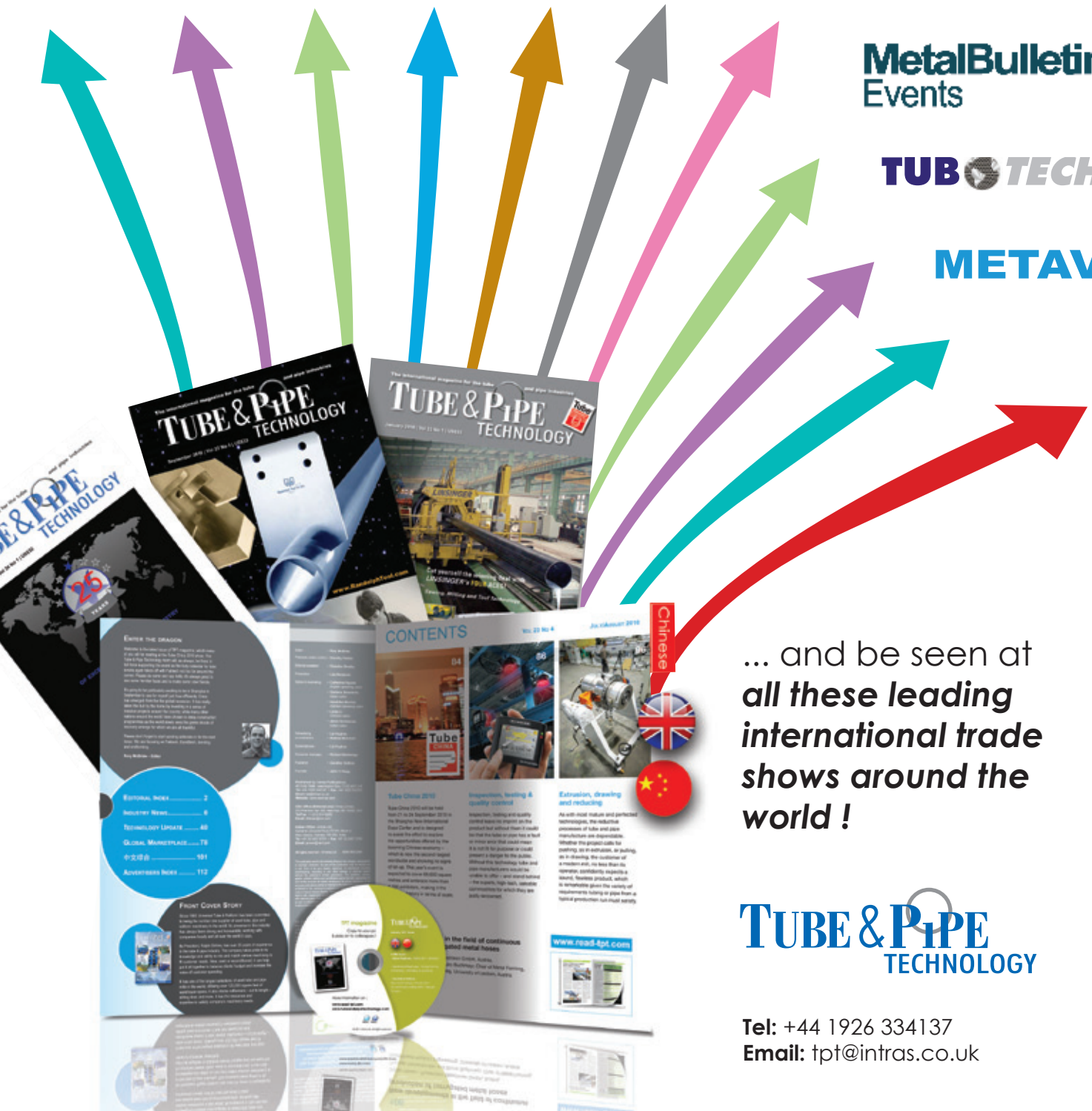

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TUBE & PIPE TECHNOLOGY

Tel: +44 1926 334137
Email: tpt@intras.co.uk

Production cells for high demand pipe

ROSENBERGER'S Twister® bending system offers precision, flexibility and process safety, as well as operating comfort. The system, with a KUKA robot at its core, provides the operator with freedom for set-up and number of the bending heads or automation modules within a production cell. The robot proves that it can do the perfect bend in an example bending process for a seat bracket for industrial vehicles.

To take up the components, the six-axle device uses part-specific pneumatic exchangeable mechanical grippers developed for the individual applications. The KR16/KR30 collects the respective pipe at the upstream unit for welding seam alignment independently, moves to the X-, Y- and Z-coordinates servo-controlled and therefore highly precisely, operates the bending head and places the part on the removal belt. This way, it links bending to other processes. This production line can be assembled according to individual customer wishes and expanded as required.

After loading of the pipe hopper, precise work commences in the system when supplying the pipes, which are transported up with a sliding plate and separated. The separated pipes are taken to an alignment and placement station. The weld seams are recognised, turned to a defined position and the part is pushed onto a fixed stop. The production part is therefore optimally prepared for assumption by the robot.

The collection position can be programmed individually and adjusted to the workpiece at all times. A choice between mandrel and mandrel-free bending can be made. When using the mandrel, the pipe is precisely gripped by the robot in the hundredth millimetre range and strung up to be supplied to the connection of the bending station. The mandrel as such is equipped with a servo motor, like the entire system, and thus permits the user to perform any required motions in x-, y- and z-directions.

The bending tool is additionally equipped with an integrated punching tool, so that subsequent processing of the pipes at a separate station is not required. The flexible placement options of the robot mean that the punching can be integrated in the process at nearly any pipe position. The robot presents more than pure handling in these plants: it acts as a fixed component of the bending machine and replaces all axes of a conventional bending machine except for the bending unit. A sophisticated software package programs the robot like a standard bending machine, with all freedoms of the robot programming being retained.

The Twister can be equipped with up to six working stations that may be either bending heads or other stations like forming, milling or external machines.

Rosenberger covers the pipe range from 2 to 50mm pipe diameter with its bending technology, using up to nine bending levels per bending head.

Rosenberger AG – Germany
Fax: +49 3644 5176 38
Email: info@rosenbergerag.com
Website: www.rosenbergerag.com

System with three CNC controls

THE FL 600 3D from Tube Tech Machinery Srl, Italy, was designed for machining tubes and structural profiles with a maximum external diameter of 610mm and a maximum length of 24,000mm.

The tri-dimensional system allows operation on any point in a sphere space, while movement along five interpolated axes, with precision ball screws and linear motors, ensures high dynamics and performance.

FL 600 3D is equipped with a double tube loading system: one from bundle, which allows the automatic loading of tubes with round, square and rectangular section and a loading capacity of 10,000kg, and one from chain, which also enables the loading of open section profiles. It is composed of V-shaped supports: the chains move at variable speed, according to the tube diameter and weight, and are made to slide on bearings to prevent noise and wear. The movements of the piece along the working axis are ensured by four self-centring mandrels, activated by synchronised hydraulic cylinders.

A tempered and rectified precision helical toothed rack activates the advance, operated by brushless motor and precision reducer with slack recovery system. The mandrels are designed to allow the machining of different diameters and sections, with no change of tools. An integrated floating system allows the compensation for a piece's uneven straightness during machining, enabling precision machining even on particularly irregular tubes, and preventing dangerous mechanical stress on the mandrels. The plant is automatically controlled by two CNC controls: one for the handling area and the other for the laser working area (Sphera). A third CNC control manages and supervises the laser source. The three computers are set to interact with one another, with no need for human operation: they automatically handle profile loading, dimensional control, 3D laser machining and discharge of the machined parts.

The software is simple and user-friendly, and can be upgraded to include the handling of lists of materials and stock.

Tube Tech Machinery Srl – Italy
Fax: +39 030 7256333
Email: info@tubetechmachinery.com
Website: www.tubetechmachinery.com

Swaging systems and tooling

HYDROPRO Inc, USA, manufactures systems and tooling for hydro-forming or swaging. The company's equipment can full depth expand a 400mm (15.75") expansion zone in just a few more seconds than it takes to expand a 40mm (1.57") zone.

The expansion pressure and dwell times can be precisely set and controlled to accommodate different tube material characteristics, which is of particular use when using tubes with high spring-back properties such as titanium and super duplex stainless steel.

HydroPro's SleevePro system uses hydroexpanding technology to expand sleeves or liners inside damaged parent tubes, to repair cracks or strengthen eroded or corroded tubes. The BoilerPro system mechanically sets and flares the ends of boiler tubes prior to hydroexpanding or mechanically rolling the joints.

HydroPro Inc – USA
Website: www.hpro.com

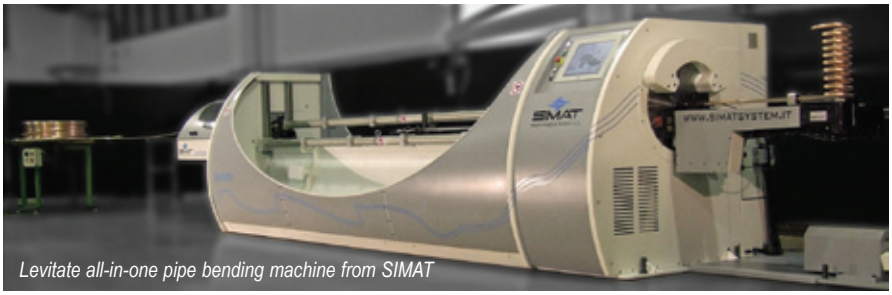
All-in-one pipe bending machine

SIMAT Srl, Italy, produces special and standard machines for tube working. The company's new Levitate® all-in-one pipe bending machine allows the bending of metal tubes (copper and stainless steel) from 6 to 35mm diameter, directly from coil. It can also make curve radius equal to diameter.

