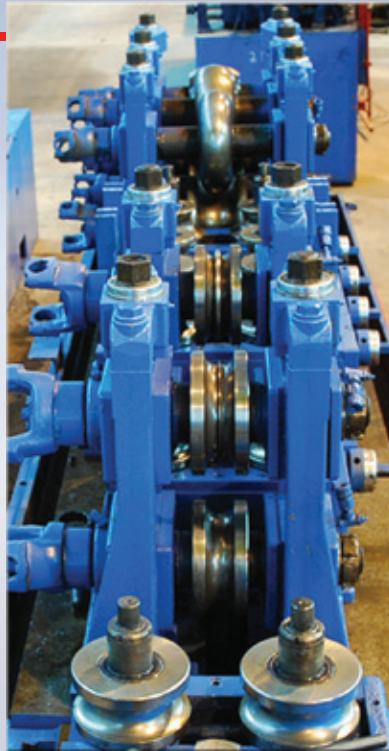


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TUBE & PIPE TECHNOLOGY

November 2011 | Vol 24 No 6 | US\$33



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fives bronx

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THE NOVEMBER ISSUE

Welcome to the latest issue of Tube & Pipe Technology magazine, which this month features an in-depth look at the latest developments in tube bending and manipulation as well as software that is used in the tube and pipe industry.

We also have a fascinating article about the operation of a tube welding plant from the perspective of SMS Meer and Arvedi Tubi Acciaio as well as a special look at acoustic microscopic tube inspection, which can help to identify leaks and cracks where there seemingly were none. Very interesting stuff and sincere thanks to the writer Tom Adams who went to a lot of effort and undertook tireless research to bring us this cutting edge article.

Next up is our January 2012 issue – which will have a special first look at Düsseldorf as well as finishing and end finishing so please be sure to send me any news or updates as soon as you can. And it is also time to start thinking about the March Düsseldorf issue – final deadline for editorial is 9 January so there is no time to waste.

Rory McBride – Editor



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FRONT COVER STORY

Since 1985 Universal Tube & Rollform has been committed to being the number one supplier of used tube, pipe and rollform machinery in the world. Its presence in this industry has always been strong and honourable, working with companies locally and all over the world. Its CEO, Ralph Girkins, has more than 35 years of experience in the tube and pipe industry. The company takes pride in its knowledge and ability to mix and match various machinery to fit a customer's needs. New, used or reconditioned, it can help put it all together to balance your budget and increase the value of your spend.



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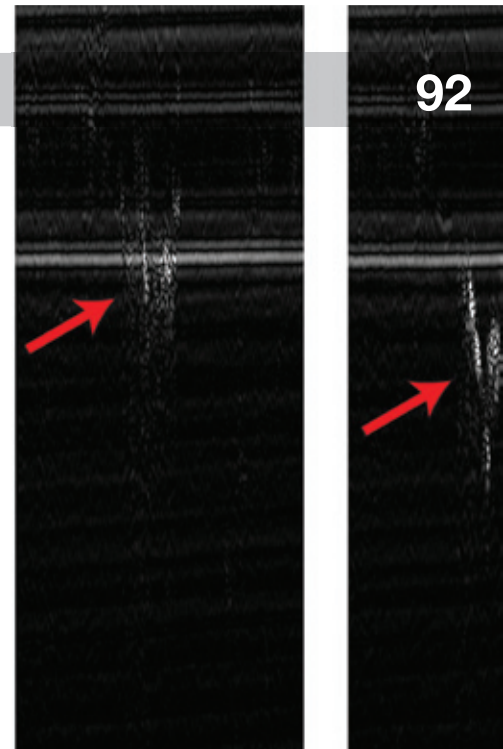
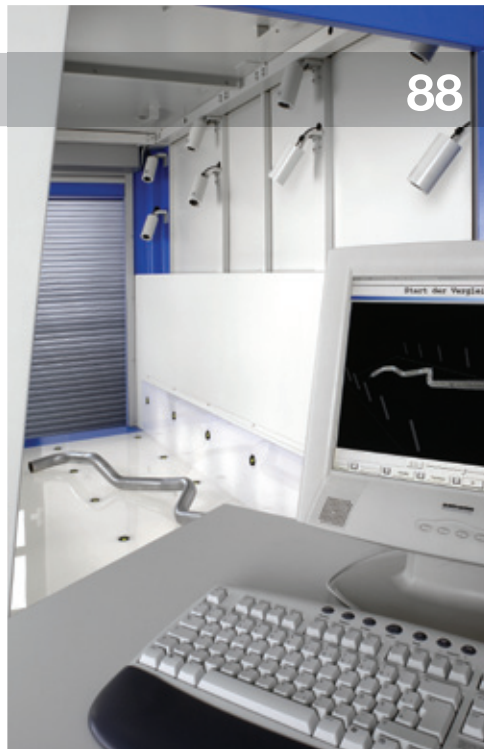
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Bending

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.

Software

The expression “human-machine interface” was once spoken with awe, as the direction and management of a production run of tube and pipe were being moved from the plant floor to a room with windows, high above the action. Now, that interface is taken so much for granted as to have fallen out of the working vocabulary – the universal sign of a rousing success and a vital part of the industry in terms of helping to improve efficiency.

Special feature

This special feature looks at a bronze alloy pipe that was part of a pump assembly that appeared to be leaking at numerous locations, but close visual inspection found no cracks. An acoustic microscope revealed not only the cracks but also their unusual arrangement. The pipe was filled with water under pressure and observed for leaks. Water soon appeared on the outer surface of the pipe, but it could not be traced to a single leakage point.

99

Experiences gathered in the operation of the 12³/₄" tube welding plant

By Frank Lagac, SMS-Meer GmbH and M Caldonazzo, Arvedi Tubi Acciaio SpA



More than 100 visitors at extrusion open house day

THE Open-House-Days of High Tech Extrusion, 4-5 May, in Micheldorf, Austria, provided an informative agenda that included presentations and live demonstrations of the innovative Omnia extrusion line.

The Open-House-Days included presentations in English and German highlighting the Omnia and also the whole subject of PVC profile extrusion. The international audience was shown how productive, reliable and energy efficient the Omnia line is. In particular, the invitees showed special interest in the new fast tool changing system for profile tools and the presentation of Mr Gehring from SKZ Kunststoff Zentrum Würzburg.

Using an energy measurement device, Mr Gehring demonstrated the advertised energy savings in practice. External lecturers were also invited, including Mr Eggern (Chemson) with the topic 'Modern stabiliser systems', and Mr Kleinschitz (SKZ) with the topic 'Joining and testing of PVC window profiles'.

An evening event at the Landhotel Schicklberg provided not only a delicious buffet but also a show from the theatre group – "Menütheater – Chaos Waiter Show".

High Tech Extrusion is the umbrella brand name for four extrusion specialists: Theysohn, Technoplast, Topf and Extruder-Komponenten Salzgitter. High Tech

Extrusion operates internationally, with four production locations in Austria and Germany, as well as sales offices in Moscow and India.

The group of companies, which has 30 years of experience in extrusion technology, belongs to HTI High Tech Industries AG, an international technology group offering products in the fields of lightweight construction, engineering and energy technology.

High Tech Extrusion GmbH – Austria

Fax: +43 59 692 2202

Email: office@ht-extrusion.com

Website: www.ht-extrusion.com



Energy measurement



A demonstration of the Omnia extrusion line



Fast tool changing system

Industrial Automation Fair Guangzhou

TO meet industry demand for leaner productivity protocols and advanced measuring methods, SPS – Industrial Automation Fair Guangzhou, to be held 7-9 March 2012 at the China Import and Export Fair Complex, Guangzhou, will include new trend areas for Machine Vision and Measurement and Instrument.

Mr Louis Leung, deputy general manager of Guangzhou Guangya Messe Frankfurt Co Ltd, one of the show's organisers, said, "The fair will deliver more business and value by offering additional solutions in overall equipment effectiveness and complex measuring processes." Mr Leung expects the 2012 show to be a success. "Interest in the event is high; the number of enquiries received from potential exhibitors and visitors are up compared to last year."

To provide buyers with automation innovations and solutions from sensors

and controls to applications, the 2012 show will focus on the key areas of Industrial Automation; Machine Vision; Measurement and Instrument; Motion and Control; and Robotics.

Figures released by the China Statistics Bureau confirm the country's industrial automation market is quickly evolving, with investment in fixed assets in the electrical machinery and equipment manufacturing industry rising 55 per cent in the first six months of 2011.

Over the same period, production of communication, computer and other electronic equipment grew 48 per cent and transportation equipment 35 per cent.

For the third consecutive year the fair is receiving strong support from leading Asian and European trade associations, which will organise pavilions and seminars at the fair. Supporting associations include Robotics

Association of Taiwan; Taiwan Electric and Electronic Manufacturers' Association; and AMA Association for Sensor Technology from Germany.

SPS – Industrial Automation Fair Guangzhou is sponsored by the China Foreign Trade Centre and Messe Frankfurt Exhibition GmbH. It is organised by the China Foreign Trade Guangzhou Exhibition General Corporation, Guangzhou Guangya Messe Frankfurt Co Ltd, Guangzhou Overseas Trade Fairs Ltd and Mesago Messe Frankfurt GmbH. The honorary sponsors are the Guangdong Automation Association and Guangzhou Automation Association.

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Pipe coating services for the Zawtika Development Project

SHAWCOR Ltd's pipe coating division, Bredero Shaw, has received a contract with a value in excess of US\$60mn from Welspun Corp Limited, to provide pipeline coatings and related products and services for the Zawtika Development Project operated by PTTEP International Limited.

The contract will be executed at Bredero Shaw's facility in Kabil, Indonesia. This facility is a technology-based, full service coating plant that was built specifically to process large, complex projects in the Asia Pacific region.

Pipe shipments will utilise the two new berths at the Kabil Offshore Deepwater Port, which became fully operational during the second quarter of 2010.

The contract involves coating approximately 335km of 10" to 28" pipe that will be protected with three layer anti-corrosion coating and concrete weight coating.

ShawCor Ltd is an energy services company specialising in products and services for the pipeline and pipe services and the petrochemical and industrial segments of the oil and gas industry.

The company operates through seven divisions with over seventy manufacturing and service facilities located around the world.

Bredero Shaw, ShawCor's largest division, provides specialised coating systems and related services for corrosion protection, insulation and weight coating applications on land and marine pipelines, including highly engineered corrosion and insulation systems for deepwater applications.

ShawCor Ltd – Canada
Website: www.shawcor.com

Bredero Shaw – USA
Email: solutions@brederoshaw.com
Website: www.brederoshaw.com

Diary of Tube Events

2011

NOVEMBER

7-9	Pipe & Tube World Conference <i>Düsseldorf, Germany</i> Conference	➔	Email: info@itatube.org Website: www.itatube.org
14-17	Fabtech <i>Chicago, USA</i> Exhibition	➔	Email: information@mfabtech.com Website: www.fabtechexpo.com
15-18	TOLEXPo <i>Paris, France</i> Exhibition	➔	Website: www.tolexpo.com

2012

FEBRUARY

21-24	2nd Middle East Steel Tube & Pipe 2012 <i>Abu Dhabi, UAE</i> Conference	➔	Website: www.metalbulletin.com
28 Feb – 3 March	METAV 2012 <i>Düsseldorf, Germany</i> Exhibition	➔	Email: metav@vdw.de Website: www.metav.com

MARCH

26-30	Tube / wire Düsseldorf 2012 <i>Düsseldorf, Germany</i> Exhibition	➔	Email: infoservice@messe-duesseldorf.de Website: www.tube.de www.messe-duesseldorf.de
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MAY

7-11	IFAT Ensorga <i>Munich, Germany</i> Exhibition	➔	Email: info@ifat.de Website: www.ifat.de
28-31	Tube Russia 2012 <i>Moscow, Russia</i> Exhibition	➔	Email: ryfishd@messe-duesseldorf.de Website: www.metallurgy-tube-russia.com

SEPTEMBER

25-28	Tube China 2012 <i>Shanghai, China</i> Exhibition	➔	Email: tube@mdc.com.cn Website: www.mdc.com.cn
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OCTOBER

23-27	EuroBlech <i>Hanover, Germany</i> Exhibition	➔	Email: info@euroblech.com Website: www.euroblech.com
30 Oct – 1 Nov	Tube India <i>Mumbai, India</i> Exhibition	➔	Email: dughl@md-india.com Website: www.tube.india.com

NOVEMBER

12-14	Fabtech / AWS Welding Show <i>Las Vegas, USA</i> Exhibition	➔	Email: information@mfabtech.com Website: www.fabtechexpo.com
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MST Seamless Tube & Pipe invests in manufacturing operations by adding \$4.5mn line

MST Seamless Tube & Pipe is investing in its state-of-the-art manufacturing facility by adding a quench and temper heat treat line to better serve customers. MST has produced quenched-and-tempered products for many years, but bringing the process in-house will result in significant efficiencies and more control of product quality.

"Adding the quench and temper line gives us better control over the entire process from order entry to truckload delivery," said Ted Fairley, vice-president of sales and marketing.

To quench and temper products, material is heated to a uniform temperature above the transformation range then quenched with a liquid to achieve a high level of hardness. The material is then tempered as the final step in the heat treating process. MST's custom designed and built line will provide water quenching and will enable better controls of mechanical properties of the finished material. The \$4.5mn capital expenditure will create cost efficiencies for the quench and temper

process and enable MST to improve upon its already stellar delivery performance. Michigan-based MST maintains a steady 98%+ on-time shipping performance each month and is committed to providing the exceptional service and products that are highly regarded worldwide.

"The quench and temper line gives us the ability to serve our customers better because we can provide even quicker response and delivery," said Les Whitver, vice-president of operations. Bringing the process in-house allows for quick change over from order to order, reduced lead times and the ability to react to emergency repair situations more quickly.

MST will purchase the new heat treat line from ThermoTool, a worldwide leader in quench and temper lines. It will be built to cover MST's full range of products, including size ranges from 0.75" OD to 5.00" OD and a variety of grades including several carbon grades, chrome moly grades and other high chrome grades such as 9 chrome and 13

chrome. MST anticipates the new line to be fully operational by late spring of 2012. There is a 10,000# minimum order required for heat treated product.

For over 80 years, MST Seamless Tube & Pipe has been the leading manufacturer of carbon and alloy seamless cold-drawn pipe and tube for a variety of industry applications, including aircraft and aerospace; mining and construction; automotive; and agriculture. Located in a suburb of Detroit, the company operates a 320,000ft² manufacturing facility on 60 acres in South Lyon, Michigan, where every pipe and tube meets today's world-class, global standards. Because of its size and capabilities, MST can be extremely flexible and provide fast set up and quick turnaround on all orders whether they're large or small. MST is owned by Optima Acquisitions in Miami.

MST Seamless Tube & Pipe – USA
Website: www.mstube.com



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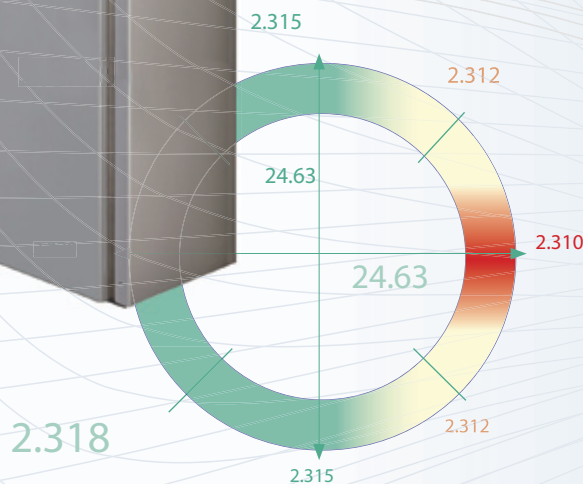
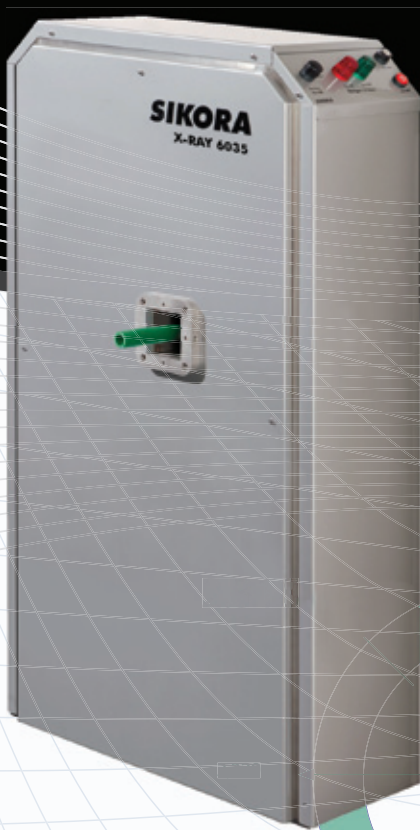
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David Carracoi
Head of Performance Improvement Department at SIKORA



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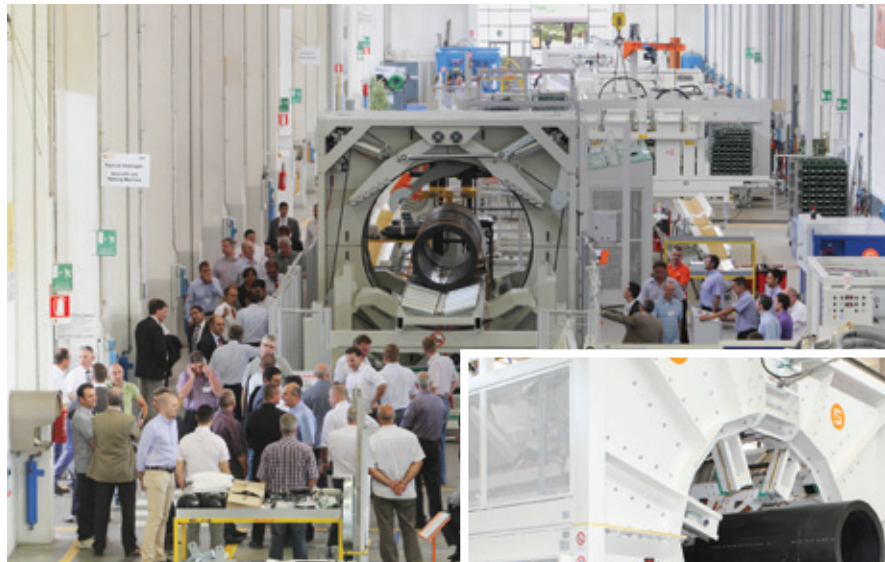
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Sica Symposium: international experience and innovation

AN important international symposium took place recently at the company Sica in Alfonsine, Italy, catching the attention of extruder manufacturers, corrugators manufacturers and pipe producers. There were 43 companies coming from 14 different nations, with a total of 63 participants. Visitors saw first-hand new technologies for pulling, cutting, socketing and packaging of plastic pipes.