This is made possible by a magnet inside the machine, which makes the mandrel (when necessary) remain in the correct position without any external support. This allows the user to take advantage of both coil and mandrel working processes, without having to use two different machines.

Levitate is versatile, and can be integrated with other automation parts, such as shaping machines.

The company is also working on a new project: a special machine that will produce serpentines with 35mm tubes and a bending radius equal to the tube diameter.



Levitate all-in-one pipe bending machine from SIMAT

SIMAT machines are strictly controlled before being sold, and they adhere to all official standards and rules. Installation and testing take place directly at the customer's location by SIMAT technicians in order to avoid lost time and other inconveniences. Operators learn how to use the machine directly from the SIMAT technicians, who also provide online and just-in-time assistance.

Levitate will be presented at Tube Düsseldorf in March.

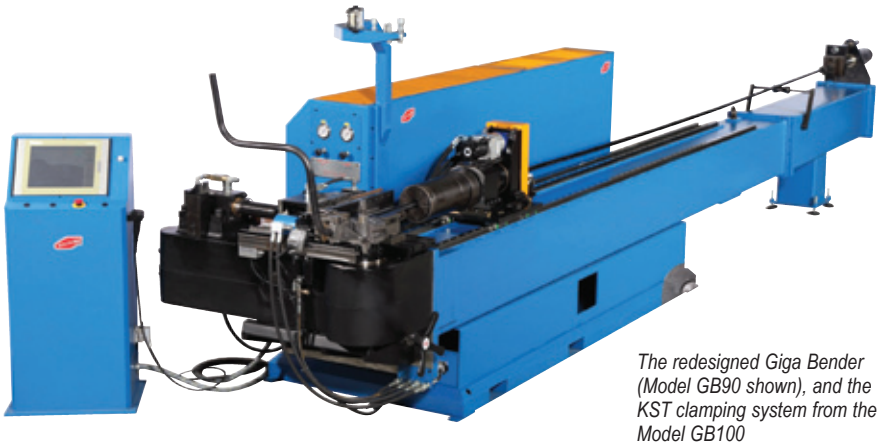
SIMAT Srl – Italy
Fax: +39 0432 948882
Email: sales@simatautomation.com
Website: www.simatautomation.com

CNC mandrel tube and pipe bender

ERCOLINA'S GB90/GB100 NC/CNC model bender series is suitable for bending tube, pipe, square and rectangular profiles to centreline radius as tight as 1.5D with minimum deformation.

Features include interactive touch screen with Windows-based control, offering easy operator access to auto and manual operating modes and system diagnostics. All commands are available in multiple language capability. Programmable auto mandrel positioning allows the operator to optimise extraction for improved bend quality. Clamping, pressure die and boost movements are programmable with manual override for easy setup. A USB port on the control panel allows saving and recalling of program files.

Precision digital encoders on each axis display both absolute (ABS) and incremental (INC) position in inch or metric values. Programmable tooling interference zone with simulation mode monitors position and eliminates work head collision. Control accepts YBC as well as XYZ input values.



The redesigned Giga Bender (Model GB90 shown), and the KST clamping system from the Model GB100

A high capacity hydraulic reservoir with auto power save feature reduces energy cost. The heavy certified GS500 spheroidal steel structure of the GB90/GB100SCNC provides a rigid platform, minimising work piece vibration throughout the bend cycle.

Ercolina's patented KST clam shell clamping system is available on both the GB90 and GB100 models; the FST finger clamp system is only available on the GB90 model. Handheld bending control is certified class 3 safety and all electrical components are UL, CSA and CE approved. Machines are available with full CNC seven axis control.

CML USA Ercolina – USA
Fax: +1 563 391 7710
Email: info@ercolina-usa.com
Website: www.ercolina-usa.com

Finishing and end finishing

These specialities have to be among the most satisfying in tube making.

The production run has yielded perfectly turned workpieces that are within an ace of becoming products – certifiable, deliverable, billable. But, to paraphrase a specialist in another area – Yogi Berra – it's not finished till it's finished.

Those charged with quality control in a state-of-the-art tube mill know this stage as the last checkpoint in the production phase of the cycle, hence the most important.

Because rejection further along is always costlier than rejection earlier on, finishing and end finishing tend to be the province of perfectionists.

The products and services reviewed here reflect that commitment.

Prestar can finish pipes of a diameter of 16 to 140mm and a length of up to 24 metres

Finishing line with cutting and chamfering

IN the second half of 2011, the Prestar company installed another fully automatic finishing line at its Russian customer TMK Group. The line for the tubes and pipes of a diameter of 16 to 140mm and of a length of up to 24 metres is intended for chamfering the tube ends following the non-destruction testing equipment and subsequently to cut the pipes and tubes of exact lengths. The required cycle for pipe and tube cutting ranges between 12 and 50 seconds, depending on the pipe and tube diameters.

Two chamfering machines are intended to chamfer the pipes' and tubes' ends and visual check following the pipe and tube cutting. The Prestar automated line is connected after the NDT equipment and processes the pipes and tubes with pre-set dimensions requiring minimum operators to attend the equipment.

The storage pocket and the separation unit inserted into the line after NDT and before the cutting make it possible to use the line even in the off-line mode.

Two automated packaging units represent another delivery supplied by the Prestar Sro company to the Russian and Belarusian market.

The packaging machines may produce square or hexagonal tube bundles. Following the production of a bundle, the pipes and tubes of diameters ranging from 20 to 240mm and in lengths of up to 12 metres are strappped with the automated strapping machines of the Signode type.

After being strapped, the bundles are automatically weighed and prepared for shipment.

Both machines work in automatic mode. The packaging machine output information is sent to Level 2 of the factory management.

Prestar supplies to its customers full automatic finishing line but also supplies individual machines and the handling between the individual machines (NDT, threading machines and straightening machines).

This handling is always fully automated and the control system is connected to the equipment at the input or at the output from handling.

Prestar – Czech Republic
Website: www.prestar.cz

Rotary waterblaster cabinet

VIKING Blast & Wash Systems announces the release of the new RTW 6060 Rotary Waterblaster Spray Cabinet. This large capacity washer offers a work envelope of 60" in height with a 60" diameter, rotating workbasket that can support up to 3,500 pounds. The RTW 6060 comes standard with two 15 HP seal-less pumps rated at a capacity of 600 gallons per minute at 65 PSI. Pump horsepower upgrades are available as well as high pressure options for additional cleaning power.

Standard features include a low water, high temperature fail switch that shuts off the gas burner, protecting the heater, a safety interlock to prevent pump operation with the washer door open, and a disc style oil skimmer to remove tramp oils and fine solids from the detergent, extending the life of the cleaning solution.

The RTW6060 has a ruggedly constructed cabinet of ¼" reinforced plate steel.

Viking Blast & Wash Systems – USA
Email: sales@vikingcorporation.com
Website: www.vikingcorporation.com

Grinding, polishing and de-burring machinery

LOESER is a leader in technology required to produce high quality surface finishes, working closely with major abrasive belt manufacturers. From simple one-station machines to completely automated multiple-station systems, Loeser custom engineers systems to each customer's exact needs.

New Loeser pressure controlled grinding technology allows for heavy stock removal, tolerance grinding and fine finishing. Abrasive belts can be changed very quickly when worn out, offering a major time advantage compared to stone grinding or turning. Loeser machines can be equipped with multiple stations in different combinations, completely enclosed or open style. Systems are fully modular and easy to upgrade with additional stations to grow with future requirements. For mirror polishing of stainless tube, Loeser produces a combined machine consisting of wet pre-grinding module and centreless cotton wheel buffing using a polishing compound.

For extremely high stock removal applications, Loeser offers high speed abrasive belt grinding instead of turning, with the machine types RPS376 and RPS377.

The company's centreless grinding and microfinishing RPS+SF model is suitable for the finishing of pistons, bars and axles with high frequency microfinish to reach super fine finish up to 0.004µm Ra. For super high quality chrome stripping and finishing of gravure cylinders, Loeser offers model HSD+SF. Loeser's product line has recently been expanded to include complete continuous through feed chrome plating systems. This new addition combined with continuous through feed induction hardening systems means that Loeser is able to offer solutions for: through feed induction hardening; through feed belt grinding pre chrome; through feed continuous chrome plating; through feed polishing post chrome; and through feed application of special wax for added corrosion resistance.

Loeser GmbH – Germany
Fax: +49 6232 3148 50
Email: info@loeser.com
Website: www.loeser.com

Automatic tube finishing machine

ML100 3Z from NS Máquinas Industriais is a round pipe polishing machine with three independent abrasive stations. It finishes tubes from Ø10 to 114mm in one single pass, using a combination of different abrasive grains.

The machine is suitable for stainless steel tube finishing where high quality is required, and can also polish oval shapes. Using the ML planetary system, the abrasive belts rotate around the tube giving a flexible finishing without spinning the tube. This enables the safe work of long tubes and also of drilled tubes.

NS has developed a new in feed and out feed system that provides continuous transport of tubes, avoiding labour costs and reducing non-productive periods.

The new system is able to feed and polish, in the same sequence, tubes with different lengths, working from a minimum tube length of 450mm. As the feeding is performed from the front of the tube, unlimited lengths can be worked. The standard capacity is designed for ten tubes, but higher numbers can be processed with different versions of the loading and unloading tube system.

ML100 3Z also includes a new energy-saving feature: it is equipped with a tube detection program that automatically stops the abrasive belts' motors whenever there is no tube on the finishing stations. This automatic start and stop system reduces not only the consumption of energy, but also of bearings, rollers, V-belts and other mechanical components.

The automatic tube feeding system is also compatible with double and single station tube finishing machines in dry or wet versions.

NS – Máquinas Industriais, Lda – Portugal
Fax: +351 229 741 619
Email: info@nsmaquinas.pt
Website: www.nsmaquinas.com

ML100 3Z automatic tube finishing machine

Used honing machinery opportunity

ARTHUR Sanders Ltd, UK, is a used honing machine dealer, experienced in the purchase and supply of services to the honing manufacturing industry.

The company, launched in 2008, is owned by honing experts David Arthur and Charles Sanders, who have a combined honing knowledge spanning over five decades. Faced with the challenge of how to survive a recession they realised there was an opportunity in the used honing machine market. In the first year of trading a quarter of all sales were exports.

Charles Sanders commented, "It was apparent that there was a need to offer reconditioned honing machinery with the same service and advice you would expect from a new purchase. We offer a turnkey package that can include tooling, consumables, delivery, installation, commissioning and training."

Recovery from the downturn is expected to be protracted and weak, and with the tight flow of credit to manufacturers remaining a worry, and firms unable to obtain funding to meet orders, the opportunity to save costs on the purchase of equipment for a manufacturer could be the answer to the problem of how to satisfy growing order books.

Current stock, which can be viewed online at the company's website, includes hand hones, beam stokers, cylinder kings, vertical and horizontal tube hones from manufacturers such as Delapena, Sunnen and Nagel. All can be demonstrated under power, and trials can also be undertaken on customers' work pieces.

The company offers training at the customer's premises, and supplies machines with tooling and consumables. Arthur Sanders engineers have recently travelled to India and Ireland to install and commission on-site, and the company is currently looking for additional overseas agents.

Arthur Sanders (Cheltenham) Ltd – UK
Email: enquiries@arthursanders.co.uk
Website: www.arthursanders.co.uk

Grinding and polishing

GRIND Master manufactures a wide range of centreless machines, from low cost LMCL models with fixed vertical belt heads to sophisticated FH series used by stainless steel tube, hard chrome bar and hydraulic cylinder makers. Various models are offered for heavy grinding, high stock removal jobs to super finishing applications to achieve 0.05 micron Ra. The machines are modular and are configured to suit individual requirements.

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

Catalytic oxidation system for finishing facility

AIR pollution control specialist AirProtekt has supplied, installed and commissioned turnkey air pollution control equipment to abate VOC fumes and odours from three solvent based spray painting booths and baking ovens at an aircraft component finishing facility.

The Honeycat® concentrator catalytic oxidation air pollution control and energy saving system treats the exhaust gases from the component finishing process to give a maximum running flowrate of 12,000Nm^3 hr-1 at a temperature of 20°C with a normal VOC concentration of 170mg Nm-3 MEK, xylene and toluene. The solvent laden gases are ducted and pulled through a rotary honeycomb zeolite wheel.

AirProtekt Honeycat and concentrator

The solvent from the process stream is adsorbed onto the hydrophobic zeolite in the honeycomb wheel. The clean gases are then transported into the main process fan inlet and pass via an exhaust stack to atmosphere. The concentrator's honeycomb wheel zeolite rotor is continuously rotating to adsorb the VOCs, which then pass into the regeneration zone where the VOCs are removed by a small volume of preheated air, which then passes into a small Honeycat catalytic oxidation system.

The combination of the VOC concentrator and Honeycat catalytic oxidation system means very large process exhaust flows containing low quantities of VOCs can be treated by a cost effective system. This type of system means that only 5% of the process flow is treated by the Honeycat catalytic oxidation system, which represents a reduction of 20:1. With the increased VOC concentration the operating cost for the total system is very low when compared with alternative systems.

"AirProtekt's solution to the challenges posed by this aircraft component finishing application has now enabled the new production facility to comply with statutory emission regulations for VOCs," explained Trevor Lawton, AirProtekt's managing director. "The new installation also extends the company's global environmental policy. The Honeycat concentrator catalytic oxidation air pollution control and energy saving system also benefits from much lower capital and running costs compared with an alternative thermal oxidation plant solution."

Overall, the AirProtekt is a low energy solution for both start up and online running conditions. The compact catalytic oxidation system also requires only minimal upgrades to a customer's infrastructure. The system features lightweight construction, requires no compressed air or natural gas, and is very quiet in operation.

AirProtekt's engineering solutions are tailored to address specific local emission requirements but are also specified to comply with national and international regulations as well as detailed global company-specific guidelines or operational procedures.

AirProtekt Limited – UK
Email: sales@airprotekt.co.uk
Website: www.airprotekt.co.uk

Orbital flaring in one machine

OP Srl's Unispeed USFL 90/37 is a machine for 37° and 90° orbital flaring of hydraulic rigid pipe ends with ISO 8434-2 and ISO 8434-3 fitting systems.

Designed to be practical and easy to use, the machine requires only one tool change to carry out flaring operations. This reduces processing time to a minimum, since it is carried out easily and without additional equipment. The machine uses a cold orbital forming process to create a flat and smooth sealing surface at 90° and 37° with a suitable rugosity for the O-ring seal. By doing so, it avoids the formation of processing signs that can occasionally occur with common axial deformation processes.

The system is compliant with the pipe flaring requirements regulated by SAE and ISO standards. The various adjustment and configuration possibilities of USFL 90/37 allow any flaring diameter and thickness. The semi-automatic processing cycle allows the flaring process to be fast, and avoids welding or soldering the clamping ring to the pipe end. The final cycle lay-up ensures optimal flaring and finishing results.

OP Srl – Italy
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Email: info@op-srl.it
Website: www.op-srl.it

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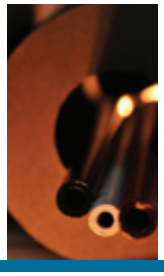

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Improving standard methods of grain size determination in high-alloy steel and alloy products

D.Yu. Klyuev, Ye.Ya. Lezinskaya, V.V. Perchanik (National Metallurgical Academy of Ukraine)
N.A. Koryaka (ITA Representative in CIS, Ukraine)

Austenite or ferrite grain size is the major parameter of steel and alloy single-phase structure. Determination of this parameter is complicated by two reasons:

- Opacity of the subject being measured
- Imperfection of the methods used for grain size determination

Many methods for determination of metal grain structure parameters appeared in the 20th century. They have made it possible to lay down basic principles of a new trend in metal science: stereological metallography. Stereometric Metallography by S.A. Saltykov, Stereology in Physical Metallurgy by K.S. Cherniavsky, Quantitative Microscopy by De Goff and Rines and Quantitative Stereology by Underwood are fundamental works generalising the experience gained in this direction during the last century.

Nearly a century-old history of existence of standard methods of determination of grain size in steels and alloys underwent several stages of its development. At first, methods of austenite and ferrite grain identification were developed. American Society for Testing and Materials (ASTM) pioneered creation of such standards.

In the early 1930s, ASTM Committee E4 developed a number of standards including various methods of grain size determination which formed the basis for analogous standards adopted in many industrially developed countries, eg SIS 11 11 01 (Sweden), UNI 3245 (Italia), GOST 5639 (Russia), NF A04-102 (France), and SEP 1510 (Germany) which was transformed later into DIN 50601 and ISO 643.

Methods in the above standards determine average dimensions (diameter, area) or the number of the grains visible in a microsections plane.

These methods are based on the development of reference photographs with which structures seen in the microsections plane are compared and the grain size is determined by the number of the grains seen in one square inch at magnification ×100.

Grain size numbers have appeared much more later on, in standard E112.

It is significant that evaluation by numbers was called forth by the needs of metal product producers who had to control grain size in their finished products. Introduction of conventional units (numbers) has made much easier the grain size control operations but it significantly worsened accuracy as compared with the quantitative methods.

Nevertheless, all present-day standard methods of determination of grain size in metals and alloys use exactly these conventional units. All methods come to either visual comparison with photographic references and expression in conventional units (numbers) amounting from 18 (in GOST 5639) to 30 (in ASTM E 112), or counting the number of grains in a unit of length (chord method), area or volume.

Chord method is of a lowest accuracy because of imperfect means of determination of spatial dimensions and shapes of individual crystallites in opaque materials of metal products. It does not ensure a realistic view of such important parameters of a spatial structure as grain anisotropy, shape, etc.