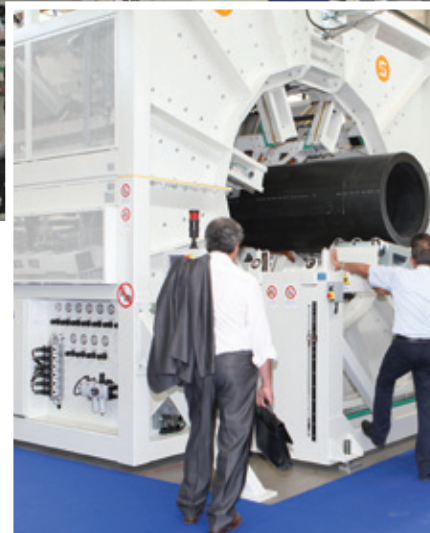
Noteworthy were the haul-off and saw for HDPE pipes for diameters up to 2,000mm and wall-thickness up to 130mm. The P 2000/14 Plus haul-off has fourteen caterpillars; the upper eleven pivot (Sica patented system), while the lower three are positionable electromechanically. All the caterpillars are anchored via connecting rods to the machine frame, so that reaction forces are transferred to both sides of the frame, with clear advantages in terms of structural efficiency and therefore better mechanical performance. The caterpillars have 2,200mm contact length and are made with special high-friction low-wear rubber. With DN 1200 to DN 2000 pipes, a maximum pulling force of approximately 400,000 N is generated using fourteen caterpillars. Whereas, with DN 630 to DN 1000 pipes, the pulling force is approximately 170,000 N using six caterpillars.

The TRK/C/Sy 2000 is a planetary saw with a tool that cuts without removing material; so it is swarfless and generates no dust. The saw is suitable for polyethylene pipes with wall thickness up to 130mm. The external pipe diameter range is from a minimum of 450mm to a maximum of 2,000mm. To best adapt to the pipe surface, the machine is equipped with universal clamps, with each clamp arm having multiple rubber and pivoting gripping elements. The frame of the



planetary saw is made of cold rolled steel sections affording superior stiffness and resistance to stresses. To facilitate safe maintenance procedures, in semi-automatic mode the movement phases are performed using two-hands type controls. The machine's control system, using PLC logic, includes a graphical touch-screen for controlling quickly and intuitively the entire haul-off and cutting process.

Sica's new generation of socketing machines are smaller and definitely innovative; they have been revised for higher outputs with considerable energy savings. Among the models shown during the symposium, there were socketing machines for polypropylene, bi-oriented PVC (PVC-O) and normal PVC pipes. Unibell is the latest model suitable for PVC pipes to be socketed with mechanical mandrel or with integral Rieber type gasket. The Unibell model on display had a short-wave infrared oven and a patented cooling



system, which enable the machine to reach outputs equal to those of standard two-oven models but with reduced dimensions and consumption.

Sica, founded in 1962, concluded its symposium by reminding all guests that its 50th anniversary is approaching. Its goal is always to be on the cutting edge, continually investing in research and development.

Sica SpA – Italy
Website: www.sica-italy.com

Stellar acquires EIL enlistment certificate

ZHEJIANG Stellar Pipe Industry Co Ltd, a sub-company of Stellar Tube & Pipe Group Co Ltd, has attained approval from Engineers India Limited (EIL).

EIL, which works under the administrative control of the Ministry of Petroleum and Natural Gas (MoP & NG), Government of India, was set up in 1965 to provide engineering and related technical

services for petroleum refineries and other industrial projects.

Zhejiang Stellar Pipe Industry started the EIL enlistment application in October 2010, and received the certificate from EIL in July 2011.

With this certificate, Stellar is qualified to directly or indirectly supply EIL associated projects with stainless steel seamless pipes,

covering the range for OD to 273.05mm and WT to 12.7mm.

In 2010 Zhejiang Stellar Pipe Industry Co Ltd also gained qualification from Petrobras of Brazil.

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Alfa Laval wins major order in Brazil

HEAT transfer, centrifugal separation and fluid handling company Alfa Laval has received an order for a brewery solution from one of the largest global brewery groups. The order value is around SEK 135mn, and was booked late June 2011. Delivery is scheduled for 2011.

In the brewery in Brazil, the Alfa Laval equipment will be used in different stages of the beer-making process, including

fermentation, cooling, filtration, blending and storage. The order includes a wide variety of hygienic products, such as valves, pumps, pipes, fittings and plate heat exchangers.

Alfa Laval has been present in Brazil since 1959, and last year the company's order intake in the country grew by 18%. The company provides specialised products and engineering solutions based on its key technologies of heat transfer, separation

and fluid handling. Its equipment, systems and services are dedicated to assisting customers in optimising the performance of their processes. The solutions help them to heat, cool, separate and transport products in industries that produce food and beverages, chemicals and petrochemicals, pharmaceuticals, starch, sugar and ethanol.

Alfa Laval's products are also used in power plants, aboard ships, in the mechanical engineering industry, in the mining industry and for wastewater treatment, as well as for comfort climate and refrigeration applications.

Alfa Laval – Sweden
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Continuous slab caster goes into operation

SMS Siemag has successfully commissioned a single-strand continuous slab caster for the production of 1,300mm wide slabs at the Angul, Orissa location of Bhushan Steel Ltd, New Delhi, India.

On executing the first cast at the end of April 2011, 70t of liquid steel was cast and the first three slabs were produced in peritectic grades for tube manufacture.

The SMS Siemag supply scope for the vertical bending machine comprised plant, process and automation engineering and equipment. This included the mould with resonance oscillation, which is equipped with a model for optimised oscillation aimed at improving the surface quality of the strand, as well as the entire strand guide system. Also included were all of the casting floor and removal equipment items, the X-Pact® electrical and automation package and the supervision of erection and commissioning.

Bhushan Steel produces quality steel for the automotive industry and sophisticated pipe grades for the Indian and international markets.

SMS Siemag AG – Germany
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Energy Saving

Coil to Coil Process

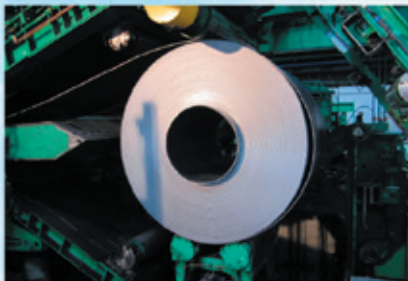
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New appointments to drive UK sales

WITH two new senior appointments, automated orbital welding specialist Arc Machines Inc (AMI) is strengthening the service it provides clients in the UK and Ireland, and reinforcing its recent move to a purpose-built facility in Daventry, as part of its growth strategy.

New regional director Michael Allman was brought on board earlier this year to build on AMI's offer to existing customers and develop new opportunities in key growth areas, while Sean Blandford has, more recently, been appointed as general sales manager to lead sales activities for the UK market from the new site.

Mr Allman's engineering background, including 12 years with BP and commercial experience as a company director with both UK and European businesses, brings a strong focus on appealing proactively to existing and potential customers. Commenting on his appointment, Mr Allman said, "AMI has been setting the standards for automated orbital welding for the past 30 years. We have the best products in the business, with a service, training and maintenance structure to match, but now is

not the time to sit on our laurels. We plan to go out to our existing customers and remind them how good our products and support are and to shout loudly to attract new business."

AMI has always maintained a strong identity in the UK and encourages regional directors to develop working practices appropriate to the local business culture. The company has historically dealt through intermediaries, but Mr Allman believes that it is the end-user who should be able to specify the best equipment for the job. "AMI has been operating for 30 years, and is a first-choice welding equipment supplier for many contractors. But nowadays there is tighter control on quality and cost from end-users. We need to demonstrate the advantages of AMI products directly to them so that they can ensure the best equipment is specified."

One of Mr Allman's first decisions was to consolidate all UK sales activity, including customer support, operator training, equipment maintenance and repair and spares supply, in a single, purpose-built facility.

Both new appointees will be based in the new 7,000ft² site, which will be the only one of its kind in the UK to accommodate the full AMI product range along with a state-of-the-art demonstration area, full maintenance and service support, a comprehensive spare parts inventory plus a dedicated operator training facility to meet both current and future market needs.

Mr Blandford, who also has significant international experience and has recently completed an MBA with the Henley Business School, commented, "Arc has a long standing reputation for reliable, high-quality products and I plan to remind all our customers of the value that can bring to their operations. Other industries that could benefit significantly from automated welding systems just do not include them as an integral part of their engineering culture and we are determined to break that mould."

Arc Machines UK Ltd – UK

Fax: +44 1327 315034

Email: sales@arcmachines.co.uk

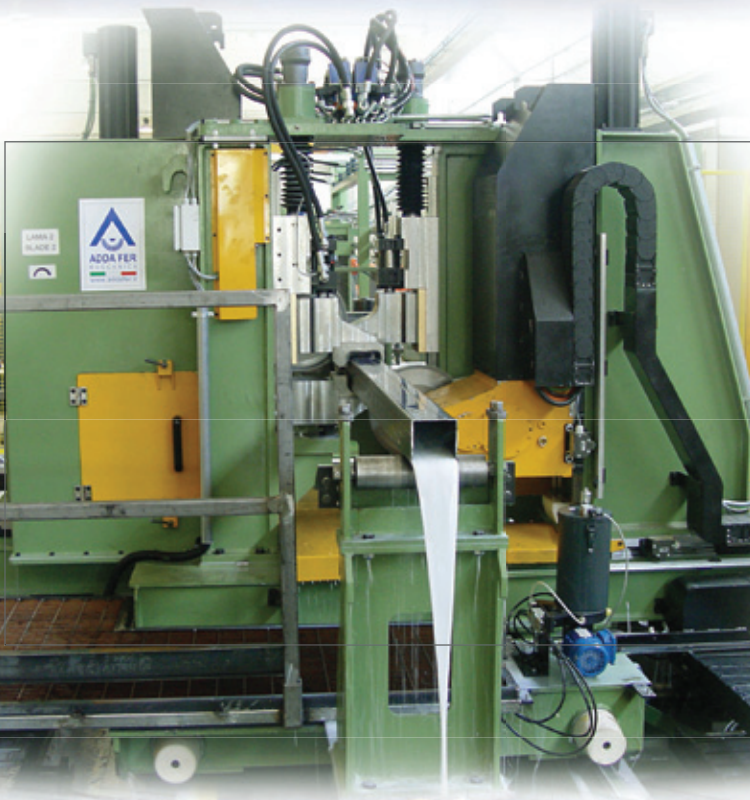
Website: www.arcmachines.com



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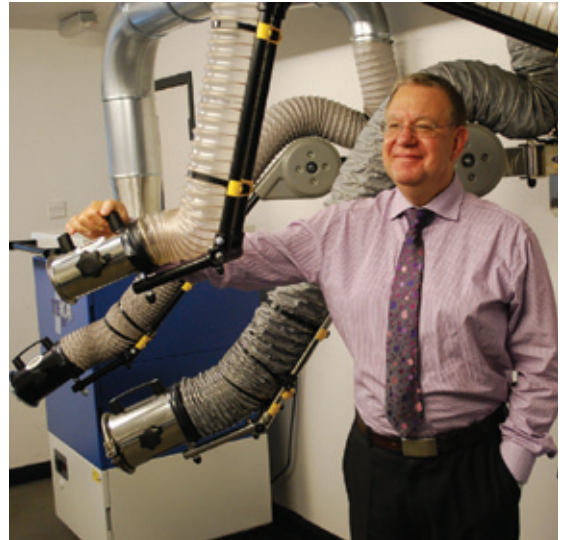
New managing director for Flextraction

FLEXTRACTION Ltd, a supplier and manufacturer of local exhaust ventilation (LEV) products, has announced that Lee Darton has been appointed managing director. Mr Darton has many years' experience in the fume and dust extraction equipment industry. He has been with Flextraction for over 12 years, as sales manager and most recently as general manager (products).

Wally Gilder, chairman of Flextraction, commented: "Lee has played a significant role in the development of this company and has created a fully focussed and committed sales and after sales team. Under his guidance we have seen our market share continue to increase and this appointment comes at a time when the company is experiencing improved trading conditions and the introduction of a wider product portfolio. It is just reward for all his commitment and endeavours."

Mr Darton said, "Flextraction has a comprehensive range of dust and fume extraction products that cover a multitude of industries, which we continually strive to improve and develop. This marketing strategy has led to increased order books both from the UK and from new markets in Europe. Working with the UKTI (UK Trade and Investment) in order to find defined partners in Europe has led to the recent appointment of a distributor in France for our HPD products (hood positioning devices). This in turn has resulted in increased production of HPDs.

"We are continuing to drive our export business forward and are currently looking at defined partners in both Germany and Spain. My appointment as managing director will help us take the company



Lee Darton, Flextraction's new managing director

forward as part of our ongoing marketing and investment strategies, both in the long and short term."

Flextraction Ltd – UK
 Fax: +44 1664 480244
 Email: sales@flextraction.co.uk
 Website: www.flextraction.co.uk

Investigating corrosion fatigue on subsea flexible pipes

CORROSION testing firm Exova has won a contract to work for Technip to investigate the effect of high-pressure corrosion fatigue on the life of the tensile armour wire component of flexible pipes.

Flexible oil and gas pipelines and risers are used to connect subsea installations to floating production facilities. The flexible nature of dynamic riser systems has been a key driver in allowing the industry to

move away from traditional fixed platform systems, to develop fields in deeper waters with floating technology.

One of the main challenges of operating in deep and ultra-deep water is the challenging environmental conditions for flexible pipe systems. Exova has responded to this challenge by developing bespoke facilities capable of corrosion fatigue testing at elevated temperature and pressure.

In increasingly challenging environments, one of the significant concerns regarding flexible pipe integrity is the condition of the annulus. If the annulus becomes flooded by ingress of seawater through the external sheath, this could lead to corrosion and a possible impact on service life.

Exova has designed equipment that is able to conduct testing at

up to 50 bar and 150°C in simulated sour environments. These new test facilities allow investigation of properties over a wide range of service environments, which includes continuous gas bubbling at pressure to stimulate the annulus environment. The data generated from the tests will contribute towards the technological advancement of flexible pipelines and risers, which are deployed in hostile locations.

Lee Best, general manager at Exova Daventry and Exova's Corrosion Centre, said, "Corrosion has often been identified as the most common in-service cause of failure in pipelines, causing loss of containment failures of hazardous materials. We have worked closely with Technip to respond to the demanding test requirement and developed a state-of-the-art testing facility that further enhances our corrosion testing capabilities."

Exova – UK
 Email: europe@exova.com
 Website: www.exova.com



The subsea pipes that Exova will be testing for corrosion fatigue

A successful building start to AWL-Techniek's new premises

THE highest point of AWL's new building was marked by the placing of a flag. The construction, which is an extension to the existing AWL building, is approximately 1,800m² in size, consists of three floors and sits in the courtyard between the existing industrial buildings.

The new building is necessary to cope with AWL's continuing growth. 2010 was a very good year for the organisation. As a result, the workforce has increased from 160 to nearly 200 over the past two years and the end is not in sight. 2011 and beyond also look very promising. MechDes Engineering from Nunspeet – with 37 engineers – will also find shelter in the new building.

MechDes and AWL work closely together in developing projects and the move will only increase this cooperation, enabling it to run more smoothly and increase personal involvement.

The new building can accommodate more than 90 employees in total and provides growth space for the rest of the buildings.



In addition, there are three well-equipped meeting and training rooms, which are furnished with the most modern means of communication, something that will also be installed in the meeting rooms of the existing building.

International business meetings and consultations will therefore be held more efficiently. It will be a high-end office block that meets the requirements of the modern workplace; an important principle here being to create a good and pleasant working environment. There will also be computer floors and the availability of Wi-Fi access to which customers can connect.

The design for the new building was drawn up by Office for Building Consultancy and Design Next in Alphen a/d Rijn. It is expected that the building will be ready for use in early 2012.

AWL-Techniek – The Netherlands
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Marshall repositions precision medical machining services

MARSHALL Manufacturing has announced the repositioning of its precision machining services to accommodate a growing need from medical OEMs who increasingly outsource engineering and design assistance responsibility as they downsize their in-house engineering departments.

Responding to these changes, Marshall Manufacturing has repositioned the company as an integrated precision services solution provider. This includes a broadened spectrum of design for manufacturability (DFM), including design engineering assistance, prototyping, device validation implementation and precision manufacturing.

Marshall's medical speciality is the process design and manufacturing of high

Marshall Manufacturing is an ISO 13485:2003 and ISO 9001:2008 certified manufacturer of medical components



precision Swiss machined components, machined needles, 2D and 3D contouring, and bending of machined wire and tubes. End-use products include urethral needles for sling implants, trocars, surgical tools and spine implants.

Explaining the move, Michael Burchill, president of Marshall Manufacturing stated, "Simply being a precision parts manufacturer in today's medical device industry is not enough. We will be making more of our experience and resources available to assist customers with the development and manufacturing of their products. As the engineering outsourcing trend has grown, it has been a challenge and opportunity for our talented staff to step up and play a greater role in our medical customers' innovation."

"Marshall Manufacturing has been performing these services for many years in a less structured way than our new plans going forward," Mr Burchill said. "One example of how we responded to the new outsourcing trend occurred when a medical company asked us to develop a process for 3D contouring an MP35N tubular component after it had been Swiss machined. The challenges were many, but we developed a proprietary process for making the component that actually improved the efficacy of the device."

Another area of increased activity has come directly from surgeons. "We've had many surgeons approach us seeking manufacturing assistance for surgical tools

they've envisioned," Mr Burchill reported. "With little more than their napkin sketch, we've developed workable prototypes, proceeded into test quantities, and worked through arduous design change and acceptance stages and finally into quantity manufacturing for the medical industry."

Also driving Marshall Manufacturing's repositioning efforts are time-to-market considerations, difficult to process new materials and cost reduction pressures. "Marshall Manufacturing is experienced in meeting these challenges," reported Mr Burchill. "We have a 20-year wealth of knowledge that we bring to the design and manufacture of sophisticated metal surgical instruments and implants. Our knowledge and experience can bring about important changes for the better."