The existing methods developed for the reconstruction of spatial structures by its flat layout in a metallographic section are rather laborious and, again, coming to the determination of average dimensions which does not allow establishment of the cause of material property irregularities undoubtedly connected with structural irregularities, ie grain anisotropy.

High-alloy steels and alloys used in high-duty structures (power equipment, electronics, chemical equipment, space technology, etc) are the materials the most prone to grain anisotropy. It should be pointed out that the present-day methods of manufacture of products form such materials, eg tubes for fuel element cans, allow formation of a rather homogeneous structure in these products [1-3]. At the same time, the available standard methods for evaluation of such structures are rather imperfect. What concerns methods for evaluation of grain anisotropy, they are practically absent.

Domain of above standards, except GOST 5639, spreads just to the structures in which grain size distribution approaches the normal one. And at the same time, if the image in the microsections plane is closest to those in photographic references given in the standards, the most trustworthy assessment results can be obtained. The higher grain anisotropy of the structure, the higher is the error of its assessment.

For the structures with abnormally coarse grains circled with sufficiently homogeneous fine grains, there is a special standard, ASTM E 930 Methods for Assessment of the Largest Observed Grains (ALA), which has a number of drawbacks and practically is not used in industrial practice.

In the present-day practice of making products from high-alloy steels and alloys, one of the main requirements determining quality of the finished products is the grain size determined by the methods established in the existing standards.

The following standards were most commonly used at the end of the last century:

- ASTM E I12-95: Standard Test Methods for Determining Average Grain Size
- DIN 50601: Determining Ferrite and Austenite Grain Size in Iron Base Steels and Materials
- ISO 643: Steel. Micrographic Determination of the Apparent Grain Size
- GOST 5639: Steels and Alloys. Methods for Determining Grain Size

It should be noted that all ASTM standards set narrow scopes of their competence. It ensures determining grain size in corresponding (though rather conventional) units with a rather high reliability.

As regards standard GOST 5639, its authors' attempt to establish a universal normative document has resulted in a number of uncertainties and, in some cases, in impossibility of a reliable grain size determination in steels prone to anisotropy, namely the steels for which anisotropy is the main quality index. This is why there were cases of rejection of this standard application in industry.

The most serious drawbacks of GOST 5639 include the following:

- setting limits of grain quantity in 1mm^2 for each grain number
- introduction of a method for assessment of anisomerous structures
- its obligatory use raised to the rank of a law

All three standards contain different quantities of whole numbers conventionally defining grain sizes. For all that, ASTM E112 permits assessment in fractional numbers (eg G8.5). It should be pointed out that average grain sizes with the same numbers are identical in the three standards.

Standards DIN 50601 and GOST 5639 use a metric system in which number of grains in 1mm^2 is determined and the average diameters approximately correspond to numbers G0 to G14 in ASTM E112 in which another size scale in inches is additionally given.

Use of the metric system in European standards has brought about a shift of the standard sequence into the field of negative numbers having no physical sense. Common disadvantages of all three standards include conventionality of units (ie numbers) which complicates their conversion into the commonly used units (millimetres) in design calculations.

For such method standard as GOST 5639, its obligatory use is incorrect because it includes provisions allowing double interpretation of the same quantity.

GOST 5639 contains a number of intolerable errors which were discussed in detail in [4-6].

Determination of average grain diameter by the method of grain boundary intersection (it is unclear why it was called "conditional") is analogous to that of E112 but numerical value d_L (GOST 5639) and $\bar{l}$ (ASTM E112) somewhat differ due to the difference between British and metric systems of units.

Major doubts are raised by the method of counting the number of grains in 1mm^3 in GOST 5639, ie counting an average number of grains in the specimen volume not specified in any one of the standards under consideration. The American standard specifies determination of an average number of nonequiaxed grains in 1mm^2 and GOST 5639 in 1mm^3 which is totally baseless and can only be done with the use of stereological reconstruction.

It would be quite another matter if it were a question of area. Then, according to [5], an equigranular in volume structure (ie a structure consisting of grains of a same size) for which $D_{max} = D_{av} = D_{min}$ gives distribution containing up to 28% of grains sizing from $D_{min} \rightarrow 0$ to D_{max} in a random secant plane.

For comparison, Tables 1 and 2 list grain structure parameters and methods for their determination in accordance with the three most widespread standards to demonstrate basic differences between them.

The final objective of development of the technology for manufacture of products of special steels and alloys is formation of a specified uniform grain size which in its turn ensures required design material strength.

As such structures are mostly assessed in practice by the method of visual comparison with photographic references from the functional standards and in conventional units (numbers), such assessment is subjective, open to serious measurement errors and methods of assessment of grain size unhomogeneity are unavailable at all.

As the analysis of the existing standards shows, except the chord method, they do not take into account real distribution of the grain characteristics (chords, plain section diameters, diameters in a volume). Therefore, it is inexpedient to use it for assessment of high-duty products in which grain size is the main quality index, and as SA Saltykov affirms in his book, "Standardised methods of metallographic analysis… are mostly semiquantitative methods of number-based assessment. Its main disadvantage is its subjectivity and the resulted low accuracy and reliability".

An objective assessment of grain structures in metals and alloys can be done with the help of the function of distribution of three-dimensional objects and its quantitative characteristics which can be realised through a stereological reconstruction of the actual structure images visible in microsections and by the use of computerised methods of primary data processing [5].

The known quantitative methods in the standards of developed countries (ASTM E112, DIN 50601, etc) allow to measure grain size with identical errors.

Structure parameter	Standard number		
	ASTME112	GOST 5639	DIN 50601
Grain number	$\boldsymbol{G}$ $N_{AE} = 2^{G-1}$ $G = 10 - 2log_2 \bar{l}$ $G = 10 + 2log_2 \bar{N}_L$	$\boldsymbol{G}$ $m = 8 \cdot 2^G$	$\boldsymbol{G}$ $G = \frac{log\ m}{log\ 2} - 3$
Number of grains in area of 1 mm² 1 inch²	N_A	$m = 2n_{100}$ $m = 2\left(\frac{g}{100}\right)^2 n_g,$ g - magnification; n - number of grains	$m = 2n_{100}$ $m = \frac{n_g g^2}{A^{*)}}$, g - magnification; n - number of grains
	N_{AE}		
Average grain section area, mm²	$\bar{A}$	$a = \frac{1}{m}$	$a = \frac{1}{m}$
Average grain diameter, mm	$\bar{d}$	$d_m = \frac{1}{\sqrt{m}}$	$d_m = \frac{1}{\sqrt{m}}$
Total length of line segments (chords), mm	L	L	$L_0 = \sum L$
Total number of grains cut by line segment of length L (L_0), pcs	N_i	N	$N_0 = \sum N$
Average length of chords (segments, intersections) in the total length of the test line, mm	$\bar{l}$	$d_L = \frac{L}{N}$	$\bar{L}_S = \frac{L_0}{N_0}$
Average number of nonequiaxed grains: in 1 mm² in 1 mm³	$\bar{N}_A = (N_{Al} N_{At} N_{Ap})^{\frac{1}{3}}$	-	-
	-	$N_V = 0.7 N_x N_y N_z$	-

x) area of the circle confining the field of view

Table 1: *Grain structure parameters determined by three standards*

However they are not used in practice because of their laboriousness.

They are used exceptionally for scientific needs or in reclamation of finished metal products.

Development of computerised analysis methods makes it possible to reduce laboriousness of quantitative methods of assessment of grain structures and obtain the most comprehensive information.

However the impossibility of making a reliable judgment on metal anisotropy in finished products using the standard functioning at present limits their use for a number of products made from new heat-resistant and corrosion-resistant alloys prone to grain anisotropy.

To make an objective assessment of the products made of materials prone to grain anisotropy, a new method was developed for quantitative assessment of parameters of spatial grain structures by their two-dimensional image in metallographic sections. Based on this method, an image analysis system [7] has been developed. It includes a structural analysis package which ensures obtaining of the following basic characteristics of the spatial grain structures by their two-dimensional images visible in a microscope or microphotography:

- number of grains in a unit of area or volume
- average and maximum diameters (in μm) of grains in a volume
- numeric and graphic distribution of grain chords and diameters in a plain section and grain diameters in a volume
- areas and perimeters of all examined grains

ASTM E112			GOST 5639			DIN 50601		
Grain No.	Parameters		Grain No.	Parameters		Grain No.	Parameters	
	$\bar{d}$, mm	N_A, 1/mm^2		d_m, mm	m_{nom}, 1/mm^2		d_m, mm	m, 1/mm^2
						-7	4	0.0625
						-6	2.828	0.125
						-5	2	0.25
						-4	1.414	0.50
			-3	1	1	-3	1	1
			-2	0.707	2	-2	0.707	2
00	0.508	3.88	-1	0.500	4	-1	0.500	4
0	0.359	7.75	0	0.353	8	0	0.354	8
1	0.254	15.50	1	0.250	16	1	0.250	16
2	0.1796	31	2	0.177	32	2	0.177	32
3	0.1270	62	3	0.125	64	3	0.125	64
4	0.0898	124	4	0.088	128	4	0.0884	128
5	0.0635	248	5	0.062	256	5	0.0625	256
6	0.0449	496	6	0.044	512	6	0.0442	512
7	0.0318	992	7	0.031	1024	7	0.0312	1024
8	0.0225	1984	8	0.022	2048	8	0.0221	2048
9	0.0159	3968	9	0.015	4096	9	0.0156	4096
10	0.0112	7936	10	0.011	8192	10	0.0110	8192
11	0.0079	15872	11	0.0079	16384	11	0.0078	16384
12	0.0056	31744.1	12	0.0056	32768	12	0.0055	32768
13	0.0040	63488.1	13	0.0039	65536	13	0.0039	65536
14	0.0028	126976.3	14	0.0027	131072	14	0.0028	131072
						15	0.0020	262144
						16	0.0014	524288
						17	0.0010	1048576
In all, 16[x)] Nos.			In all, 18 Nos.			In all, 25 Nos.		