"For example, in the medical industry there is a tendency to specify tighter tolerances than necessary, which contributes to higher costs and longer development times. Another problem area is incorrect material selection and processing techniques. They negatively influence the contouring of medical tubes and rods for needles, contributing to productivity losses and increased costs. We have the skilled teams and manufacturing resources to do things better in all of these areas."

Marshall Manufacturing – USA
 Fax: +1 800 321 6728
 Email: contact@marshallmfg.com
 Website: www.marshallmfg.com

Intelligent Trench wins prestigious health and safety award

THE Intelligent Trench underground mapping solution won the Health & Safety at Work award at the Chartered Institution of Highways & Transportation annual awards ceremony, which took place in June.

Judges of the award, who represent a variety of stakeholders from across the industry, were looking for solutions that demonstrably led to improvements in health and safety, and which could in particular show originality, robust implementation, best value cost-benefit and wider implementation potential.

By deploying RFID markers in excavations and collecting data and photographic evidence about buried apparatus using GPS enabled PDA software, this information is thereafter available free of charge at any time, making future works safer and more effective. Data can be obtained during any excavation or as part of a non-invasive survey.

The Intelligent Trench solution provides instant access to the data through both a desktop portal and directly to the field via supported devices. RFID locators enable

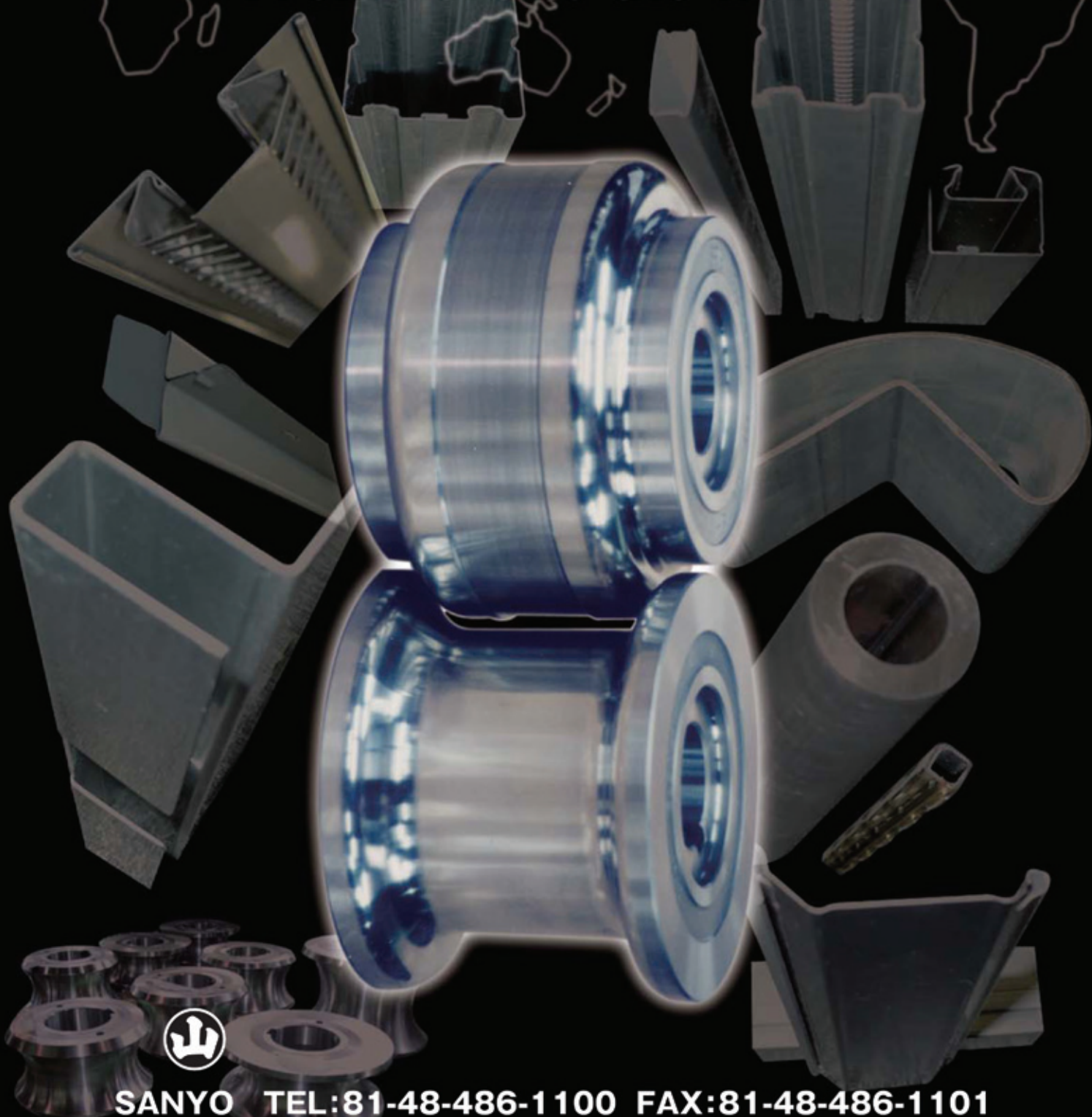
the position of previous works and the location and depth of buried plant to be accurately determined, even in built up areas where techniques such as GPS often fail. Future works may then benefit from access to photographs and other asset data, enabling better compliance with health and safety guidelines such as HSG47.

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Simona records substantial growth in revenue and earnings

THE Simona Group managed to maintain its forward momentum in sales volumes and revenue over the course of the second quarter of 2011. Sales revenue generated during this period stood at €85.4mn, which corresponds to year-on-year growth of €15.4 million or 22 per cent. In total, revenue for the first half of 2011 rose to €162.3mn, up €32.6mn or 25.1 per cent on the figure posted in the first half of 2010. The percentage increase in sales volumes was also in double figures in the first half of 2011, albeit slightly less pronounced than in the case of revenue, which benefited from price adjustments in response to spiralling commodity costs. Simona reaped the rewards of substantial investment spending by customers in key target segments within the chemical, mechanical engineering and photovoltaic industries in particular.

“All sales regions around the globe managed to use the stable economic conditions to their advantage over the course of the first half. Demand for extruded sheets used in the area of tank and apparatus construction as well as the photovoltaic industry was particularly buoyant,” said Wolfgang Moyses, CEO of Simona AG.

Despite the continued rise in the overall cost of materials, the group managed to drive EBIT up by 74.4 per cent to €10.6mn. Within this context, optimised capacity utilisation and stringent price management proved decisive. The Group’s EBIT margin also improved markedly, rising to 6.5 per cent (prev. year: 4.7 per cent).

Compared to 31 December 2010, total assets increased by €17.2mn to €262.2mn. At €7.1mn (prev. year: €2.9mn), Simona expanded its capital expenditure by a significant margin in the first half.

The plastics-processing specialist anticipated that business conditions would be much more difficult in the second half of the year. The national debt crisis currently affecting some of the world’s major industrialised nations has caused significant market uncertainty. “Against the backdrop of a considerable deterioration in market sentiment, investments in machinery and equipment, a key factor influencing our own business, may be adversely affected, despite the fundamental strength of the economy,” said Wolfgang Moyses. “In view of the positive performance in the first half, however, we currently anticipate that we will be in a position to achieve our revenue target of €290mn and profit before taxes of €15mn.”

Simona AG is a manufacturer of thermoplastic products with production facilities and sales offices around the globe. The company’s product portfolio includes semifinished products (sheets, profiles, welding rods), pipes and fittings as well as finished parts. Simona employs more than 1,200 people worldwide. In total, 35,000 products for a diverse range of applications are manufactured at facilities in Germany and abroad. Annual production exceeds 100,000 tons.

Simona – Germany
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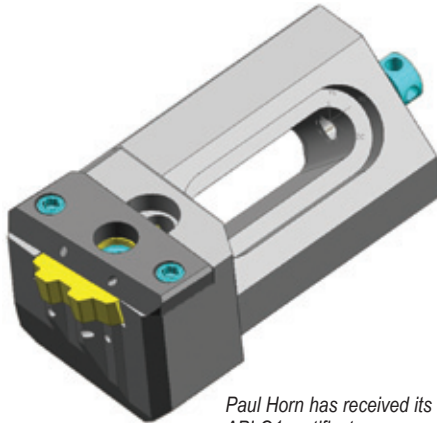
WWW.T-DRILL.FI



API certification for Horn

IN spring 2011 Paul Horn GmbH was assessed as meeting requirements for certification to API Q1 by the American Petroleum Institute (API). API is the leading trade association for the oil and gas industry whose specifications are recognised internationally. By meeting the quality system requirements of API Spec Q1, companies demonstrate that they are capable of meeting the industry's exacting demands.

Hartmetall-Werkzeugfabrik Paul Horn GmbH is now listed on the APIQR's Composite List. It is thus far the first manufacturer worldwide of turning and



Paul Horn has received its API Q1 certificate

milling tools to achieve this distinction. As well as certification according to ISO 9001:2008, Paul Horn GmbH can now refer to an industry specific, internationally recognised standard. It may also mark its products with the API monogram.

Horn tool systems for machining of oil field pipes and sleeves – such as System 117 – are designed for the end machining of rotating or stationary oil field pipes up to 25" diameter. The product range currently includes tools for external and internal turning of API and special threads, internal and external chamfering, machining sealing seats, grooving, parting off and peeling.

Paul Horn GmbH – Germany
 Email: christian.thiele@phorn.de
 Website: www.phorn.de

Modernised strip galvanising line boosts productivity

WUPPERMANN Staal Nederland BV has placed an order with SMS Elotherm for the modernisation of a strip galvanising line delivered in 2000. With an inductive booster heating system from SMS Elotherm, it is claimed that Wuppermann will be able to increase its productivity by 30 per cent.


SMS Elotherm is to supply a complete 3,600kW induction plant with two strip coils. In addition there will be new components for the existing plant and the line controller will be integrated into the overall process.

Erection and commissioning as well as training of the customer's personnel also form part of the order.

With the inductive booster heating at the tower entry, the ingoing temperature from the pickling line is raised by approximately 150°C. The existing plant power is then used to increase the temperature to process temperature. The efficiency of the booster heating system will in future be higher than the values at present. The inductive booster heating plant for strip galvanising




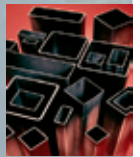
is designed for strip thicknesses from 0.8 to 4mm and a strip width of up to 1,660mm. Wuppermann has planned a 15-day standstill for installation and commissioning. The start of production after the installation of the booster heating plant is scheduled for the beginning of 2012.

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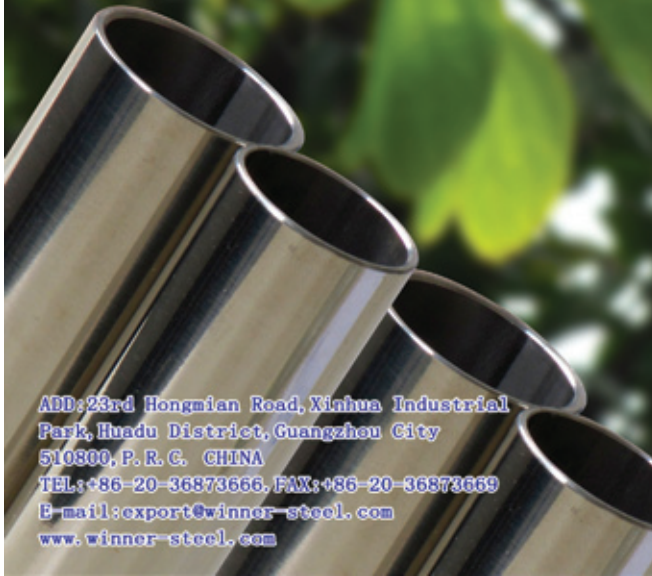


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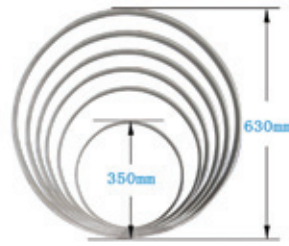
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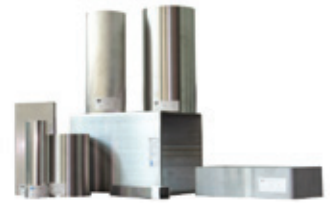
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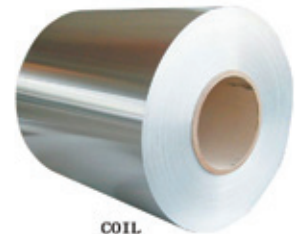
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Trelleborg acquires industrial hose operation

THROUGH its Trelleborg Engineered Systems business area, Trelleborg has signed an agreement to acquire the French company Bloch SA, a privately owned high-end industrial hose solution provider, which generates annual sales of about SEK 70mn. The agreement encompasses the acquisition of 60 per cent of the business with an option to acquire the remainder. "The acquisition of Bloch enables

Trelleborg to strengthen its industrial hose offering thus creating the conditions for future growth," commented business area president Lennart Johansson. "We will be able to offer customers complete solutions in selected segments that add value to us and that means better service for our customers."

Bloch primarily specialises in complete solutions and special couplings for a wide

range of industrial hoses that offer protection in particularly demanding environments, such as chemical processing and the food sector. The company has offices and production facilities in Lyon, France. The acquisition was expected to be completed during the third quarter of 2011.

Trelleborg AB – Sweden
Website: www.trelleborg.com

New managing director at Lasag AG

ROFIN-Baasel Lasertech has announced the appointment of a new managing director of its Swiss subsidiary. Lasag AG, a laser manufacturer in micro material processing, will be managed by Andreas Ewald, as of July 2011.

Mr Ewald, who took responsibility in various positions on an international basis in the laser industry, has many years of

experience in management positions. He is electrical engineer (HTL) and holds an MBA in industrial engineering.

Commenting on his new challenge, Mr Ewald said, "My primary objective is to conclude the integration of Lasag AG into the Rofin group successfully. The affiliation has unleashed significant new potential, eg an extensive global sales network, as

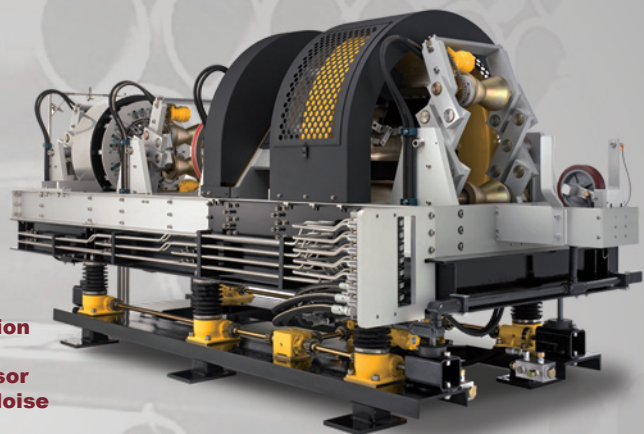
well as the wide range of excellent Rofin technologies. These synergies allow us to work out new benefits for our customers."

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AWD announces new 'welding world village' at MACH 2012

THE AWD (Association of Welding Distribution Ltd) has announced that it will be actively supporting the MACH 2012 exhibition from 16–20 April 2012, through the AWD Welding World™ Village at the show, sponsored by the association and its members.

The AWD Welding World™ village will comprise many stands devoted to the presentation of high technology welding and cutting equipment, welding consumables, health and safety equipment, process gases and other ancillary products while the AWD will also feature a welding world seminar area and hospitality lounge facility.

Adrian Hawkins, AWD director and national chairman, said: "As our country now recognises the necessity to expand the UK manufacturing industry to supplement the ailing financial services sector, the association of welding distribution has a lead role in the promotion of manufacturing

technology and in particular, the welding and thermal cutting processes. The association is delighted to be able to support the UK's premier manufacturing exhibition MACH 2012 through the AWD Welding World™ village where many of our members will exhibit the latest innovations and equipment in welding and gas technology."

Toby Gourley, chairman of the AWD exhibition committee said: "The Association of Welding Distribution membership represents a cross section of some of the best and most forward thinking manufacturers, suppliers and innovators in the industry. I'm confident that the Welding World™ village within MACH will provide an opportunity for them to showcase and demonstrate the knowledge and advancements the industry has to offer."

Adrian Sell, MACH 2012 sales manager, said: "We are delighted to be working closely with the AWD for MACH 2012.

MACH is the week long showcase for the UK's manufacturing industry and as such the addition of the Welding World Village to MACH 2012 will add real value to Mach's 20,000+ visitors."

AWD Member, Nick Dulley, Nederman business manager – machining commented: "Nederman has exhibited at the bi-annual MACH shows for the last eight years in our capacity as both a welding and now a machining equipment supplier I would very much endorse both the visitor quality and the quantity. The last show in 2010 produced at least 90 high quality leads over the five days, some of which were in fact in our welding sector. The organisation and professionalism of this show has proven to withstand the toughest market forces and I am convinced that it will grow in the coming years to be the premier manufacturing technologies exhibition for the UK."

Association of Welding Distribution Ltd – UK
Email: secretariat@awd.org.uk
Website: www.awd.org.uk

Continuous caster

SALZGITTER Flachstahl GmbH, a company of the Salzgitter Group, has placed an order with SMS Siemag, Germany, for the expansion of its single-strand slab caster No 3. The aim is to maintain and increase the casting speed, in particular for small casting widths, thereby enhancing production capacity.

With Continuous Caster 3 supplied by SMS Siemag in 2004 for slabs with thicknesses of 250mm and widths of 850 to 2,100mm, Salzgitter Flachstahl's range of steel grades was expanded with a focus on IF steels, C steels, I steels, micro alloyed strengths and sour gas-resistant steels. The continuous caster was designed with a view to ensuring that it could be expanded to include three segment places, ie segments 13-15. Segment 13 will now be installed to increase the production capacity.