[x)] Only whole numbers are given in the Table. The standard contains 30 numbers

Table 2: *Comparative analysis of grain structure parameter values determined by three standards (magnification ×100)*

- shape factor and index of asymmetry of the grain structure
- grain number according to GOST 5639 and ASTM E112

The main advantage of the new method is the possibility of assessment of grain anisotropy in the examined structures using the variation coefficient of grain distribution in the product volume generally used in the assessment of grain structure unhomogeneity. All above-mentioned parameters are determined in commonly used units to ensure higher accuracy of design strength calculation of new materials as there is no need in conversion of conventional numbers into commonly used units.

The new method was taken as a basis for a proposed standard. The new standard features a condition that each number is a monodisperse system of spheres (equiaxed grains).

In the proposed standard, value of the grain diameter within the monodisperse system of spheres in which grain anisotropy is absent and not the quantity of grains in a form of cubes in 1 mm^2 as in GOST 5639-88 is taken as the grain number. Then, the number of equiaxed grains in a unit of volume is determined by the following equation:

$$N_V = m^{\frac{3}{2}} \text{ pcs/mm}^3$$

This approach will ensure a clear-cut assessment of material grain anisotropy by the variation coefficient of grain distribution by sizes. If the obtained variation coefficient in the examined structure is 0.28 in a plane or -0.36 in a line, it will be the evidence of structure homogeneity in a volume. And the more this value differs from the above values, the higher anisotropy is in the volume of the examined structure.

The new standard features:

1. The standard series is set for 3D structure objects
2. Spatial spherical model of structural components

3. Each element of the standard series is a monodisperse system of spheres of an equal diameter

4. To harmonise the numeric series of the new standard with the functioning standards, volumes of the monodisperse system spheres are taken equal to the volumes of the corresponding elements of the cubic model, ie the principle of geometric progression is preserved in the standard series

5. To determine the value of the structural 3D objects, structure reconstruction is made over the planar section and its initial data is distribution of chords in disperse intervals of the standard series obtained by any known quantitative method. The initial data are obtained in a planar section (microsection) by determination of chord dimensions in two mutually transverse directions

6. The structure reconstruction is made using software STRUCTURE 2001 [7] or other software used for the reconstruction of the spherical model of the equiaxial grain structure. The requirement of reconstruction is obtaining of distribution of standard sphere diameters (grain numbers) in a 3D space and numerical characteristics of this distribution the number of independent monodisperse spheres in a volume, average value of their diameters, deviations from the average value and variation coefficient determining grain anisotropy in the studied object in the space

Table 3 shows data for assessment of grain size and anisotropy by the new standard in accordance with standards ASTM E112, DIN 50601 and GOST 5639. Figures 1 and 2 show examples of assessment of a homogeneous and anisotropy structures in the specimens taken from cold-worked tubes of ASTM316L steel type after rapid and furnace heating at 1150°C.

As the above figures show, Coefficient of variation shows clearly anisotropy of the tube metal. It should be pointed out that the average value of diameters are determined in a volume, in a plane and in a chord, not only in a plane as the existing standards specify.

The index of anisotropy *r* attitude of variation real structure (figure1, 2) can serve as toward the variation of flat cut of monodispersible spherical model (table 3).

This method of assessment was used in [7] in the analysis of influence of the heating parameters on the grain size and structural anisotropy in cold-worked tubes made of corrosion-resistant steel of Kh18H10T, Kh17H14MZB type and alloy Kh15N35MBTUR.

Analysis of a great number of experimental data [1, 8-10] shows a high level of grain anisotropy in above Cr-Ni steels and other (16-15; 18-12; X15H35, X25H45 type) steels and alloys. It leads to the appearance of a significant unhomogeneity of physical-mechanical properties and can result in undesired consequences during service of the products from such materials.

Analysis of these data makes it possible to draw the following conclusions:

1. Relative level of grain anisotropy for all studied materials subjected to isothermal heat treatment is higher ($1.5 \le r \le 2.5$) than during anisothermal heat treatment ($1.52 \le r \le 1.8$)

Table 3: *Parameters of grain structure according to the new standard*

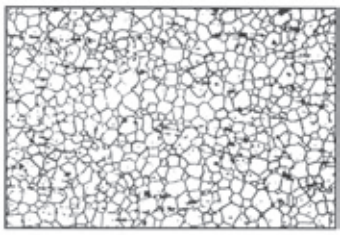
Grain number, G according to…			Parameters for the determination of grain size and grain anisotropy						
			Number of grains in 1mm^2	In a volume		In a plane		In a line	
GOST 5639	ASTM E112	DIN 50601		Diameter, D, μm	Coefficient of variation	Diameter, d, μm	Coefficient of variation	Chord, l, μm	Coefficient of variation
-3		-3	1	1240.7	0	974.4	0.2842	815.1	0.36
-2		-2	2	877.3	0	689.0	0.2842	576.4	0.36
-1	00	-1	4	620.4	0	487.2	0.2842	407.6	0.36
0	0	0	8	438.7	0	344.5	0.2842	288.2	0.36
1	1	1	16	310.2	0	243.6	0.2842	23.8	0.36
2	2	2	32	219.3	0	172.3	0.2842	144.1	0.36
3	3	3	64	155.1	0	121.8	0.2842	101.9	0.36
4	4	4	128	109.7	0	86.1	0.2842	72.1	0.36
5	5	5	256	77.5	0	60.9	0.2842	50.9	0.36
6	6	6	512	54.8	0	43.1	0.2842	36.0	0.36
7	7	7	1024	38.8	0	30.5	0.2842	25.5	0.36
8	8	8	2048	27.4	0	21.5	0.2842	18.0	0.36
9	9	9	4096	19.4	0	15.2	0.2842	12.7	0.36
10	10	10	8192	13.7	0	10.8	0.2842	9.0	0.36
11	11	11	16384	9.7	0	7.6	0.2842	6.4	0.36
12	12	12	32768	6.9	0	5.4	0.2842	4.5	0.36
13	13	13	65536	4.8	0	3.8	0.2842	3.2	0.36
14	14	14	131072	3.4	0	2.7	0.2842	2.2	0.36

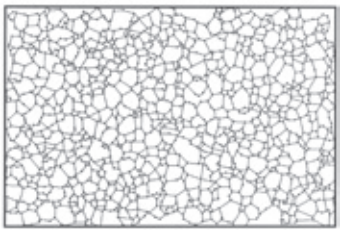
Item	Name	Unit	Value
1	Number of objects (grains)	pcs	695
2	Maximum grain size	μm	37.67
3	Average grain diameter in a volume	μm	10.17
4	Mean square deviation	μm	4.83
5	Coefficient of variation		0.48
6	Number of grains in 1 mm^2 of microsections	pcs	12784
7	Total grain area	mm^2	0.05436324
8	Number of grains in 1 mm^3 of volume	pcs	1445440
9	Grain number according to standard GOST 5639		11
10	Grain number according to standard ASTM E 112		10.5

Coefficient of variation of the structure

In a volume	In a plane	In a line
0.48	0.54	0.57

Structure of initial plain section (microsections)





Structure after computer processing

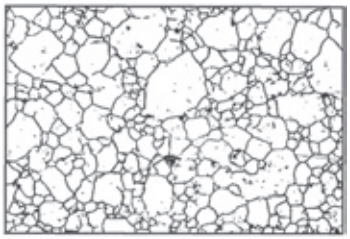
Figure 1: *Characteristics of a comparatively homogeneous structure*

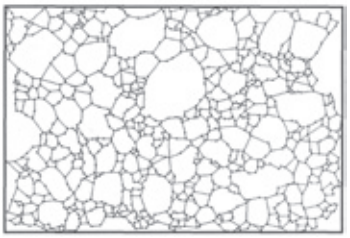
Item	Name	Unit	Value
1	Number of objects (grains)	pcs	6385
2	Maximum grain size	μm	148.90
3	Average grain diameter in a volume	μm	29.62
4	Mean square deviation	μm	20.86
5	Coefficient of variation		0.70
6	Number of grains in 1 mm^2 of microsections	pcs	1848
7	Total grain area	mm^2	0.20832358
8	Number of grains in 1 mm^3 of volume	pcs	79442
9	Grain number according to standard GOST 5639		8
10	Grain number according to standard ASTM E 112		7.5

Coefficient of variation of the structure

In a volume	In a plane	In a line
0.7	0.71	0.72

Structure of initial plain section (microsections)





Structure after computer processing

Figure 2: *Characteristics of an anisomery structure*

2. Complex alloyed molybdenum steels and alloys possess a maximum grain anisotropy. Index of anisotropy for this steel is within 1.8-2.0 at a rapid heating