SMS Siemag AG – Germany
Fax: +49 211 881 4902
Website: www.sms-siemag.com

SHIPBUILDING INDUSTRY: GeKa LASER B 47 (E 7018), GeKa SG2 (ER705-6), GeKa ELCOR R 71 (E71T1-C), GeKa ELIFLUX BFB / GeKa S2 (F7A2-EM12/EL12)

WIND TOWER: GeKa TEMPO B 85 M (E 11018-MH4R), GeKa TEMPO B W2 (E 8018-G-W2 H4), GeKa ER 1005G (ER1005G), GeKa ELCOR R 81 NiCu (E 81T1-G), GeKa ELCOR R 110 (E111T1-K3C), GeKa ELIFLUX BFF / GeKa S3NiCrMo2.5 (F11A8-EM4 (mod) M4)

OFFSHORE: GeKa ELOX R 2209 (E 2209-17), GeKa TEMPO B W2 (E 8018-G-W2 H4), GeKa ELCOR R 81 NiCu (E 81T1-G), GeKa ELOXCOR S 2209 (E2209T1-11-4)

PIPELINE: GeKa LINK 6010 (E 6010), GeKa LINK 7010-G (E 7010-P1), GeKa LINK 8010-G (E 8010-P1)

PRESSURE VESSEL: GeKa LASER B 47 (E 7018), GeKa LASER B55 (E 7018-1), GeKa SG2 (ER705-6), GeKa SG3, GeKa ELCOR B 70 (E70T-5M J), GeKa ELCOR R 71 (E71T-1C), GeKa ELIFLUX BFB / GeKa S2 (F7A2-EM12/EL12)

BRIDGE BUILDING: GeKa TEMPO NiCu (E7018-W1(mod)), GeKa TEMPO B W2 (E 8018-G-W2 H4), GeKa ELCOR R 81NiCu (E 81T1-G)

STEEL CONSTRUCTION: GeKa LASER B 47 (E 7018), GeKa LASER B 50 (E 7018-1), GeKa SG2 (ER705-6), GeKa ELCOR R 71 (E71T-1C), GeKa ELCOR M 70 (E70C-6M), GeKa ELIFLUX BFB / GeKa S2 (F7A2-EM12/EL12)

POWER PLANT: GeKa ELOX R 308 L (E 308 L-16), GeKa OPUS MOB (E 7018-A1), GeKa SGMo (ER805-G), GeKa ELOX SG 308 LS (ER308LS), GeKa ELOX SG 310 (ER 310), GeKa ELCOR R Mo (E81T1-A1C), GeKa ELIFLUX BFB / GeKa S2Mo (F8A4-EA2-AZ)

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AddisonMckee helps world's leading stairlift manufacturer move up to the next level

ADDISONMCKEE has supplied another one of its state-of-the-art DB 89 electric bending machines to the world's leading stairlift manufacturer.

Its relationship with the customer in question is a longstanding one with its origins in two hydraulic machines supplied some sixteen years ago.

One key advantage of the electric machine over its hydraulic forebears is the fact that the machine 'teaches' itself and reduces set-up times, automatically making any necessary adjustments and eliminating the need for manual re-setting. What's more, wherever the metal is sourced from and whatever its grade, the machine will manufacture a more repeatable component that matches the original drawing first time.

Most importantly of all, because no two staircases are exactly the same and many have a gentle curvature, one of the customer's prime requirements was the capability for freeform bending.

So, as well as using standard tools, the DB 89 machine uses rollers on to the die and clamp, then pushes the tube to generate an infinitely variable radius between the rollers. A minor angle variation put into the bend arm is reflected in the tube radius as it is pushed forward.

It is another example of how AddisonMckee's innovative approach is transferable from one sector to another, the technology having originally been developed for Nissan roll bars. A further

requirement was the reduction of the envelope tolerance the middle of the tube needed to follow: from 10-12mm down to a mere 5. This was something the DB 89 machine could achieve with aplomb.

But all of this precision has a purpose in closing the loop between what the customer requires and what it actually gets out of the machine. Precision is of the utmost importance here since, especially in the current climate, AddisonMckee's customer simply cannot afford to throw away raw material. So getting things 'right first time' is crucial.

There are major benefits for the end user, too, since even the most minor indentations in the tube produce a noticeably less smooth and more uncomfortable ride.

The fortunes of AddisonMckee itself have certainly taken a turn for the better in recent months too as the market climbs out of recession.

New ownership has galvanised the company by introducing a number of measures to ensure a smoother ride for all its customers, in, among others, the automotive, aviation, truck and shipbuilding industries.

First and foremost, while the company remains a truly global concern with partners all over the world, in response to



An AddisonMckee DB 89 electric bending machine

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 claims to offer something its 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.

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.

AddisonMckee – UK
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Hydratight opens West Coast hub

ENGINEERING services and joint integrity company Hydratight has set up a major new facility in Concord, California, for operations across the US western seaboard.

The new facility, in the heart of northern California's oil refinery district, will be Hydratight's regional hub: a 'product supermarket' for the rental and sale of

equipment to service power stations, refineries and other industrial facilities across the whole of the western US.

The Concord site, which replaces the company's Sacramento facility, covers 10,000ft² and will house all sales, engineering and management functions as well as a fully equipped workshop

with assembly testing, refurbishing and preparation stations on-site. The building also includes full-scale training facilities, so product instruction and information can be offered to customers.

"The 70 mile move to this new, larger facility gives us a more strategic location and larger training facility," said Rory Abrams. "Customers all over the west coast will have easier access to all our services and we look forward to increasing our rental and training business in the coming year."

This is the second major facility opened by Hydratight this year. In June the East Coast hub was opened in Somerset, New Jersey, offering similar facilities to customers across the US eastern seaboard. It also brings together Hydratight operations in Cranford and Flemington to be the new centre of excellence for nuclear products and service.

Hydratight's new facility in Concord, California



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Roll-Kraft's regional tube and pipe and roll forming seminars exceed expectations

ATTENDEES from all across the US and Canada gathered in Mentor, Ohio to learn from Roll-Kraft's internationally recognised tube and pipe and roll forming instructors during day-long tube and pipe and roll forming training sessions.



Robert A Sladky, vice-president of tube mill engineering at Roll-Kraft, led the sessions, along with technical sales engineer, Bret Molnar; vice-president of operations, Chuck Summerhill; and director of product applications, Dave Rostocil. The speakers covered the

important areas of mill integrity, alignment, tooling design, proper setup, and trouble shooting. A bonus presentation each day on Finite Element Analysis software was included in the sessions. The PowerPoint presentations, combined with "follow along" seminar guide books and hands-on displays, resulted in one of the most comprehensive training programmes to date.

"The audience participation was exceptionally interactive throughout both programmes," Mr Sladky commented. "Additionally, many new companies that are looking to enter into the tube and pipe and roll form industries were also present. This entry-level interest, along with the high numbers of attendees from established companies, is good news for the industry."

The mix of participants in attendance included personnel from management, engineering, and maintenance, as well as operators and their helpers.

Each day was concluded with a tour of Roll-Kraft's state-of-the-art facility in Mentor, Ohio.

Roll-Kraft also conducts on-site training sessions at customer facilities, on their own equipment. Visit Roll-Kraft's website for more information on tube and pipe training and roll forming training.

Roll-Kraft has its headquarters in Mentor, Ohio, and maintains other facilities in Frankfort, Illinois (Roll-Kraft Northern), and Ontario, Canada (Roll-Kraft Ltd). The company phone number is (888) 953 9400 or (440) 205 3100, and the fax number is (440) 205 3110.

Please also visit the website at www.roll-kraft.com. For easy and immediate contact with Roll-Kraft that transcends time zones and working hours, the website features Dr Resolve. Simply complete and submit an on-line form and Roll-Kraft will respond.

Roll-Kraft – USA
 Fax: +1 444 205 3110
 Website: www.roll-kraft.com

New pipeline weld integrity service introduced

PIPELINE welds in the oil and gas industry will be coming under increased scrutiny after a new evaluation testing method was designed by Exova.

The company has introduced a new Immersion Ultrasonic Testing (IUT) technique that has become part of the Automated Ultrasonic Testing (AUT) validation procedure for girth weld inspection, enhancing the level of accuracy and reducing the cost of production for pipelines.

The testing service is particularly relevant for discovering smaller defects as a result of the high accuracy robotics and enhanced immersive testing environment.

An increased number of defects can be identified because of the service, such as cracking, porosity, incomplete penetration, inclusions, lack of sidewall fusion, and

related defects that can compromise the pipeline's girth weld strength. Exova has also invested in an innovative electrical discharge machine which is capable of producing minute slices of macro specimens with a new stage of precision. The perpendicularity of the specimen is guaranteed and ensures no material will be lost during machining.

Sander van Nieuwenhuijzen, operational manager of Exova in The Netherlands, said: "Due to the increased demands on pipeline integrity, it is important that any defect in the welds are detected, accurately located, sized and reported quickly. Exova has actively encouraged input from other industry leaders on this service to ensure it will help improve the sector's reputation and production efficiency. The new testing method offers better

inspection detection and sizing capabilities helping non-destructive testing companies to improve their probability of detection and sizing accuracy, as extreme critical analysis can be performed. This is crucial for our clients, as we offer them enhanced confidence that their pipeline welds are free from critical defects."

The testing regime was designed at the Exova laboratory in Spijkenisse, The Netherlands, but will be available to the company's clients throughout the world.

The Spijkenisse laboratory is one of Exova's leading materials testing laboratories, offering chemical and corrosion testing as well as failure analysis.

Exova – USA
 Website: www.exova.com



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SSC set for national rollout after £800k investment

SSC Laser, a laser cutting subcontractor, is expanding by opening a network of service centres across the UK. The company, which celebrated a record month for profit and turnover in June, has already opened sales offices in the North East, East Midlands and the South. Once the company raises its profile in a region and develops a local customer base, these sales offices, and others in the future, will be developed into stand-alone manufacturing sites.



Sales director Andy Evans (left), with other SSC directors

In addition to its rollout programme, SSC has been investing heavily in new equipment at its Hixon headquarters. The recent installation of an £800,000 Adige LT8 tube laser cutting machine and associated handling equipment is the largest single investment the company has ever made.

“Our industry is quite parochial and you tend to find that buyers like to use suppliers that are in their area,” explained Andy Evans, SSC’s sales director. “So our vision is to develop a nationwide network of SSC centres to give customers a local service. I shall be extremely disappointed if ten years from now we don’t have at least 20 of these centres dotted around the country.”

Regarding the company’s £800,000 investment in machinery, Mr Evans added, “We didn’t just want to be a flat bed laser business because there are already 500 of these in the country. The new tube

laser facility gives us a unique selling point because customers can now come to us for all their laser cutting requirements. We can handle all kinds of sections – box, circular, hollow, angle, channel, flat, irregular – and manufacture parts up to 8.5m in length. There aren’t many people who can do this. In addition, it’s more cost-effective and more convenient for customers if their complete order can be processed under one roof rather than having to deal with separate suppliers.”

A new state-of-the-art business management system has also enabled SSC to improve its customer service levels through better quotation, stock management, order tracking and traceability processes.

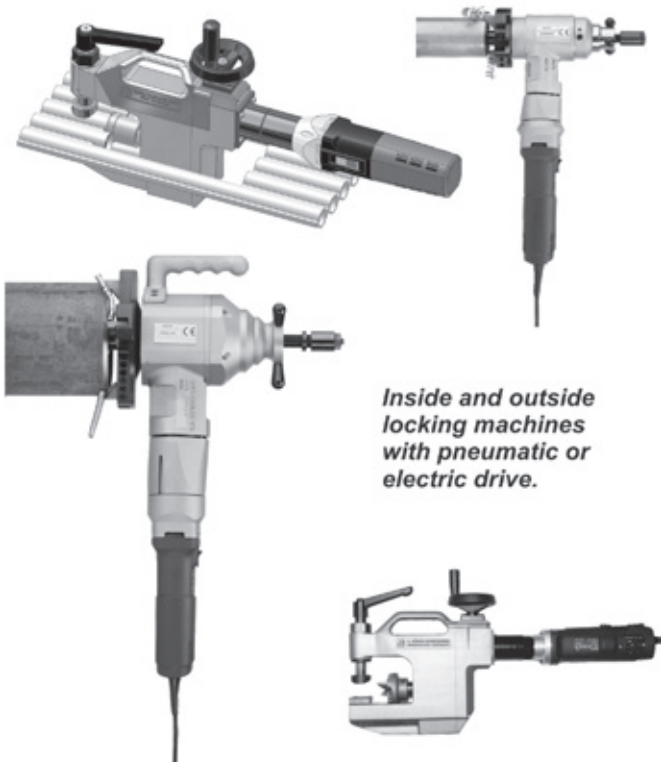
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Change of management at Schoeller

GUNTHER Voswinckel has taken over management of welded stainless steel tube manufacturer Schoeller Werk GmbH & Co KG. Dr Voswinckel succeeded Jörg Rumpf as chairman of the management board on Mr Rumpf's retirement in May. It is the first time since the founding of Schoeller that a non-family member has been at the head of the company.

Dr Voswinckel is supported by Frank Poschen and Jürgen Mensinger, who had been executives and have now also been called onto the board of management.

Schoeller Werk GmbH & Co KG began in 1827 at its current site in Hellenthal, Germany. It was the first company in Europe to use automated machines for manufacturing nails and rivets.

The company now specialises in the production of welded stainless steel tubes with an outside diameter of between 0.1 and 127mm. The company's staff of almost 1,000 employees, working on more than

100 welding lines and a large number of drawbenches, produce up to 100 million metres of stainless steel tubing per year.

Key buyers of the stainless steel tubes are automotive manufacturers and their suppliers. In addition, Schoeller is a recognised supplier of tubing for power plants, logistics systems, offshore and shipbuilding as well as machines and plant engineering.

Schoeller stainless steel tubing is available in TIG-welded and laser-welded condition, circular or profiled, or as coiled or straight lengths. The products meet all common international standards for welded stainless steel tubing. Eddy current, ultrasonic and pressure testing ensure quality.

Depending on usage, the tubing is cold-formed using a drawing method to produce improved surface structures, closer tolerances and defined material yield. Millions of fixed lengths are produced on



Dr Gunther Voswinckel is the new chairman of the Schoeller Werk management board


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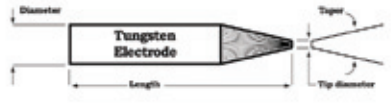


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Metef-Foundeq moves to Verona

AFTER eight successful editions, Metef-Foundeq, the biennial show for the aluminium, technological metals and foundry sector, moves to the Verona Exhibition Centre. The 2012 edition will be held 18-21 April at the trade fair complex located in Verona, Italy, a venue suited to Metef-Foundeq's international growth.

The Verona trade fair ground covers 350,000m² distributed in 12 pavilions, with 12,000 car parking spaces and a convention centre with eight halls seating from 20 to 600 people, and has a representative network in 22 foreign countries. It can be reached easily from anywhere in Europe by different means of transport.

The venue features functionally organised logistics and infrastructure that can adapt to a potential growth of the volume of exhibitors to Metef-Foundeq, and is just 2km away from Verona's historical quarter and strategically located within a region rich in tourist and cultural attractions.

The Province of Verona and Lake Garda and the Veneto region boast beautiful landscapes, exceptional art and rich

culture, and history and traditions built over centuries.

Metef-Foundeq outlines the entire metal production and transformation chain, starting from aluminium, and is a reference event for such an important and strategic industry.

Metef-Foundeq will provide customised solutions for exhibitors, targeted services, and different and effective instruments to promote and realise opportunities for demand and supply to meet at an international level, in the belief that an international event must be able to meet the diverse and varied needs of operators. In 2012 exhibitors will be offered a special 'business to business' service of trade matching, which, through custom appointments arranged between suppliers and customers, aims to promote and establish contacts with the top-class visitors, the most qualified buyers visiting the exhibition.

Attention will also be given to technology transfer through round tables, technical forums, and seminars. The 2012 edition of Metef-Foundeq will host numerous



Metef-Foundeq will move to the Verona Exhibition Centre in 2012

conferences and seminars of a technical-commercial nature, with presentations by industry experts on the latest innovations in the aluminium and metals industry. Among these are the 1st edition of the International Extrusion Forum, and the Metef Innovation Award which, thanks to its success in 2010, will be repeated in 2012. The award will once again highlight the most significant technological innovations presented by exhibitors.

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Water pipeline inspection technologies

WACHS Water Services and Pipeline Inspection & Condition Analysis Corporation (PICA) have formed a strategic alliance based on a shared vision of helping utilities better manage aging water distribution infrastructure. The alliance will develop and deploy specialised metallic pipeline inspection technology solutions through collaborative R&D, manufacturing and marketing.

With an estimated 240,000 water main breaks each year in the US alone, it is becoming critical for utilities to determine the actual condition of metallic water mains to proactively reduce breaks and improve cost effectiveness of water main repair, lining or replacement programmes. The aligned offering of Wachs Water Services and PICA will provide water system operators and owners the ability to extend the reliable life expectancy of water pipelines.

"There are many factors that influence the condition of a water pipeline. The trick is to have actual information to determine which segments need to be replaced, which can be lined and which segments are still in

good shape," said Cliff Wilson, president of Wachs Water Services. "We are very excited to have established this alliance with PICA, and we continue to build a portfolio of industry leading pipeline inspection technologies to ensure that our clients have the right tool for the job."

PICA technologies can be applied to either distribution or transmission mains, and provide accurate measurements of the remaining wall thickness of the pipeline. The patented technologies travel through the inside of a water main and use an electromagnetic field that can both detect and size graphitisation, pitting, erosion and cracks – even through liners, scale and tuberculation. PICA's metallic pipeline assessment Hydrasnake™ portfolio offers strong synergies with Wachs Water Services in-line leak detection and pressurised main CCTV offerings, the LDS1000™ and Investigator™.

"We are investing in this alliance because we believe that there is a tremendous opportunity for utilities to get ahead of

the aging water infrastructure crisis," said Dave Russell, president of PICA. "Our direct condition assessment services are an integral part of asset management programmes for clients worldwide. Wachs Water Services is currently delivering several of the largest water network renewal projects in North America and their clients will be able to immediately benefit from PICA's proven metallic pipeline inspection capabilities as well."

"The alliance timing is excellent as PICA recently opened a new office in Charlotte, North Carolina," added Chris Garrett, general manager of PICA USA. "There is a growing demand for our proven pipeline inspection technologies, and this alliance with Wachs Water Services will allow us to further expand our footprint to better service the market."

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OMS employee awarded Pipeline Industries Guild's Carron Trophy

JIM Buston, client solutions executive at pipe measurement specialist Optical Metrology Services (OMS) Ltd, has won the Pipeline Industries Guild's Carron Trophy Young Person's Presentation Competition.

Jim received the trophy and a £500 cash prize after delivering his winning presentation to a panel of judges and an audience made up of members of the Pipeline Industries Guild. The presentations were held at the Inn at the Park Hotel, Aberdeen, on 18 August 2011. On the night, Jim beat off stiff competition from three other shortlisted contestants to scoop the top prize for his presentation entitled 'Fit-up solutions – the project manager's secret weapon'. The official awards presentation took place at the Guild's Scottish Branch Annual Dinner on 7 October 2011 in Glasgow.

"After submitting a synopsis of my presentation earlier in the summer, I was really pleased to receive news that I had made the shortlist of four finalists," commented Jim Buston. "On the night, presenting to the panel of judges and to members of the Guild was quite a nerve-racking experience, but I'm absolutely delighted to have won such a prestigious award, particularly in the face of such strong competing entries."

Jim's presentation highlighted a number of different methods for checking pipe end geometry in oil and gas pipeline projects and how it is now possible to take this further and use actual measured profiles of the shapes of the pipe ends to proactively manage and improve the fit-up process in order to minimise HiLo. Measured profiles can now be assessed to identify difficult pipes early



Jim Buston receiving the Carron Trophy

on and to achieve the best possible fit up with the pipes.

As Jim puts it: "To maximise the benefit, different systems are now available to suit the logistical situation for any given project. It is possible to dynamically plan the best fit up for each pipe or group of pipes as they become available for welding, or to plan a complete string architecture in advance. Methods like these can make a project go faster, and enable a better weld quality. Processes like these are becoming ever more popular, and are becoming standard practice."

OMS – UK

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Dr Jeffrey Packer joins STINA's HSS committee 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.

Bill Wolfe, executive director of STINA, noted that Dr Packer's addition to the HSS committee's board will provide it with a broad range of knowledge and experience: "Jeff Packer is one of the foremost experts in North America concerning the design and use of tubular steel products. His expertise will be a welcome addition to our HSS board.

"STINA is also exploring the possibility

that Dr Packer may actively contribute to one or more areas of the HSS committee's new website. We would like to have the opportunity to share Dr Packer's expertise with other groups that we serve – designers, fabricators, contractors, government officials, equipment manufacturers and building owners."

Dr Packer graduated from the University of Adelaide, Australia in 1972, and subsequently received his Master's degree from the University of Manchester (1975) and PhD from the University of Nottingham (1978) in the UK.

Since his initial appointment at the University of Toronto in 1980 he has undertaken research, development and consulting work primarily on tubular steel structures. He has published extensively on this topic, including several co-authored CIDECT design guide books (published in four languages), another in Chinese, two design guides for the Canadian Institute of Steel Construction (CISC), and another for

the American Institute of Steel Construction.

He currently serves on several technical committees, including the American Welding Society (AWS D1), the Comité International pour le Développement et l'Etude de la Construction Tubulaire (CIDECT), the Canadian Standards Association (CSA) and the International Institute of Welding (IIW), where he served on the board of directors from 2004 to 2007. Dr Packer is also the recipient of numerous awards.

The Steel Tube Institute was formed in 1930 when a group of manufacturers joined forces to promote and market steel tubing. Their goal was to mount a cooperative effort that would improve manufacturing techniques and inform customers about their products' utility, versatility and competitive advantages.

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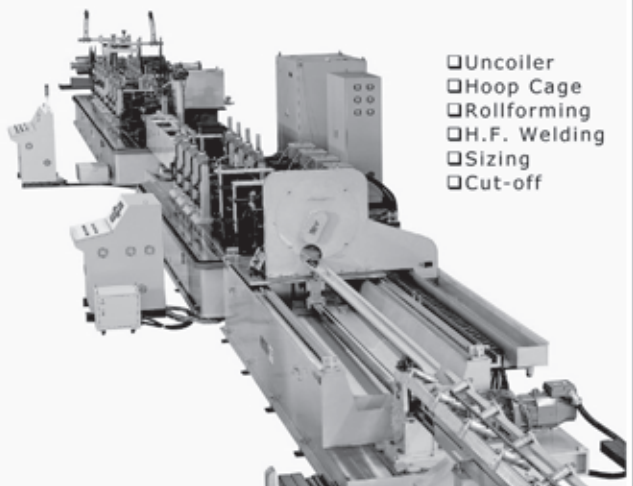
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Measuring technology in hose and tube extrusion lines

HOSE and tube manufacturers are obligated to fulfil customer specifications at the production. These specifications refer to the dimensions of the product as well as their material characteristics. In order to meet the demands there are measuring technologies used in the lines that continuously monitor the quality during production.

In extrusion lines, where for example installation tubes, automotive or industry hoses are produced, the X-Ray 6000 helps to permanently comply with the required specifications.

Immediately with the online measurement the measuring values of the wall thickness, eccentricity, outer and inner diameter and ovality are available at the processor system Ecocontrol 6000. The eccentricity measuring values are displayed at eight points and allow the operator for an optimal centring of the extrusion tools and controlling of the wall thickness or the diameter to the nominal value. The values are numerically or graphically displayed as product cross-section.

Depending on the application, the measuring device is installed before

the cooling trough, between two cooling troughs or after the cooling trough.

The application field of the X-Ray 6000 ranges from one or multi layer hoses or tubes as they are common in extrusion lines such as composite pipes, pressure pipes with textile reinforcement, small and large diameter pipes made of PE, HDPE, PVC, EPR, also foamed products, products made of EPDM, nylon, rubber and silicone. In addition the X-Ray 6000 is applicable for medical hoses, industry and automotive tubes as well as for the gas and water sector.

By using an X-Ray 6000 as hot measuring head right after the extruder and a diameter measuring head after the cooling trough in combination with a control a constant diameter is achieved. With the hot/cold control module HC 2000 the material shrinkage can be calculated and automatically considered for the control of the diameter or wall thickness.

Besides the X-Ray 6000, which measures the dimensions of the hose or tube, testing and measuring devices are necessary, to assure product quality regarding material properties. Customers can configure their lines with Sikora measuring devices tailored to their needs.

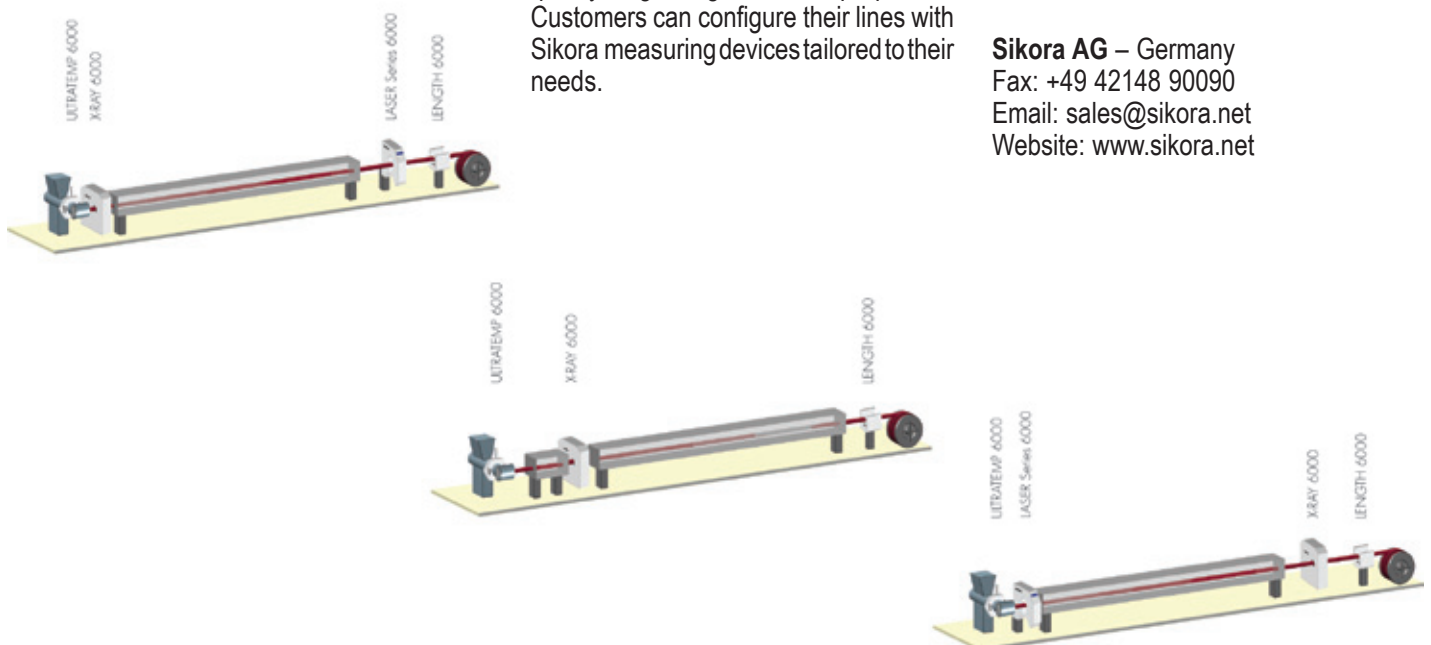
Between extruder screw and the cross head the Ultratemp 6000 measures the melt temperature. As a result of the temperature measurement a homogeneous melt is assured. Inhomogeneities in the material are also detected by the measuring system.

In the extrusion line 2- or 3-axis lump detectors are used, which detect faults on the material surface. The 3-axis measuring principle of the LUMP 2000 T devices is designed for the detection of small punctual faults with a constantly high detection probability.

During the production hose and tube manufacturers can measure the product length with the help of Length 6000 and assure that precisely the required length is produced.

A continuous quality control during hose and tube manufacture is a precondition for an economic production as risks can be identified and faults can be prevented at an early stage. With the first day of operation Sikora measuring technology reduces the costs of a production line and contributes significantly to profit increase. The X-Ray 6000 for example pays off already after four months.

Sikora AG – Germany
 Fax: +49 42148 90090
 Email: sales@sikora.net
 Website: www.sikora.net



Possible configurations of Sikora measuring technology in hose and tube extrusion lines

Four-roll plate roll machine

ALSTOM, a large multi-source energy company, has confirmed to plate roll manufacturer Davi an order for a new, high capacity four-roll plate roll.

Company president Orazio Davi commented: "We have been the first and only one to engineer a four-roll system suitable to manufacture wind towers, originally installed on land and in the last few years, offshore, which are assembled on platforms and with structures of monopiles and tripods, with great thickness and high tensile steel."

The Davi four-roll machine is claimed to satisfy the high productivity needs of the leading power generating companies, thanks to the company's technical characteristics, manufacturing quality, and support to customers during all project phases.

Davi has also received an order for a Press-Roll three-roll colossus (with variable axis), with a 10ft x 7 1/8" capacity. The order was placed by one of the largest offshore platform manufacturers in China, and the machine will join the numerous other Davi plate rolls utilised in this market segment.

Mr Davi said: "Only a heavy duty plate roll can bend this product. Our plate roll, the Davi MAV Press-Roll, is the best solution, due to its robust engineering and quality manufacturing, that ensures excellent results."

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Davi's three-roll MAV

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Latest tube and pipe mill projects

ABBEY Products Division has announced its most recent ERW tube and pipe mill projects. The first project is a heavy wall 1.5" mill for a large Southcentral USA plant.

The second project is a 24" combination API and structural mill for the Chinese market. Both of these projects showcase the wide range of heavy duty ERW mills that Abbey Products can engineer and manufacture.

The Abbey Products series 1KH-1.5" mill includes a squaring section to produce shapes and can achieve speeds of 600 fpm. The key feature of this mill is the patented CCT Quick Change System.

The CCT System allows for completely automated tube size changes in minutes without the use of an overhead crane.

The series 24KH Mill produces line pipe for oil and gas as well as structural shapes. Utilising the Abbey Products patented TBS System allows this customer to run 8"-24" OD up to 0.750" wall thickness with minimal



Abbey has announced its most recent ERW tube and pipe mill projects

downtime during size changeover. The TBS System has driven rolls at several locations in the mill to aid in making extreme sizes.

Fives Bronx – Abbey Products has been designing and manufacturing world class tube and pipe production equipment since 1901. Their product

innovation combined with their experience makes Fives Bronx – Abbey Products the quality choice for ERW mills no matter what size tube you are producing.

FivesBronx – USA
Website: www.fivesgroup.com

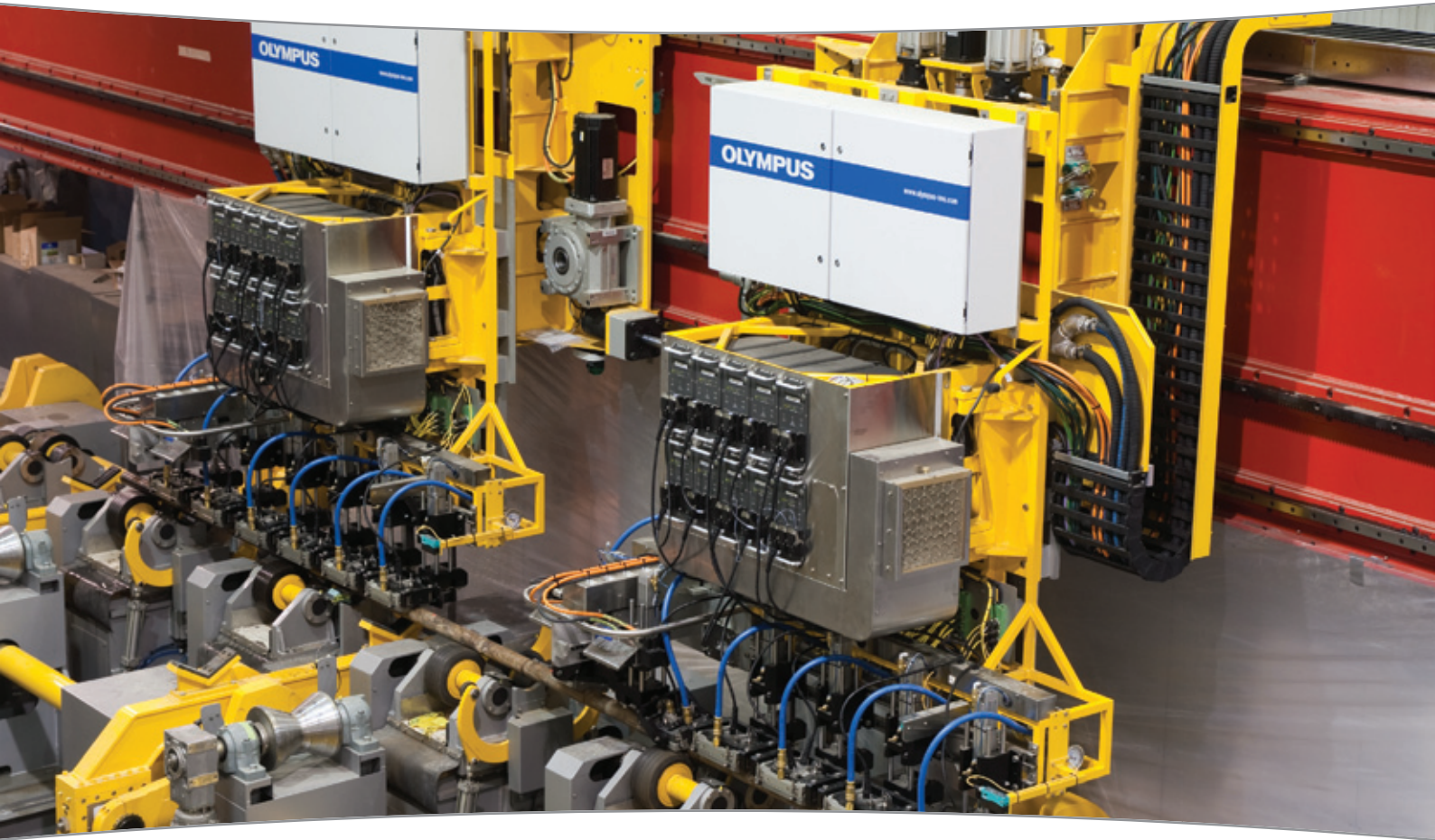
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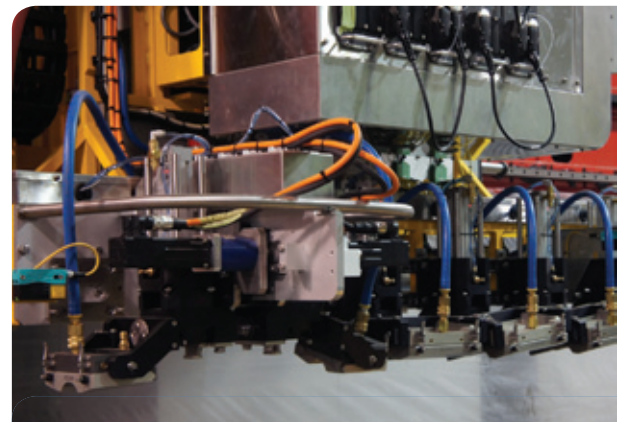
OFF-LINE ERW TUBE INSPECTION SYSTEM

Nondestructive Phased Array Solution

The Off-Line ERW solution uses phased array technology to inspect weld seams and the heat-affected zone (HAZ) of electrical resistance welded (ERW) tubes.

- A "Hybrid" solution providing combined weld-seam and full-body inspection with the same inspection head.
- Wide sector coverage of the weld seam and the HAZ with constant amplitude using only one PA probe on each side of the weld (eliminating the need for weld tracking).
- Automatic radial positioning of the probe according to the pipe thickness.
- Multiple inspection mode capability with the same PA probe (45°, 60°, 70°, 45 tandem, etc.).
- Optimized detection of each ID, mid-wall, and OD defect type.
- Very short untested length at the ends of the tube.

NEW



- ✓ Weld Seam Inspection
- ✓ Full Body Inspection
- ✓ No Need for Weld Tracking

Catalytic oxidation system for finishing

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 12,000Nm³ 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.

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 per cent 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.


AirProtekt Limited – UK

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The original, patented design of the Ring Purge, available from Weldwide Solutions Limited, enables the fabricator to seal the inflatable dam inside the pipe and achieve a purge around the weld within a few minutes, and will therefore not only save purge gas but will also shorten the time spent on purging.

Compared to consumable purge products (eg purge paper) where a new product will need to be purchased for every weld, a Ring Purge system's initial purchase cost will soon be offset, as it can be used for hundreds of welds if used correctly.

For example, an 8" Ring Purge used for 100 welds will cost just over £2.40 per weld; if used for 200 welds, this cost will be halved.

Unlike purge paper or purge film products, Ring Purge and inflatable dams provide the welder with ways to get purge gas in and out of the pipe, even when the root weld pass has been closed.

Ring Purge maintains a positive seal of the dams with the pipe ID so that the purge gas provides a pressure to support the weld root.

Customers using the Ring Purge in a correct operation have reported 500+ welds from their product. The pre-set valve minimises the risk of over-inflation and bursting of the product, which further increases life span.