3. Increase in duration of isothermal heating results in an increase in the grain anisotropy proportionally to the heating temperature

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这一栏目专为我们的中文读者介绍国际管道行业的最新技术和行业新闻的综合信息。

大通孔回转工作台

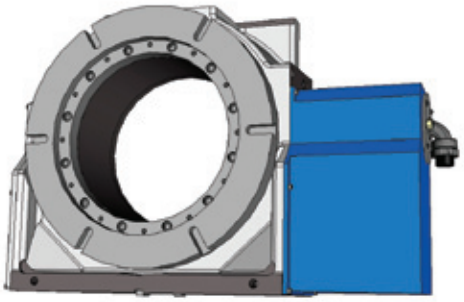
Kitagawa推出了带有一个超大通孔的伺服电机驱动的数控回转工作台，用来帮助在加工中心和手动轧机上管式和轴式部件精确的铣削和钻削。1st Machine Tool Accessories (1st MTA) 公司生产的该装置，特指TG530，在英国销售。

345毫米直径的中心通孔可以接受340毫米(13⅜")的管子，这是用于石油和天然气工业应用的标准，如钻孔套管。

TG530的机器结构设计能承受加工航天部件用钢性材料所需的重切削扭矩(2,600Nm以内)。液压夹紧扭矩高达6,100Nm，允许重型静态加工。

用来满足最高加工精度的坚固构造，该装置重366千克， 是通孔只有一半大、具有同样功效的Kitagawa TR工作台系列机器的三分之一。回转工作台重量轻意味着能加工较重的零部件而不超过机床的最大工作台承载。

中心高度为310毫米，使用1/180的齿轮减速比，最大转速为11.1转/分钟，分度精度和可重复性分别为20到40角秒。该装置可以垂直或水平安装，最大允许组件重量分别为350和700千克。1st MTA是工件夹紧和加工配件供应商，包括夹具；



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1st MTA的广泛的股份持有得到了专业技术工程师团队提供的保证和服务的支持。已选产品的展示可根据需要由外部销售专家提供。

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感应加热系统制造商Ambrell推出了功率为250千瓦、中心频率为10千赫的Ekoheat 250/10。它是Ambrell高频到低频感应加热系统综合生产线的一部分。

Ambrell的应用实验室发现Ekoheat 250/10适合各种广泛的应用，包括外径为10"石油工业用管的热装，直径近1"的线材退火，作为在线制造工艺的一部分，焊接前2.5"直径钢棒的预热。很多加热应用公司正寻求感应法，因为它是一种无火焰、非接触式的加热方法，快速、精确、高效节能而且有益于工艺的可重复性。其他加热方法效率较低，因为他们加热的是更大的面积而不是只需要加热的面积，从而导致过多的能耗。需要大量穿透加热的较大的应用能够因扩展Ekoheat低频系统线而获得感应的好处。

“我们非常高兴能提供Ekoheat 250/10，”Ambrell的销售副总裁Tom Dickerson表示。“我们正在寻找对很多应用感兴趣的广泛的行业，而且我们看到对该系统特别感兴趣是来自较大管子应用领域的。当然，我们有较低频率的系统用于那些甚至更大的应用。”Ambrell产品是CE认证的并在通过ISO9001:2008认证的工厂内完成制造，确保高质量的设备。潜在顾客可以利用公司的应用实验室来确保系统是按照他们的加热要求建造的。Ambrell在50多个国家安装了10,000多套系统。

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AUMA为智利北部山区的瓦西铜矿提供了能在高海拔地区作业的稳健的制动解决方案。六十个模块化电动装置自动化阀门控制材料，穿过海平面上4300米开始的管道。

该矿场是世界上最大的有色金属项目之一，位于有着丰富铜矿开采史的一个区域。1999年试运行，矿场的这次扩建计划使其达到每年500,000吨铜的长期开采能力。

AUMA的模块化制动器支持瓦西铜矿

加工设备包括一台60,000tpd硫化物精选器和一台50,000tpa阴极铜氧化物堆leach-SX-EW设备。研磨后，矿石经过浮选和精选再研磨后，产生高度精矿，在输浆管道内从矿山运输200千米到港口。带有三相电机和齿轮箱的AUMA制动器安装在管道“收束站”，正所谓因为材料需要在运输过程中加速后再慢下来。

AUMA制动器遇到的挑战包括气候环境条件，夜间温度非常低，而白天温度极高。经济的三相交流电机以及防腐是应用受益的非常厂要的产品特征。AUMA为矿山设施提供模块化电动装置的业绩记录包括在同样位于智利的Los Bronces矿山的安装。

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精加工设施催化氧化系统

空气污染控制专家AirProtekt公司供应、安装和调试了交钥匙空气污染控制设备，用来减少来自飞机部件精加工设施三种溶剂基喷漆室和烤炉中的挥发性有机化合物烟雾和臭气。

Honeycat®浓缩器催化氧化空气污染控制和节能系统将部件精加工过程产生的废气进行处理，给出温度在20°C时12,000Nm^3 hr-1的最大运行流量，以及170mg Nm^{-3}的丁酮、二甲苯和甲苯常用挥发性有机化合物浓缩溶剂。含有溶剂的气体用风管输送并通过旋转蜂窝沸石轮送出。

来自工艺流的溶剂吸附到蜂窝轮的疏水沸石上。然后将清洁气输送到主要工艺风机进口，再通过排气管排到大气。浓缩的蜂窝轮沸石转子不断旋转来吸收有机挥发性化合物，然后进入再生区，在这里，VOC将被小量预热气体清除，然后再进到一个小的Honeycat催化氧化体系。

VOC浓缩器和Honeycat催化氧化系统结合意味着含少量VOC的非常大的工艺排放流能通过具有成本效益的系统来处理。这种类型的系统意味着只有5%的工艺流是由Honeycat催化氧化系统处理的，代表着减少量为20:1。增强的VOC浓缩使总系统操作成本比替代系统低很多。

“AirProtekt针对飞机部件加工应用挑战的解决方案使新的生产设施现在能够符合VOC排放法规，”AirProtekt的董事总经理Trevor Lawton解释到。“新的安装已扩大了公司的全球环保方针。Honeycat浓缩器催化氧化空气污染控制和节能系统得益于与替代的热氧化工厂解决方案相比资本和运行费用非常低。”

总的来说，在启动和在线运行条件下，AirProtekt都是低能解决方案。精简的催化氧化系统只需要对客户的基础设施进行最少的升级。该系统结构轻，无需压缩空气或天然气，而且运行安静。

AirProtekt的工程解决方案专门用来解决当地特定的排放要求，但也规定要符合国家和国际法规以及全球特定公司的详细指南或操作规程。

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AirProtekt Honeycat和浓缩器

主要机械设备投资补充关键行业资格认证更新

ARC Energy Resources是总部设在英国的堆焊层和制造服务专家，雇有75名职员。今年初，公司宣布了一个重要投资计划以及三个关键认证的更新。

主要投资涉及两台价值500,000欧元的新旋转头焊机，将用来提高生产率，扩大公司能处理的尺寸和工作范围。伴随而来的成功是获得了几份新合同，推动审核公司处理更大和/或更复杂的部件堆焊层指令的能力。当目前工作站围绕固定焊炬移动部件时，新的机器使用自动控制操作围绕固定部件的焊炬，精确定位焊炬来进行堆焊，同时紧密围绕部件轨迹工作。该机器能处理通常被认为很难焊接包敷的部件。这一投资扩大和增强了Arc Energy'处理复杂几何形状部件的能力，用于重量15吨以内的各种尺寸部件全部或部分的包敷和制作。

其他新的机械发展包括申请创新管道操作系统专利，该系统是设计用来提高Arc Energy防腐涂层服务效率和质量的。Arc Energy技术和质量总监Neil Cook表示该系统为顾客带来了真正的利益，因为管子定位和处理是堆焊层过程最重要的挑战，并且该新机器大大提高了过程效率和成品堆焊层的质量。管子处理系统补充Arc Energy的第十五个堆焊层工作站，他们也是内部设计的，拥有满足公司专业要求的流的控制系统。

工作站和管道操作系统的结合提供了更精确的控制并使堆焊能够紧跟更好的公差以及能更精确地的定位。更顺利的加工也限制了使用合金的量以及减少了焊后加工时间，为客户带来了双重节省。

公司能够包覆直径为4米的孔以及孔直径小到20毫米的难接近的区域。三个工作站是专为管道熔敷设计的，配备有最新的高级控制和检测设备，提供了处理各种项目的灵活性而且也有助于使堆焊层在石油和天然气以外的行业经济可行。公司的堆焊层专业技术为各种工艺和管线设备提供了防腐和耐磨保护。常用的堆焊材料包括铬镍铁合金625和825、蒙乃尔铜-镍合金、哈氏合金和不锈钢和其他。此外，Arc Energy还提供室内试焊、热处理、材料可靠性鉴别以及无损检测设备。

三大认证——ISO 9001:2008质量管理、ISO 3834-2金属材料熔焊和国际知名的ASME U和R钢印——在严格审核后更新。其他资格认证包括ISO 14001:2004环境管理和人力投资；以及今年底健康及安全管理系统将进行OHSAS 18001认证审核。