The Ring Purge should be considered for purging lengths of straight pipes that need welding, and if used carefully can be considered to weld lobster back welds and some elbows. For purging of smaller diameter pipes and around bends, Weldwide Solutions Limited recommends the use of Proban cotton inflatable purge systems.

All of Weldwide Solutions' inflatable purge dam designs feature a secondary purge gas inlet feed so that higher flow rates of argon can be used when making the initial root pass.

Using the secondary hose prevents over-inflation of the dams, and if flow rates become too high and the welder feels too much gas pressure escaping through the root gap, the gas pressure will drop immediately when the gas flow to the secondary argon hose is reduced.

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SEUTHE GmbH is part of the Austrian engineering and plant building ASMAG group.

Its state-of-the-art manufacturing facilities support Seuthe GmbH's high level of in-house production and allowed to deliver every second month one complete FCF® section mill to European tube producers in the first half of 2011.

Patented since 1998, the FCF® (Flexible Cold Forming) technology offers unbeatable advantages and even more in conjunction with Seuthe's financing programme.

The company directly shapes the square or rectangular profile from the strip.

The formerly used method of shaping a mother tube under high forces to a quadrangle profile created a material thickening in the corner radii.

The direct forming by FCF® prevents this. This sounds something less than spectacular, but this material loss is a countable and considerable figure on a profit and loss account. Profile production with FCF® saves up to 8% of strip material!

The idea of linear cage forming has been brought to an advanced level by Seuthe.

Well developed universal tool rolls enable the production of a wide dimension range – inclusive of all in-between dimensions. All the operator needs to do is to chose the pre-setted dimension or to insert the new dimension values at the operator desk.

The machine will automatically adjust all forming rolls accordingly. No need to stop the production line for hours because of the time-consuming

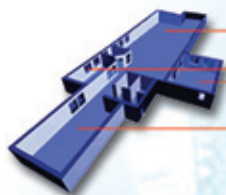
tool roll change. The dimensional change takes now 15–45 minutes.

Seuthe has held the patent for this direct forming technology for 13 years and improved this technology through the years to provide a sophisticated production solution.

Many references of this direct forming method throughout the globe confirm its economic value and customer satisfaction.

In 112 years at the market, Seuthe gained good experience to realise projects economically and profitably in Made in Germany quality. The company said that even 50 years from now, Seuthe production lines can still be working reliably and economically.

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New technology for PVC-O pipes

THE need for water infrastructure is ever growing, but the economic situation is forcing the lowering of the cost of products and installation, transmitting the pressure on installers and pipe manufacturers.

At the same time, global warming has pushed many governments to define policies looking for more ecological, environmentally friendly solutions on every activity.

It is difficult to find solutions that combine better performance, cost reduction and lower CO₂ emissions. PVC-O pipes are perhaps the solution that fits this difficult equation.

Molecular orientation is a physical process that modifies plastic's molecular structure, where amorphous PVC-U structure is reorganised into a layered structure that confers mechanical properties to plastic pipes that include impact resistance, fatigue resistance and flexibility.

PVC-O pipes are an environmentally friendly solution for water transportation according to the 'Estimation of energy consumption and CO₂ emissions due to production, usage, and final usage of PVC, HDPE, PP and cast iron' of the Department of Engineering Projects, Universitat Politècnica de Catalunya (Barcelona, December 2005).

This report shows the CO₂ emissions and energy consumption during the whole LCA (pipe's life cycle), which includes raw material production, pipe manufacturing and usage life of pipes for water transportation, comparing PVC-O, PVC-U, PE and cast iron pipes. The report concludes that PVC-O pipes are the best choice for water transportation.

Molecor Tech has developed an air based technology in which no water is involved, which makes a safer, cleaner, more efficient process. It is a flexible system able to work continuously with

an extrusion line, or to produce in batches. The enhancement of the mechanical properties results in less consumption of raw material for the same performance.

Less material means less oil consumption, but also more hydraulic capacity within the pipe, and more efficiency for pipe installers.

Products manufactured by Molecor range from DN 90 to 360mm and up to 25 bar, opening the way to new markets for plastic pipes.

Molecor's PVC-O technology allows simple transformations of standard PVC-U lines into PVC-O lines, bringing savings for pipe manufacturers, and benefits for potential pipe customers and end users.

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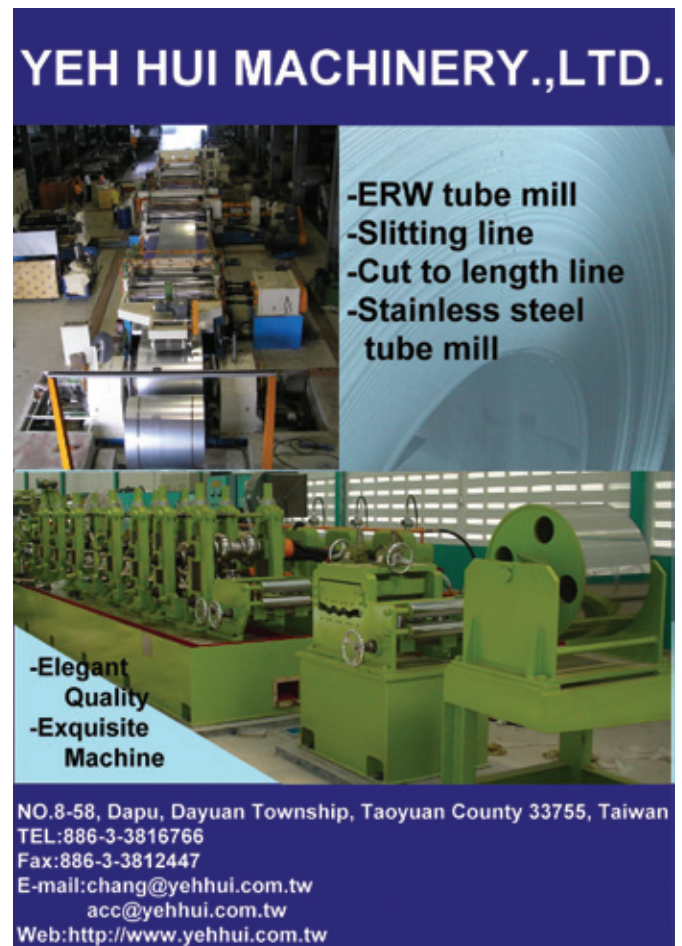
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Premium processor systems with TFT colour monitor and touchscreen operation

THREE Ecocontrol models belong to the premium segment of display and control devices by Sikora. They attract special interest, due to intelligent software technology, simplicity and ease of use for the operator. The Ecocontrol models offer all common interfaces for easy data transfer to a line PC.

Ecocontrol 2000* is an extremely powerful display and control processor system, which clearly brings the measuring values of the connected diameter and eccentricity devices into focus. In total, up to eight measuring and test devices can be connected to the Ecocontrol 2000. The measuring values are displayed numerically

as well as graphically on a 15" -or optionally 19"-TFT monitor. A clear line presentation with pictograms of the connected devices provides additional information.

Moreover, it contains a time- and length-related trend diagram for the measured dimensions and a display of the statistical distribution curve of the measurements with the minimum, maximum and mean value, standard deviation, Cp and Cpk.

The operation is menu-driven via touch-screen, designed for intuitive use. All Ecocontrol models allow an automatic control and recording of the measuring values. For the Ecocontrol 1000 and 2000 models data storage is

also possible. Ecocontrol 1000 offers two serial interfaces for the connection of measuring devices such as Sikora's diameter gauges of the LASER Series 2000/6000. Additionally, test devices such as the LUMP Series 2000 can be connected. The measured values are displayed on a 15"-TFT touchscreen monitor.

The innovative, compact and economic Ecocontrol 600 utilises a clear 8.4"-TFT touchscreen monitor and offers a serial interface for the connection of one measuring device. All Ecocontrol models integrate future-orientated technology combined with remarkable straight forwardness.

For applications with the X-RAY 6000 (online eccentricity, wall thickness and inner and outer diameter measuring system) the Ecocontrol 6000 is available.

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Cycle times three times faster than HSS circular saw blades or band saws. Drastically longer edge life. Substantially lower tool costs. No wonder that the automobile industry increasingly employs Ferro Max. Available for tubes and solids made from mild, alloyed or stainless steel. When will you go for it? Kanefusa. Not without reason Japan's leading manufacturer of quality tools.

Arc Machines in successful first venture with chemical giant

ARC Machines Inc (AMI) has supplied automated orbital welding systems for a unique project at GrowHow UK Ltd's fertiliser plant at Ince, near Chester, UK.

The Ince site produces 1 million tons of fertiliser per annum, providing essential nutrients for grass and arable farming, and needed to install a new converter vessel in its ammonia synthesis gas loop. When faced with welding the 18" diameter, nearly 2.5" thick stainless steel pipes, contractors Fabricom called upon AMI's expertise to provide an automated welding system that could guarantee weld quality and speed unachievable by a manual process.

AMI provided full training to the Fabricom engineers and supplied three M415 power source and M15 torch systems to enable the welders to work 24 hours a day and complete the project with minimum plant downtime.

This was the first time GrowHow had used automated orbital welding and selected the AMI system for the guarantee it provides of repeatable high quality across all welds. In a situation

where the reliability of every weld is vital, the ability of AMI's equipment to cope with the thickness of the pipe wall and maintain weld integrity under extremely high gas pressure and temperature gave the company significant advantages.

To ensure a high integrity weld, AMI conducted several tests on the high grade, elevated temperature environment 321 stainless-steel pipe material prior to project commencement and provided comprehensive training and support. Seventeen girth welds were completed in a fabrication shop with the final four tie-in welds completed on site under arduous winter weather conditions.

For AMI's regional director, Michael Allman, this is another demonstration of the relevance of automated orbital welding to a variety of industries ranging from oil and gas, petrochemicals and nuclear power generation to food and beverage, pharmaceuticals, and semi-conductors.

AMI's M415 power system gave GrowHow the reliability of an automation

controller designed to meet the challenges of the most demanding welding applications. Incorporating an industrial computer, programmed via a large 12" touch screen or keyboard, the Model 415 has an intuitive graphical user interface to make programming easy using standard welding industry terminology and the capability of storing weld schedules in a microprocessor based control system. It also includes the option of real-time data acquisition, in order to maintain weld integrity with precise tolerances over hundreds of repetitive welds or when an identical weld is required at a later date.

Completing the system was the Model 15 large diameter pipe weld head with a specially adapted chisel torch nozzle designed to accommodate the relatively narrow compound bevel optimised during the welding development phase.

Arc Machinery – UK

Email: mike.allman@arcmachines.co.uk
Website: www.arcmachines.com

Automated orbital welding from Arc Machinery



EZTM tube rolling plants designed for greater flexibility in manufacturing

EZTM JSC has started the detailed design of a new generation of tube-rolling plants.

The principle of Efficiently Fragmented Technological Process (EFTP) forms the basis of the project.

The essence of the EFTP principle is that the certain technological process is divided into smaller subprocesses which are used (like on the principle of constructor LEGO) for flexible developing of different manufacturing processes depending on market requirements to the finished products.

The use of this principle at designing of the tube-rolling plant allowed getting three tube rolling technological schemes through using one and the same generally accepted contents of the equipment.

Such decision allows providing the production of small and large batches of tubes of wide range of product sizes and grades with minimum expenses for resetting of equipment.

The 7-stand continuous mill of new generation with MPM Quattro technology will be used as an elongator.

8-sided wall reduction is performed on the long retained mandrel of MPM Quattro mill (of the 3-high mill – 6-sided wall reduction, of the classic 2-high MPM mill – 4-sided one)

Such decision allowed:

- providing friction conditions at the outer tube surface similar to three-high scheme;
- reducing to minimum the friction processes at the inner tube surface at the mandrel extracting by implementing the technology of increasing of tube cross-section perimeter as compared to mandrel section perimeter, similarly to MPM mill technology (the use of such technology in a three-high mill is impossible);
- decreasing the transverse thickness variation of the produced tubes (the technology has the potential to reach

the thickness variation parameter up to the value of $\pm 4\%$).

The distinctive feature of the new MPM Quattro technology is that it can be applied for both building new tube-

rolling plants with continuous mill and retrofitting of existing MPM mills.

EZTM JSC – Russia
Website: www.eztm.ru



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Mac NDT test systems

NONDESTRUCTIVE test instruments and Systems from Magnetic Analysis Corporation (MAC) were exhibited at the Polimeter Comércio e Representações Ltda booth at Tubotech, São Paulo in October. Polimeter is MAC's representative for Brazil, Chile and Argentina.

MAC uniquely offers three different test technologies, eddy current, ultrasonic, and flux leakage. MAC's ability to provide a choice of technologies is a distinct advantage. By combining eddy current and ultrasonic technology, for example, superior test results can be obtained as each technique detects the conditions that it is best suited to find.

Applications include inspecting welded and seamless tubes as well as Oil Country Tubular Goods (OCTG) with or without upset ends. Both ferromagnetic and non-ferromagnetic materials can be successfully tested.

Information on the MultiMac[®] Eddy Current, Echomac[®] FD-4 Ultrasonic, and Rotoflux[®] flux leakage test instruments and systems was available at Tubotech. The versatile MultiMac with up to eight test channels can be used to detect transverse, non-continuous and/or longitudinal, seam-type surface defects.

MultiMac operates with encircling/sector test coils or rotary test probes, depending upon the specific application and type of defects that need to be detected.

The Echomac FD-4 instrument features up to 32 independent test channels.

It provides superior performance for flaw detection, and measurement of wall thickness, ID, OD, ovality and eccentricity. Echomac FD-4 can be used with MAC's rotating transducer units as well as with new or existing immersion, squirter and

other couplant type installations. The Rotoflux tester is available for transverse and longitudinal flaw detection. With 48 channels, the Rotoflux systems meet demanding industry standards for heavy wall OCTG tube. A recent system for a tube mill has the capability of testing to within 1" from the tube end.

A range of mechanical handling, test coil platforms, automated controls and reporting capabilities are also available from MAC.

Magnetic Analysis Corp is a market leader in Brazil for eddy current tube test systems and all MAC equipment can be delivered with software and operating instruction manuals in Portuguese.

Magnetic Analysis Corp – USA
 Fax: +1 91470 33790
 Email: jgould@mac-ndt.com
 Website: www.mac-ndt.com



SHANGHAI YUEYUECHAO STEEL TUBE

Established in 1994, Shanghai Yueyuechao Steel Pipe Group mainly deal with seamless steel pipe, seamless square/rectangle steel pipe, large OD LSAW manufacture. The specification for LSAW of Shanghai Yueyuechao Manufacture Tube Co., Ltd is $\Phi 356-1422 \times 8-60\text{mm}$. The specification of cold drawn seamless steel tube for Jiangyin Yueyuechao Manufacture Tube Co., Ltd, ranges from $\Phi 6-426 \times 1-20\text{mm}$, hot expanded tube specification ranges from $\Phi 168-630 \times 4-50\text{mm}$. Quality standards are API/ASTM/GB/ISO/DNV/JIS.



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Tubing processing equipment

PROPER operation and life of hydraulic systems components not only depends on the quality of the components but also on the assembly of the system and the quality of the machining process through which the tubes were manufactured before assembly.

OP's wide range of products include a complete line of equipment purposely developed for processing rigid tubes for hydraulic systems, ensuring proper assembly for the user.

Accurate pre-assembly of the fitting cutting ring and the 90° or 37° flaring of the steel tube is paramount to the safety of any system using DIN 2353 and SAE J 514 fittings joints.

Erroneous assembly of the cutting ring and inaccurate flaring of the tube might jeopardise the system and, in extreme cases, cause injury to property and persons.

To avoid this, OP proposes various Unispeed series equipment models. They are easy to use and handle, comfortably portable even on site to facilitate service men's and mobile assistance centre operations; they have a wide range of tools capable of machining carbon steel tubes and stainless steel tubes ranging between Ø 6mm and Ø 42mm in diameter, with thickness reaching 4mm.

In addition, OP products include practical bending machines, easy-to-use and service, ideal for bending stainless steel and carbon steel tubes with a maximum diameter of 50mm.

After cutting, deburring to remove metallic burrs, which could find their way into the system damaging pumps, valves, seals and other components vital to the system permanently, is paramount.

The de-burring machines ensure proper removal of burrs leaving the tube edge clean and smooth.

Lastly, OP has various equipment, namely Center Junior and Mini Center multi-functional and mobile units, which include all the tools offered separately, allowing the operators to have all they

require in a single unit for the finest work results.

OP Srl – Italy
 Email: sales@op-srl.it
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 - ✓ TRAINING FOR PRODUCTION AND QUALITY MANAGERS
 - ✓ EVALUATION OF COMPANY ASSETS (INDUSTRIAL / INTANGIBLE)
 - ✓ EVALUATION OF THE ECONOMIC VALUE OF COMPANIES / BUSINESS UNITS

TECHNOLOGY UPDATE

Accurate in-line thickness measurement

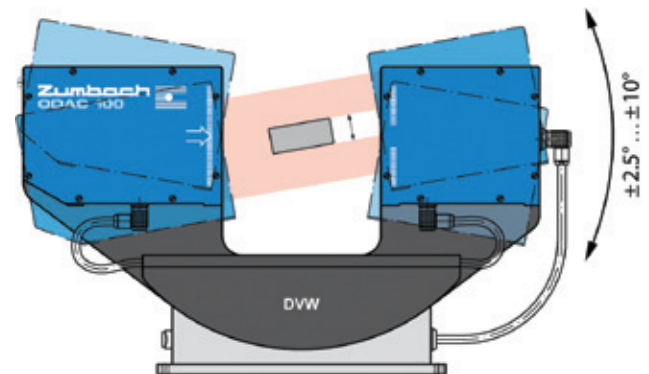
ZUMBACH Electronic has enhanced and extended its line of systems for accurate, non-contact measuring systems for precision profiles made of steel, copper or any metal. The Dynamic Double Scan (DDS) method is the solution.

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.



Pivoting device DVW with single axis ODAC laser head

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

Fax: +41 3235 60430

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Leading The World in Pipe Finishing Solutions.

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.

Fives Bronx ... start to finish.



Manufacture of plastic tubes

MAINTOOLS GmbH & Co KG, which is engaged in the production of extrusion lines for the manufacture of plastic pipes, has achieved an important new development in its business field of corrugators.