董事总经理Alan Robinson，少数英国注册的欧洲焊接工程师之一，表示很少有焊接专家能比得上Arc Energy的认证或经验，强调为客户提供高素质、经验丰富的焊接人员。

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Arc Machines与化学巨头的第一次冒险取得成功

ARC Machines Inc (AMI)有限公司为GrowHow UK Ltd公司切斯特附近Ince化肥厂的独特项目提供了自动轨道焊接系统。

Ince工厂每年生产100万公吨化肥，为草和可耕种植物提供必需的养分，并且用来在其氨合成气回路安装一个新的转换容器。当面对焊接直径18"，壁厚近2.5"的不锈钢管时，承包商Fabricom需要AMI的专业技术提供自动轨道焊接系统，确保实现手工操作无法达到的焊接质量和速度。

AMI为Fabricom工程师提供全部培训以及提供了三套M415电源和M15火炬系统，使焊机能够进行每天24小时的工作，在最少的工厂停机时间内就能完成整个项目。

这是GrowHow第一次使用了自动轨道焊接并选择了AMI系统来保证提供可重复的高质量焊缝。遇到所有焊缝都很重要的情况下，AMI的设备能够处理厚壁管道并在极高的气压和温度下保持焊缝的完整性，这给了公司明显的优势。

为确保高的焊缝完整性，在项目开始前，AMI在高温环境下对优质321不锈钢管材上做了几次试验，并提供了全面的培训和支持。17道环焊缝在预制车间完成焊接，最后的4道接头焊缝是在寒冷的冬季在现场完成焊接的。

对于AMI区域总监Michael Allman来说，这是对自动轨道焊接与从石油和天然气、石化和核能发电到食品和饮料、医药和半导体等很多行业相关的另一次证明，

他说："GrowHow是英国最大的氨和硝酸生产商，而且以技术卓越著称，因此我们的系统必须符合非常高的标准。自动轨道焊接不仅比手动系统更快、更精确地完成了工作而且还提供了干净、高质量的表面光洁度，这对精确地无损检测来说是很重要的。

"自动系统实现的项目竣工速度也是一个极大的优势。在所有行业，停机时间最小化以及相关的成本是至关重要的，AMI系统在这方面是处于领先地位的。"

AMI的M415电力系统为GrowHow提供了自动控制的可靠性，用来满足最苛刻的焊接应用要求。结合了工业控制计算机，通过12"的大触摸屏或者键盘编程的Model 415有一个直观的用户图形界面，使用标准的焊接行业术语使编程很简单，并且能够在微处理器控制系统内储存焊接计划。为了保持成百上千的重复焊缝在精密公差下的焊缝完整性或当随后需要相同的焊缝时，它也提供实时数据采集供选择。

完成系统的是Model 15大口径管道焊接头，带有特别改装的凿式焊炬喷嘴，用来适应焊接发展阶段优化的相对窄的复合坡口

主要设计用于对焊接质量要求极高的核能、造船、石化、建筑行业现场使用的Model 15是一个坚固、精密的焊接头，而且径向间隙很低。对于焊接3"以上的所有管子，它具有旋转、送丝、自动电压控制、横焊缝控制和火炬摆动的特点，而且能够用许多特定配件进行改造或定制。

AMI自1976开始成立以来一直都在为自动轨道焊接技术设定标准。现在公司在市场上拥有大量的产品范围而且以最高的生产标准、技术力量、客户服务和高质量的材料而著称。

在最近搬到北安普敦郡达文特里的新地点后，公司现已在一个专门建立地独特的工厂内合并了英国所有的销售活动，包括客户支持、操作工培训、设备维修和备件供应，使其能够为新老客户提供一致的高质量。

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Zumbach Electronic的动态双扫描(DDS)用于钢/金属型材准确的在线厚度测量

ZUMBACH Electronic公司增强和扩展了准确的非接触式测量系统系列，用于钢制、铜制或任何金属制精密型材的测量。动态双扫描(DDS)方法是解决方案。

生产线如冷轧或冷拔生产线中精密型材准确的厚度测量一直都是一项艰巨的任务。

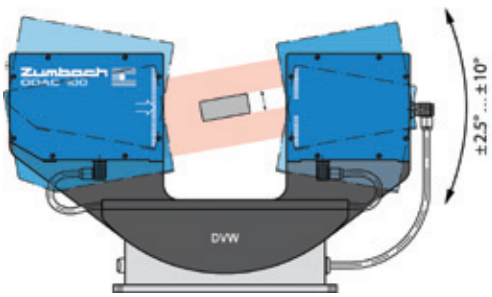
当触觉系统取决于接触点上的磨损或损坏的时候，只要型材相对于光学传感器有轻微的扭转，所有的光学系统都有误差大的问题。禁止的强制性的机械引导，因为这会损坏产品。

基于光切原理的视觉检测系统可以用作替代，但通常太贵。

Zumbach有着长期的提供电线、电缆和钢铁产品直径控制用ODAC®激光扫描仪的记录，目前提供了价格中等的新型的简洁而高效的解决方案。

利用装在新的旋转装置上的高速激光头，相关的厚度通过动态最小值检测方法检测和测量出。该方法能提供高度准确的读数，完全不受产品方位或可变扭转的影响。达到2000每秒的高测量速度和强大的处理器软件是该系统的重要组成部分。

该系统主要由一个ODAC F激光头、一个DVW动态扫描旋转装置和一个USYS处理和显示装置组成。如果对宽度也感兴趣，2轴ODAC-XY头能同时捕捉厚度和宽度。各种激光头模型和DVW装置适用于各种特定的应用和尺寸。



Zumbach Electronic的动态双扫描(DDS)用于钢/金属型材准确的在线厚度测量

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Larikka CylinWeld: Tubular parts manufactured better

By Maarit Aalto, Marketing Director, Larikka Ltd, Finland

This article describes Larikka CylinWeld, the cylinder internal welding method, and its capabilities in manufacturing tubular parts such as Tees and manifolds from stainless steel and other high alloy. The specific aims of this article are: To introduce Larikka CylinWeld and to share insights of why to manufacture tubular parts such as Tees by Larikka CylinWeld.

Introduction

Larikka Ltd

Larikka is a specialist in processing technologies for tubular parts and pipe components. The Larikka processing technologies acknowledge the importance of inner surface quality and especially the surface of the weld area in Tees and manifolds which is critical on most areas of industry utilising tubular parts, eg food and pharmaceutical industries.

After more than 20 years of experience in collaring methods for tubular parts it was realised that this method had reached its process limit and the 25-year search for a solution to solve the issue of manufacturing such tubular parts that could not be collared began. Now, Larikka demonstrates its innovativeness, know-how and experience from over 45 years of the processing technologies for tubular parts in the internal approach to welding stainless steel and other high alloy cylindrical parts.

Challenges in manufacturing tubular parts

The requirements set by the usage purpose of the pipeline define the material and surface quality requirements of Tees in addition to joining techniques. Particularly, in the food, pharmaceutical and semi-conductor industries the surface quality requirements are such that Tee-joints made on-site do not fulfil these requirements. For these reasons Tees have become industrial products and commercial goods.

The characteristics of a quality pipe component and tubular part can be summarised as: 1) the large radius of the inner corner of a branch; 2) smooth inner surface; 3) good flow technical properties; and 4) good material strength. However, there are several challenges in manufacturing such tubular parts. One common problem for all manufacturers is the geometry of the joining point of two tubular parts.

This joining point turns into a continuously changing arc which follows the surface of the main pipe. The arc of cutting branch pipe is identical with the arc of the main pipe. These arcs joined together form the joining surface which is to be welded. In addition to continuously changing arc the joining point of pieces to be welded form an angle which changes between 0 and 90 degrees.

Controlling the full penetration of the weld and smoothness of the inner surface is difficult causing lots of expensive after-work. Furthermore, different kinds of fixings are needed to fix weldable parts together for the welding process. The easiest and often the only way to do this is to install the fixing equipment outside the weldable pieces. Yet, these fixings cause several problems for the movements of the welding head and weldable part to follow the pipe surfaces' mathematical arc.

In order to eliminate the welding and after-work problem several pipe branching methods have been developed where a collar is formed to the branch's joining point and this way the branch location resembles the end of a straight pipe. This type of joint is easily welded manually and for this kind of welding there are several good pieces of orbital welding equipment which produce qualitative result on-site. However, collaring causes thinning of the material in the collar area. The higher the collar the greater the thinning and the risk of rupture of the collar.

As a compromise resulting from these characteristics markets have settled for particular wall thicknesses in pipes which have been determined more by the available manufacturing technique rather than other facts affecting material strengths. Generally, pipes' wall thicknesses have remained at 1.5mm even when the outer diameter is 15mm or smaller.