In addition to a compact design, the high performance corrugators Protos 165 and Protos 270 have a very high degree of flexibility. Equipped with a productive capacity of more than 30m per minute and an output rate of 800kg per hour, multilayer pipes with a maximum outer diameter of 165mm/270mm are produced, mainly for the fields of cable protection and sewage technology.

The decisive factor for these extremely high production speeds is the direct, tubeless and completely wear-and maintenance-free cooling system. In combination with the further development of the mould blocks, 50%

higher cooling water flow rates can be achieved. Besides that, also the curve-optimised circulation of the mould blocks as well as the quick-change system characterises the advantages of these corrugators. The replacement of a complete set of mould blocks takes less than 30 minutes.

Based on the newly developed drive concept, the Protos 165 does not need any manual or electrical adjustment of the mould block clearance. In addition to the minimisation of the maintenance costs due to the innovative cooling system, a significantly lower wear of machine parts can be reached by the weight advantage of the mould blocks as a result of the "Zooming Technology" of the Corrugator (ie the basic forms of the mould blocks "grow" or "shrink" together with the dimensions).

In addition to the manufacture of corrugators Maintools GmbH & Co

KG is also engaged in the following business fields: winding pipe systems for large-scale plastic pipes, extrusion lines for the production of multi-layer composite pipes and extrusion lines for drip irrigation pipes.

Maintools GmbH & Co KG –
Germany

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A systems-thinking approach

QUAKER Chemical claims to be the only chemical speciality supplier to the tube and pipe industry to offer system-wide expertise, as well as a comprehensive portfolio of processing fluids and coatings. Quaker will be at Fabtech 2011 in Chicago this year, in Booth No 640 of the South Hall, to showcase its "front-to-back approach" in helping customers solve the complex business challenges of today. The company's global team of experts provides process expertise and custom-formulated process fluids and coatings for all production operations in welded and seamless tubular mills worldwide. Quaker's fully-integrated product lines include:

Coatings – for tube and pipe that include low-to-zero VOC water-based coatings, zero VOC UV coatings, and high-solids solvent-based varnishes – Quakercoat®.

Coolants – water-soluble, metal removal fluids containing soluble oils, semi-synthetics, true solution synthetics, and emulsion synthetics that provide a wide range of performance capabilities to meet industrial requirements in metal forming and cutting operations – Quakercool®.

Corrosion Preventives – Temporary or long term corrosion preventives formulated to be readily removed through conventional alkaline cleaning or degreasing procedures. Specifically developed to protect metal surfaces from corrosion for up to one year; they can be applied using spray, dip, brush or electrostatic techniques – Ferrocote®.

Cutting Oils – neat oils and emulsifiables for sawing, cutting, shearing – Quakercut®.

Fire-Resistant and Specialty Hydraulic Fluids – for high temperature applications. Each series an engineered solution for your application – Quintolubric®.

Hot Steel Rolling Lubricants – for hot elongation and stretch reduction processes – Quaker Quakerol®.

Hydrostatic Testing Fluids – for a variety of pressure testing operations – Quakercool®.

Maintenance and Production Cleaners – Quaker Formula™, Quakerclean® and Rinse Aid™.

Metalfforming & Drawing Lubricants – water soluble synthetics, emulsifiables, and neat oils, shown to work extremely well in pilgering and drawing applications – Quakerdraw®.

Quaker is a global provider of metalworking fluids and customised coatings with manufacturing and R&D facilities in 12 countries. It has technical staff on the ground in every industrialized region of the world to support local business.

Quaker – USA

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Brandt introduces significant improvements to coupling screw on machine

BRANDT Engineered Products Ltd introduces significant improvements to accommodate a wide variety of specifications and increase functionality. The Coupling Screw On machine (Coupling Starter) is designed for maximum throughput and simple, reliable operation. The Coupling Screw On machine screws the coupling onto the pipe end before a bucker fully torques it. The machine is fully automated and controlled from a touch screen operator station. This equipment has been designed and manufactured to fulfil the customer's requirements for function, efficiency, convenience, flexibility, and durability. This machine provides a cost effective solution for coupling screw on operations. Size change overs are simple and fast. The Brandt Coupling Screw On machine

uses electrical and pneumatic actuators to stage and then screw on the coupling. Brandt has also increased the size range of pipe diameters the equipment can accommodate.

Productivity is greatly improved due to the functionality of the Brandt Coupling Screw On machine. The machine allows quick and reliable actuation to thread couplings onto the pipe. Precision components ensure precise alignment and functionality of the machine. Encoders and VFDs allow couplings to be threaded on to a user defined distance. An HMI trending screen shows real-time feedback of torque, position and speeds.

Brandt Engineered Products Ltd specialises in machine and system design, manufacturing, installation, and commissioning for the tube & pipe

and mining industries and has been providing finishing floor solutions for over 20 years.

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End machining of oil field pipes and sleeves

NEW tool systems from Paul Horn GmbH are designed for the end machining of rotating or stationary oil field pipes up to 25" diameter. The product range currently includes tools for external and internal turning of API and special threads, internal and external chamfering, machining sealing seats, grooving, parting off and peeling.

The grooving and parting off tools are based on the proven S100 insert. Their working range has been expanded for the requirements of the oil industry to groove widths of 10, 12 and 16mm and a groove depth up to 65mm. They offer high feed rates with long engagement times, a good chipping process and reliable guidance.

An ISO insert product range available from stock has been developed for chamfering and peeling.

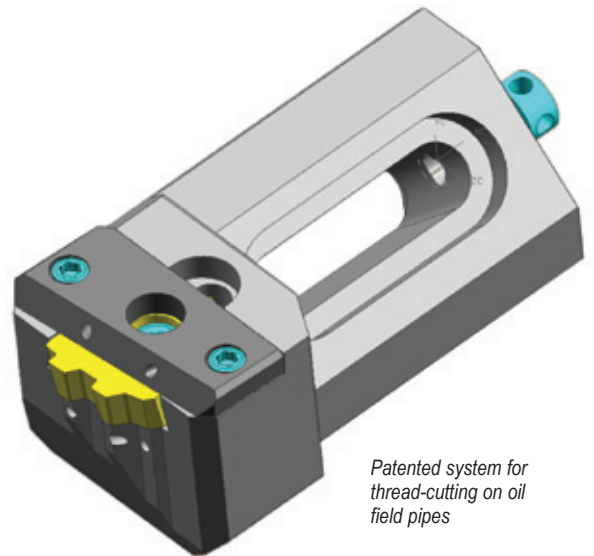
The high thermal resistance of the inserts enables high feed rates and the removal of thick chips which are reliably broken off due to the geometry.

Using the inserts for thread turning, pitches of 5, 8 and 10 threads per inch on internal threads and of 3, 5, 8 and 10 threads per inch on external threads can be machined.

Positive clamping of the inserts in the toolholder is made using one or two bolts depending on the number of teeth.

The secure seating of the 5 and 7mm thick inserts guarantees a lateral undercut engagement that locates in similar fashion to a dovetail joint. This highly precise mounting ensures repeat positioning accuracy $\leq 0.005\text{mm}$.

Their special feature is the chip breaker incorporated into the insert. As no clamping plate is required for chip forming, fewer clamping tools are needed. Heat dissipation is also improved which manifests itself in higher precision and smoother operation as



Patented system for thread-cutting on oil field pipes

well as in a longer tool life and a more favourable price. Both the holders for the external machining as well as those for internal machining have an internal coolant supply.

The new patented system of insert and chip former provides a significant improvement for thread cutting on pipes. Thereby, the insert is also mounted in the recess of the holder and supplemented from above with a chip forming cover.

No chip breaker is needed with this solution and the insert can be manufactured very cost-effectively. The cover and the insert can be installed and removed separately.

Under test, the new tools have confirmed their capability for taper turning and thread cutting. A combined tool was first used to turn a 1:16 internal cone on a seamless 10" pipe section of quality level P110 (tensile strength 760-970 N/mm²), and then the 5TPI thread was cut. In comparison with established competing products, the tool life for the Horn tools increased by the factor of 2.1.

Paul Horn GmbH –
Germany
Email:
christian.thiele@phorn.de
Website: www.phorn.de

Sample tools for thread-cutting, chamfering and turning to diameter



Sustainability, performance, cost effectiveness in HDPE pipe applications

AT the Wasser Berlin International, Berlin, Germany, Sabic, a global plastics industry company, showcased the new Sabic® Vestolen A RELY family of tough, sustainable and cost-effective bimodal high-density polyethylene (HDPE) materials for pressure pipe applications.

The Sabic® Vestolen A RELY portfolio offers converters considerable energy savings and enables environmentally responsible pipe installation.

Further demonstrating its commitment to sustainable technologies, the company also presented its revolutionary new Strain Hardening method, a fast, cost-efficient and highly accurate method for evaluating the slow crack growth resistance behaviour of HDPE. This Strain Hardening method avoids the use of detergents – that can pose an environmental hazard – and avoids the use of valuable drinking water.

Both announcements underscore Sabic's increasing focus on the development of high-performance, sustainable technologies, and its

ongoing investment in innovative materials and validation techniques to help converters, developers and builders leverage next-generation pressure pipe solutions.

The term "RELY" refers to the material's outstanding reliability, which is critical for transporting potable water, gas and other valuable liquids.

It also reflects Sabic's global reputation as a strong and reliable business partner that can ensure a long-term supply of advanced material solutions.

"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 Sabic® Vestolen A RELY portfolio – 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 significantly 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.

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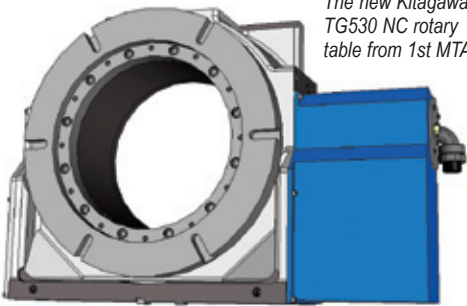
Laser and inspection systems for true dimensional measurement

Rotary table with large through-hole

A SERVO motor-driven NC rotary table with a very large through-hole has been introduced by Kitagawa to facilitate accurate milling and drilling of tube- and shaft-type components on machining centres and manual mills. The unit, designated TG530, is available in the UK from 1st Machine Tool Accessories (1st MTA).

The 345mm diameter hole through the centre has been sized to accept pipe up to 340mm (13^{3/8}"n), which is a standard used in the oil and gas industry for applications such as borehole casing.

The new Kitagawa TG530 NC rotary table from 1st MTA



The mechanical structure of the TG530 is designed to withstand the heavy cutting torques (up to 2,600Nm) required to machine tough materials used for some aerospace components. Hydraulic clamping torque is high at 6,100Nm, to allow heavy static machining.

Of rigid build for top machining accuracy, the unit weighs 366kg, one-third less than the equivalent model in the Kitagawa TR table series, which has a through-hole only half as large. Lower rotary table weight means that heavier components can be machined without exceeding the maximum table load of the machine tool.

Centre height is 310mm, maximum rotational speed is 11.1rev/min using a gear reduction ratio of 1/180, and indexing accuracy and repeatability are 20 and 4 seconds of arc respectively. The unit can be mounted vertically or horizontally, with maximum permissible component weight being 350 and 700kg respectively.

1st MTA is a supplier of workholding and machining accessories, including collets; chuck jaws; Kitagawa, Bison and Talleras de Guernica chucks, rotary tables and vices; Chick and Tecnomors workholding equipment; Abbott and Leave fixturing and clamping products; Darex tool sharpeners; OK-Vises; Brighetti reduction bushes; CoolJet high pressure coolant systems; Micromag filtration units; machine mounts; and Overbeck de-burring twister lathes.

1st MTA's extensive stock holding is backed by warranty and service provided by a dedicated team of technical engineers. Demonstrations of selected products are available from external sales specialists on request.

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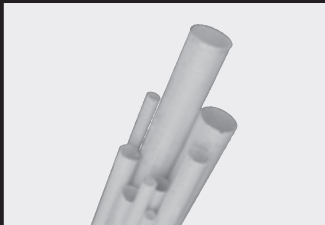
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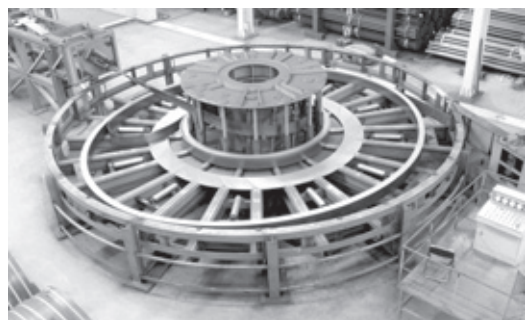
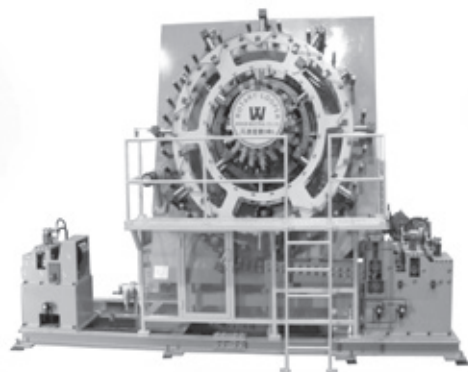
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Hybrid optic offers highest precision in metal analysis

SPECTRO Analytical Instruments recently unveiled the updated version of its Spectrolab metal analyser at the GIFA foundry trade show. The latest version of the versatile metal analyser incorporates a number of improvements, and, in several instances, achieves better detection limits than its predecessor version, such as trace analysis of pure copper and aluminium.

“Since our introduction of the first Spectrolab equipped with a hybrid optic in 2007, we’ve seen enormous interest in this technology everywhere,” comments Kay Toedter, product manager for stationary metal analysers for Spectro. “For many users, the combination of the two detector technologies opens new possibilities for improvements in laboratory analytical performance.”

“This latest Spectrolab offers the advantages of photomultiplier detectors relative to single spark evaluation and time-resolved spectroscopy along with the flexible line selection and ability to combine analytical and reference lines from charge-coupled device detectors. By combining all of these advantages, the Spectrolab analyser delivers the lowest detection limits with a previously unattainable stability and

repeatability of measurement results,” he adds.

Optimised excitation parameters and an innovative readout system enable permanent enhancements for lead analysis with a focus on battery technology or in the analysis of precious metals, for example. Even during automotive and aerospace materials testing, the new Spectrolab analyser displays its unique strengths, notes Mr Toedter.

“The new Spectrolab analyser is able to analyse aluminium, magnesium and titanium alloys with a single hardware configuration. With the complexity of spectra, this was long considered impossible, because the number and selection of lines was limited by the positioning of the PMT detectors. With the new Spectrolab analyser, the entire spectrum from 120nm to 780nm now is available to users,” explains Mr Toedter.

“The new instrument offers unique flexibility that provides completely new options for incoming and outgoing controls or the analysis of unknown metallic materials. In addition, with its optimised optical resolution and a focal width of 750nm in both optical segments, the new Spectrolab achieves outstanding analytical results for trace analysis of

pure metals and the examination of all conceivable material combinations and alloys,” he concludes.

In redesigning the Spectrolab stationary metal analyser, Spectro placed special emphasis on ease of operation and reduced operating costs. With those considerations in mind, Spectro placed components that could require maintenance in easily accessible locations. An extended diagnosis and log file system also assist users in monitoring the instrument’s status and in performing accurate trouble shooting, helping to lengthen maintenance intervals and shorten repair times.

Spectro Analytical Instruments GmbH – Germany
 Email: spectro.info@amatek.com
 Website: www.spectro.com

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Automatic handling

LOECO produces equipment for the automatic handling of tubes through the pickling and galvanising process. Serving customers for almost 40 years, the company has installed new lines, and modernised and upgraded existing lines, while constantly improving the technology.

The Loeco Advanced Automation Pipe Pickling and Galvanizing Line ensures a uniform even coating.

Single pipe pickling is more effective than bundle pickling, and acid consumption is only half that of bundle pickling.

Other benefits of the system include shorter pickling time; no black spots or bending; fewer defaults due to consistent pre-treatment; no human faults through automation; total control of first-in-first-out galvanising process for equal products; fume-free housing

for workers' safety and longer hall and crane life; and immediate blowing after extracting for better coating thickness control.

Loeco helps customers optimise efficiency. The products' finish will be uniform, to the standards required and by using minimal resources.

Environmental aspects are accommodated by complete fume suction and cleaning as well as recycling of the pickling media. Loeco's latest 6" pipe galvanising line is in production in Brazil, and another in Guatemala, where structural goods can also be handled.

Loeco-Industrieanlagen GmbH & Co KG – Germany
 Fax: +49 208 5898124
 Email: loeco@t-online.de
 Website: www.loeco.de

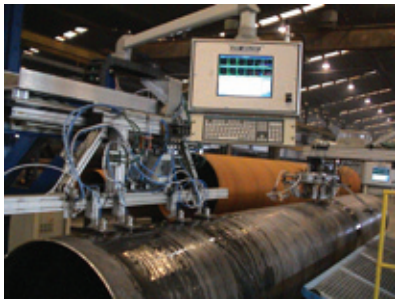
Aluminium extrusion

ZHEJIANG KimKing Aluminum Product Co Ltd, China, is an aluminium extrusion and finished aluminium product factory, with an annual production of 12,000t.

The company has two 10t aluminium melting furnaces, eight 500-2,000t extrusion production lines, two anodising production lines and one electrostatic powder coating production line.

They can provide aluminium casting rods, aluminium extrusion profiles and aluminium products that are widely used in fields such as rail transportation, elevators, vehicles and radiators.

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Representatives welcome

High-precision diameter control in cold processes for heavy environments

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 also 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, 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, ovality etc can be fed out directly to the user's network or also displayed in real time for the operator by USYS processors and also for feedback to the machine.

Complete accessories like secondary protection enclosures, cooling devices, air purging, air knives, etc are available for heavy-duty environments.

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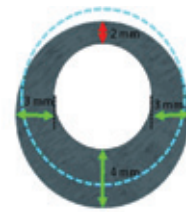
Minimum wall thickness for maximum quality

THE eccentricity and the resulting wall thickness of a product are important parameters for an excellent quality and last but not least for material saving. Sikora offers a new wall thickness control, which continuously assures a specified minimum wall thickness (minimum value) during the entire production process (see picture 1).

The newly developed control from Sikora optimises the production under

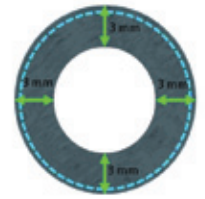
consideration of the wall thickness and eccentricity measurement information. As a result, an over wall thickness is avoided.