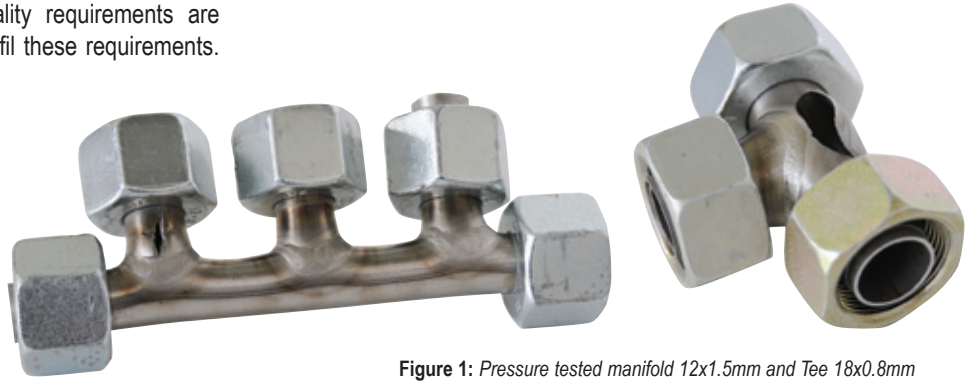

Figure 1: *Pressure tested manifold 12x1.5mm and Tee 18x0.8mm*

Manufacturers have tried to collar these pipe diameters despite difficulties. This has led to great compromises because of the collar quality. In short, as the pipe diameters get smaller and the wall thickness in relation to pipe's diameter grows, ie becomes thicker, there are no working collaring methods (for branching) available.

Resulting from long development work of both collaring and welding techniques, Larikka has developed a very clever solution for manufacturing tubular parts like Tees where all the collaring problems have been elegantly solved – no collaring at all. This new solution is named Larikka CylinWeld and it approaches the manufacturing these kind of "small" Tees and other pipe components qualitatively and economically by welding cylindrical parts from inside as its name reveals – cylinder internal welding. Due to this innovative approach to the welding process all above mentioned challenges in manufacturing tubular parts can be avoided.

Larikka CylinWeld – the cylinder internal welding

The simplest approach to the mathematical pattern which the joining surfaces of two hollow parts form is from inside and on the central line of either tubular part. This kind of a mathematical pattern is easy to control with current servo technics. Since the weldable parts must be fixed together for the welding process and most commonly this is made from outside the parts, the inside of the pipe parts remains free for the welding process. Larikka CylinWeld is an application of TIG-welding which cleverly utilises this vacant space inside of pipe parts. In Larikka CylinWeld the electrode is directed inside the parts to be welded either through the branch or the main pipe. Thus, the welding takes place inside the tubular parts.

There are two significant things that happen when tubular parts are welded from inside. Firstly, a round inner corner is formed as the arc flame travels over the sharp inner corners of the tubular parts' joining point and melts these corners. This kind of smooth and round corner inside is flow-technically and in terms of material strength a very good end result. Secondly, the root is on the part's outer surface making the visual check of weld's full penetration easy.

Figure 2: *Larikka CylinWeld machine*

The welding seams of Larikka CylinWeld have undergone both X-ray and pressure tests with good results. X-ray test results were class 5. Also, the pressure tests proved great material strengths. For example, a 3-branch manifold of a 12x1.5mm stainless steel pipe lasted 1,700 bar and a Tee welded from a thin-walled 18x0.8mm stainless steel pipe lasted 480 bar before rupture.

Figure 3: *Drilled main pipe and punched branch pipe ready for welding*

Noteworthy is that the branches' welding seams did not rupture. Instead, the material ruptured outside the welding seams of branches as shown in figure 1.

Larikka CylinWeld (figure 2) consists of a power source, a user interface for controlling the welding process, a welding chamber and a fixing cassette for fixing the parts. The fixing cassette is equipment to which parts can be easily fixed for the welding process. The positioning devices force parts into a correct position in the cassette locking them for the welding. The cassette also directs the parts into proper position in relation to the welding electrode as the parts are loaded within the cassette into the welding chamber. Together the cassette and the welding chamber form a shielding gas atmosphere for controlling the inner and outer shielding gas during the fully automatic welding process where the movements of the welding and the power control are executed according to the pre-programmed parameters. Thus, no special skills or know-how are required from the person operating Larikka CylinWeld.

Larikka CylinWeld is very suitable for welding diverse and challenging tubular parts either with saddle weld or straight seams to collared parts. It is applicable for the welding of single parts where the part rotates and the welding is down-hand welding, which theoretically is the most ideal welding situation. Furthermore, with Larikka CylinWeld it is also possible to weld long manifolds. The equipment's functions can be applied so that the pipe is stationary and the electrode rotates inside the pipe. Since the welding takes place inside the pipe it is possible to weld branches very close to each other. Also, the operating range of Larikka CylinWeld is wide: the smallest diameter is 4mm and the largest 200mm, in special cases even larger.

Larikka CylinWeld concept and the welding chambers are widely patented.

Manufacturing tubular parts with Larikka CylinWeld

Tubular parts have been manufactured under limitations of available manufacturing techniques and weldable parts have been produced to meet the requirements and possibilities of the welding. Also, for Larikka CylinWeld process the parts are prepared by the conditions set by the welding. The following describes how manufacturing tubular parts with Larikka CylinWeld works.

Drill and punch

Preparation of parts for the welding is very simple. Firstly, a hole is drilled to the main pipe. Secondly, an arc is punched to the pipe end

of the branch part (figure 3). Parts are directly ready for the welding process.

Fix and weld

For the welding process parts must be fixed together. Larikka CylinWeld has three devices for handling parts: 1) a welding cassette; 2) a positioning device; and 3) a welding chamber. The same welding cassettes can be used in welding both single Tees and manifolds. The weldable parts to pipes can be flanges, pipes, threaded nipples or any other parts where there is a hole and the material thickness is suitable. Furthermore, a very effective production situation is created by using two welding cassettes, where one cassette is in welding while the other cassette is being loaded.

The handling of parts is also very cleverly and simply realised in Larikka CylinWeld. First, the base part of the cassette is dropped inside the positioning device. Next, the branch part is dropped to the guiding pins which are on the central line of the positioning device. After this the main pipe is put into the cassette so that the tip of the guiding pins goes inside the main pipe's hole. Now the weldable parts are positioned into the welding cassette so that the branch pipe's arc is against the main pipe's hole. Also, the central lines of the weldable parts and inside electrode's axis of revolution are concentric and parallel. As the welding cassette is closed the parts are pressed tightly against each other thus forming a shielding gas atmosphere for controlling the inner and outer shielding gas during the welding (figures 4 and 5). After fixing the parts, the welding cassette is removed from the positioning device and is loaded into the welding chamber (figure 6).

By the start command the pneumatic actuator of the welding chamber locks the chamber to its position and connects the outside shielding gas as well as the earth current contact. The

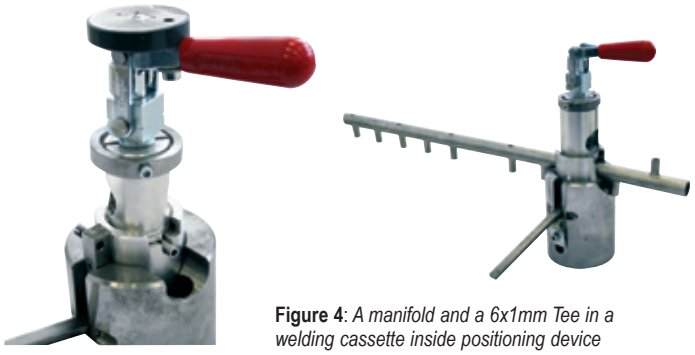

Figure 4: *A manifold and a 6x1mm Tee in a welding cassette inside positioning device*

Figure 5: *Manifolds in welding cassettes*

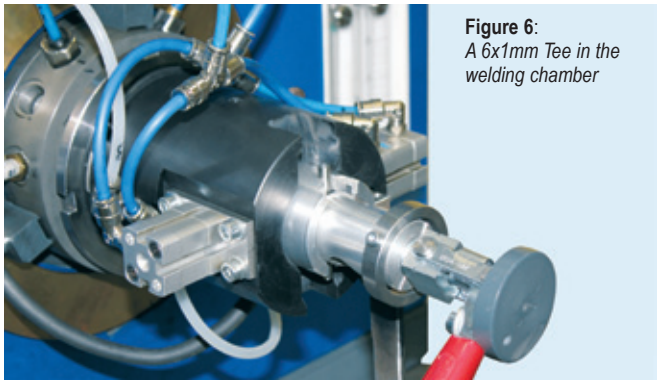

Figure 6: *A 6x1mm Tee in the welding chamber*

Figure 7: *Larikka CylinWeld Tees: welding seam from inside*

fully automatic welding begins after the programmed pre-purging time and it processes according to the pre-programmed welding parameters. After the cooling time the pneumatic actuator releases the cassette which can be then unloaded from the machine and unlocked. The welded part can now be removed from the cassette and the welding result can be immediately visually checked for a full weld penetration since the root is on the part's outer surface.

During the welding the arc flame has travelled over the sharp inner corners of the tubular parts' joining point and melted these corners into a good, round corner. The welding has a positive welding bead both inside and outside (figure 7). Thus, the welding result of Larikka CylinWeld fulfils all the characteristics of quality tubular parts: 1) the large radius of the inner corner of a branch; 2) smooth inner surface; 3) good flow technical properties; and 4) good material strength.

Conclusions

Small tubular parts are manufactured better from inside. Larikka CylinWeld makes the difference in manufacturing quality Tees and manifolds from stainless steel and other high alloy with its cylinder internal welding approach. It enables manufacturers of tubular parts to respond to the increasing demands on material savings, production process optimisations and reduction of the carbon footprint without compromising the quality of pipelines.

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