In the past, control concepts usually based on average values of the wall thickness, and did not take into account a product eccentricity. This results either in a shortfall of the wall thickness tolerance and thus to the production of scrap or in an increased demand



— minimum wall thickness
Average wall thickness = 3 mm

Picture 1: Example of a concentric product



— minimum wall thickness
Average wall thickness = 3 mm

Picture 2: Example of an eccentric product

for material in order to guarantee the required minimum wall thickness. (see picture 2).

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

Flux cored wires

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

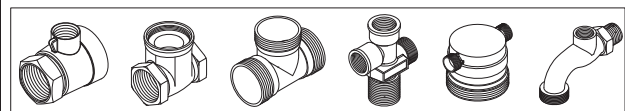
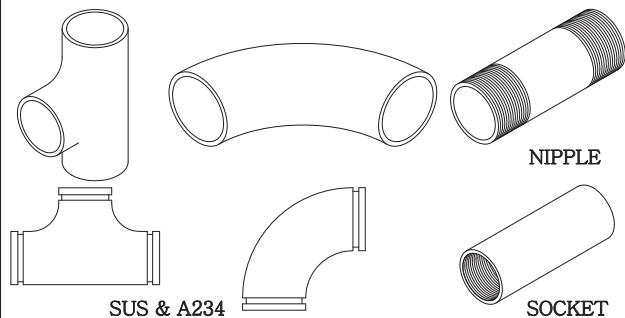
cored wire are high deposition rate, smoothness of seam, easiest functionality in every position and less distortion and stress as compared to shielded metal arc welding. Ever-changing and improving industrial applications create the demand

for flux cored wires of Gedik Welding especially for certain specific material groups.

Gedik Welding – Turkey
Website: www.gedikwelding.com

Our product lines:

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- ⊕ Auto threading m/c for socket & nipple.
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3D design and manipulation

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 improved the software's CAD data exchange capabilities, with claimed speed improvements of 300%.

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 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.

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High demands and economic pipe processing

WITH the TWISTER®, Rosenberger produced a bending system that offers best precision, flexibility and process safety, as well as extraordinary operating comfort. Furthermore, the system with a KUKA robot at its core provides the operator with lots of 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 still rather simple production line can be assembled according to individual customer wishes and expanded as desired. The flexibility of such Rosenberger production cells contributes greatly to efficient and economic production.

Right 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. Now the production part is optimally prepared for assumption by the robot. The collection position can be programmed individually and thus adjusted to the work piece at all times. A choice between mandrel and mandrel-free bending can be made in the project named. 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 TWISTER from Rosenberger

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.

In contrast to a common bending machine, the TWISTER® can release the component and grip it again in any other position. Attachment parts like flanges, nipples, valves and even flexible hose elements can now be

installed as straight pipes and fastened. The TWISTER® assumes bending of the ready-installed lines and thus enables smooth production process while dispensing with many previously required interim layers of the "semi-finished parts". Potential error sources like subsequent bending or manual bending operations are also dispensed with.

Rosenberger AG has been designing and producing production cells for companies from the area of automotive, including supplier industry, climate, sanitary and heating technology, furniture and illumination industries, aerospace technology, ship construction, chemical industry, motor construction, medical technology and defence technology for many years.

Rosenberger AG – Germany
 Email: info@rosenbergerag.com
 Website: www.rosenbergerag.com

Decoilers with two expandable mandrels

OTO SpA has unveiled decoilers that have an appropriate supporting structure capable of simultaneously handling two expandable mandrels that are counter positioned.

Their main function is to support the coil during the unwinding phase, assuring a constant mechanical tension on the strip.

The double mandrel solution is extremely convenient because it offers the possibility to put on the free mandrel a new strip coil (on loading side) while the other coil is being unwound to feed the line.

This phase can be performed in full security conditions for the operator considering that the decoiler is equipped with special protection panels that efficiently separate the strip unwinding side feeding the line from the loading new coil opposite side.

Their essential simplicity combined with all necessary characteristics required to accomplish at the best their mission, give to the operator the comfort to ease the machine handling and execute some simple and small regulations required, depending on the raw material utilised.

These decoilers are particularly recommended to process out strips with very low thicknesses at a high

production speeds on transforming lines where they are applied.

Two versions have been developed; these are identified as follows:

AD 256 E can operate with strip widths maximum up to 250mm. and maximum loading capacity, as per weight, of 6,000kg per mandrel

AD 368 E can operate with strip widths maximum up to 360mm and maximum loading capacity, as per weight, of 8,000kg per mandrel.

The use of this kind of decoiler offers many advantages as:

- Possibility to be installed at the beginning of a tube mill, both for unalloyed carbon steels and stainless steels.
- Do not require specific foundation works
- Fast and easy installation. The machines are complete and equipped with autonomous hydraulic power unit and control panel
- Require a reduced maintenance procedure.

The strip coil is picked up from warehouse and loaded on the mandrel; a radial support together with a laterally positioned roll provide a reference and containment during the strip unwinding at a high speed.

The expansion movement of the section bends, controlled by a special selector installed on the main switch board, assure the coil proper centring and fixing on the mandrel.

On the mandrels it is also possible to install additional bends allowing the coil locking with different internal diameters.

Once the loading of the coil is accomplished, the operator (using appropriate control switches on the main control board), will make the pressure roll press on the external diameter of the coil avoiding any

possibility of uncontrolled unwinding of the coil once the retaining bulkhead is removed.

For this reason the standard version decoiler is equipped with idle pressing rolls that require the operator's action to put the head of a new coil into the strip joiner unit to join it together with the tail of the coil which is being processed in the profiling phase.

As an option and on request when coils of bigger thickness are processed, instead of using idle pressure rolls (and easily interchangeable) it is possible to use motorised pressure rolls.

They are driven by an electrical motor coupled with a gear reductor and are controlled by an operator, who uses a special foot pedal actuator.

OTO SpA – Italy

Website: www.otomills.com



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All-in-one machine controller simplifies development of plasma tube cutter

A NEW plasma cutting machine for flue pipes has been developed by Techserv Cutting Systems, a manufacturer of CNC profile cutting systems. Advanced interpolated motion of the cutting system is used to increase production throughput, using an economic real-time machine control module from Baldor.

Capable of cutting aluminium and stainless steel flue pipes at any angle, as well as holes of any shape or size, the plasma tube cutter completely automates this aspect of manufacturing. For example, elbow pipes have traditionally been produced by cutting complex shapes from flat metal sheet, which are then rolled and welded before assembly. This time-consuming multi-stage fabrication process requires considerable movement of work pieces around the factory.

The new cutter dispenses with the need to pre-cut complex shapes. Instead, the flat metal sheet is rolled into a tube and seam welded, then each tube is successively loaded into the machine. The entire cutting operation is handled autonomously; a simple angled cut takes a matter of seconds. Cutting

the angled end pieces for an elbow pipe and then assembling them – a task that previously took about 15 minutes in total – can now be accomplished in around 4 minutes.

The tube being cut is mounted in the machine with its top end held in a rotating pneumatically driven clutch assembly. The plasma cutting torch is moved up and down as the tube rotates, at a rate that determines the severance angle or the size and shape of the hole being cut. Both the main rotational axis and the plasma torch height axis are powered by Baldor BSM series AC brushless servomotors driven by Baldor MicroFlex digital servo drives, and employ interpolation to secure a constant cutting rate regardless of the profile of the cut or diameter of the tube. The machine can handle a wide range of tube diameters, from 90 to 350mm, with wall thicknesses up to 1.5mm.

The tube cutter also uses three Baldor stepper motor driven axes. Two of these control the position of a pair of guide rollers, which support the tube during the cutting process and are driven closer together or further apart

depending on the diameter of the tube. They also move aside automatically during the tube reload phase to facilitate operator access. The third stepper-driven axis dynamically varies the distance between the plasma torch head and the wall of the tube during the cutting process, to provide optimum performance.

All five electrical axes are controlled by a Baldor NextMove ESB-2, a compact real-time machine control module that receives commands direct from an on-board PC-based CNC system developed by Techserv specifically for tube profile cutting applications. The CNC system software runs under Windows XP, with all operator information presented on a large, touch-sensitive, full colour HMI.

Baldor's NextMove controller provides all the control functions for the machine's five servo and stepper motion control axes, with even the base model capable of accommodating a further two axes if required for future machine variants. The controller also features extensive built-in I/O capabilities, again with expansion options.

According to Techserv's technical director, Mike Cowley, "Baldor's high-level Mint programming language helps us to develop motion control programs for custom applications like this very quickly. Integrating the NextMove controller with our front-end CNC system was also straightforward because it uses the same API naming conventions as ActiveX commands."



Baldor's NextMove ESB-2 real-time controller provides control functions for the tube cutter's motion axes

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New orbital fusion head

MAGNATECH had added a new, larger model to its 800 series of orbital weld heads. The new Model 860 fusion welds tube from 50 to 150mm (2" to 6").

The company recently introduced the 800 series, a line of enclosed autogenous orbital weld heads that utilise digital technology. Digital encoder drive motors eliminate the need for calibration. QC can quickly verify the accuracy, but calibration will never change over time.

The 860 is a compact and lightweight 150mm (6") head. Only 19mm (0.75") of straight length is required – tungsten to collet face. The 860 head is only 43mm (1.7") wide, allowing its use in tight clearance applications, welding fitting-to-fitting or fitting-to-valve.

According to the company, new construction techniques make the series cost-effective, durable, and easy to service in the field. A unique design, over-close collet clamping system, and an exclusive full exchange water cooling system allow for true 100 per cent duty cycle. Five models handle tube sizes from 3 to 150mm (0.125" to 6") OD.

Magnatech also manufactures the Tubemaster 517 model, which integrates a controller and orbital head with standard GTAW power supplies. Its intuitive, symbol-based interface

requires minimal operating training. Overcoming the objectives of price and complexity allows more industries to benefit from the precision and repeatability of orbital welding.

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The Tubemaster 517 is designed to be easy to operate



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New.Com is a pipe drilling specialist. It operates state-of-the-art equipment that allows for drilling of micro holes from simple to complex configurations. We have over 1000 drilling moulds, able to produce micro holes with precision in diameters ranging from 20 mm and up to 300 mm deep in any conductive material. We have all the tools needed to make drilling moulds to match customer design requirements precisely. All the operations of pipe deformation, manipulation and bending are performed in-house. New.com is also a service centre for cutting pipes to length. It has automatic single and multi-head cutting lines and sells welded beams.

General Manager – Mauro Mura



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Energy



A prolonged drought in Texas puts proponents of the state's ambitious wind energy initiative on the defensive

"The drought that grips Texas is a natural disaster in slow motion. Life itself slows down, falters and begins to fade. Out here, in the low hills west of Austin, the ground under my boots is split and cracked, the creek below the house bone-white and dry. Even the Blanco River's usually cool, spring-fed water is warm and still."

Richard Parker, a Texas-based journalist with McClatchy-Tribune Information Services, was writing on 13 August – high summer in the worst single drought year on record in the state. But he pointed out that Texas has a long unofficial history of megadroughts: events that can last 30, even 40 years. Applying the science of dendrochronology, researchers from Texas and Arkansas sampled nearly 300 trunk-core samples, creating a record of tree rings stretching back to before the arrival of Columbus in the Americas. One tree, still living, was a sapling in 1426, and its testimony is irrefutable. As bad as this year's drought is, things could get much worse.

Later in the month another journalist who makes his home in Austin reported having endured 70 days with temperatures over 100 degrees Fahrenheit, and with no relief in sight. But conspicuously absent from his account was the elegiac tone of Mr Parker's lament for a parched land. Writing in the conservative journal *National Review*, Robert Bryce was angry, and not at nature. "On nearly every one of those hot days," he wrote, "ERCOT's wind capacity has been AWOL."

ERCOT, the energy grid operator Electric Reliability Council of Texas, had on the afternoon of 24 August declared a power emergency as some of the state's generation units faltered under the soaring demand for electricity. As detailed by Mr Bryce, power usage hit 66,552mW, about 1,700mW shy of the record set on 3 August. In his view, as record heat and drought continued to punish the state, "the inanity of the state's multi-billion-dollar spending spree on wind energy [was becoming] ever more apparent." ("Texas Wind Energy Fails, Again," 29 August)

Mr Bryce provided the information that Texas has 10,135mW of installed wind-generation capacity – nearly three times that of any other US state. But on 24 August, with electricity badly needed, all

of the state's wind turbines together mustered just 880mW of power. Put another way, he wrote, even though wind turbines account for about 10 per cent of the Lone Star State's 103,000mW of summer electricity-generation capacity, wind energy was able to provide just 1.3 per cent of the juice needed on that afternoon to keep the air conditioners running.

Wind vs natural gas

An acknowledged proponent of energy from natural gas, Mr Bryce developed his indictment of ERCOT at some length. But his main points are simply stated. As the temperature soars and electricity demand rises, the wind dies down. As a response to an overstrained Texas grid, wind energy is inadequate and overpriced. Mr Bryce reported that, over the few weeks before his article appeared, electricity prices had risen as high as \$3,000 per megawatt-hour on the local wholesale market. Large industrial users in Texas had been forced to curtail consumption to avoid blackouts.

"And yet," he wrote, "the state is spending billions on projects that focus on wind energy rather than on conventional generation capacity."

Particularly galling to Mr Bryce is the prospect that consumers will soon be paying for new transmission lines being built solely so that "the subsidy-dependent wind-energy profiteers" can move electricity from their distant wind projects to urban areas. He quoted Kate Galbraith of the *Texas Tribune*: "The cost of building thousands of miles of transmission lines to carry wind power across Texas is now estimated at \$6.79bn, a 38 per cent increase from the initial projection three years ago."

The irate Mr Bryce invited his readers to imagine what the state's grid might look like if Texas, which produces about 30 per cent of America's natural gas, spent its money on gas-fired electricity instead of wind. He cited data from the US Energy Information Administration showing that wind-generated electricity costs about 50 per cent more than that produced by natural-gas-fired generators. With gas, he wrote, not only would Texas consumers be saving money on their electric bills; the state government would be earning more royalties from gas produced and consumed in the state.

▶ A senior fellow at the Manhattan Institute, a conservative think tank, and author of the book *Power Hungry: The Myths of "Green" Energy and the Real Fuels of the Future*, Robert Bryce is hardly an impartial judge of these matters. And someone who excoriates "apologists for the wind industry" is making too little allowance for the fact that wind energy – like all the "green" energy sciences – is still in its infancy. But it is worth noting that he is sharply critical of Governor Rick Perry of Texas, who recently has developed ambitions beyond his drought-stricken state. In Mr Bryce's view, Mr Perry – a contender for the Republican Party nomination to succeed President Barack Obama, a Democrat – has compiled an abysmal record on energy.

In 2005, Gov Perry mandated that Texas have at least 6,000mW of renewable energy capacity by 2015. Mr Bryce wrote, "[His] support has been so strong that a wind-energy lobbyist recently told the *New York Times* that the governor "has been a stalwart in defense of wind energy in this state, no question about it." Senator John Cornyn – another Texas Republican and one of the Senate's most conservative members – also drew Mr Bryce's

wrath: for running TV ads “showing pretty pictures of – what else? – wind turbines.”

Oil and gas

The potential riches of the formerly icebound Arctic beckon contenders, portend an ecological disaster


On 25 August a six-man team of British explorers became the first people to row to the magnetic North Pole. The group that set out from Resolute Bay in Canada on 29 July had rowed the 450 miles, in a vessel with runners on the underside enabling it to be hauled over the ice, in just under four weeks.

While these were very different circumstances from the ongoing Texas experience (See “A Prolonged Drought,” above), the two accounts are linked by the exigencies of climate. The voyage by rowboat was made possible only by seasonal ice-melt in the former permanently frozen Arctic. As reported on the environmental blog Care2.com (5 September), the expedition was mounted specifically to examine the effects of global warming. The rowing crew worked throughout with scientific research partners to collect data on the impact of deterioration of the polar landscape.

Late summer was a busy period for Arctic-related news. On 30 August an agreement for joint development of Arctic Ocean hydrocarbon reserves was announced by Russia’s top crude oil producer, Rosneft, and Exxon Mobil Corp, of the United States. The partnership, which includes \$3.2bn for exploration in the Kara Sea and the Black Sea, also calls for the establishment, in St Petersburg, of an Arctic Research and Design Centre for Offshore Developments, which will be staffed by Rosneft and Exxon employees.

Rex Tillerson, the chairman and CEO of Exxon, told Reuters that his company would work closely with Rosneft on Russian energy development. The deal also allows Rosneft the opportunity to gain an equity interest in a number of Exxon’s exploration stakes in North America, including the deepwater Gulf of Mexico and the Texas oil patch. But that is another story; as is the unhappy outcome of a similar initiative with Russian partners by Britain’s BP.


For the polar scientist Peter Wadhams, a professor of ocean physics at the University of Cambridge, the main significance of the Exxon-Rosneft deal is the boost it gives to the Arctic oil rush. (It will be recalled that in 2007 the Russian explorer Artur Chilingarov planted his country’s flag beneath the North Pole. “The Arctic is Russian,” he declared at the time. “Now we must prove the North Pole is an extension of the Russian landmass.”) Professor Wadhams, the former director of Cambridge’s Scott Polar Research Institute, is fearful that the global Arctic scramble ahead will entail incalculable peril to the natural environment of the earth.

 In an interview with Michael McCarthy, environment editor of the London-based *Independent*, Prof Wadhams warned that any serious oil spill in the ice of the Arctic, “the new frontier” for oil exploration, is likely to despoil vast areas of the world’s most pristine ecosystem. Oil from an undersea leak would not only be very hard to deal with in Arctic conditions: it would, he said, interact with the surface sea ice, become absorbed into it, and be transported by


it for as much as 1,000 miles across the ocean. (“Oil Exploration Under Arctic Ice Could Cause ‘Uncontrollable’ Natural Disaster,” 6 September)

The interaction was discovered in large-scale experiments 30 years ago. What it means, Prof Wadhams said, is that the Arctic oil rush is likely to be the riskiest form of oil exploration ever undertaken.

Of related interest . . .


 Whatever its intentions for Arctic development, Exxon Mobil, the Texas-based oil giant, is doing something right – at least in the eyes of the major American credit rating firm Standard & Poor’s. S&P famously downgraded to AA+ the top AAA status that the US government had held since 1941, on grounds of runaway federal spending. But the AAA rating is a badge of honour in corporate America, as well; and, exclusive of some financial and government-affiliated organisations, Exxon is one of only four firms to hold it. That total is down from 60 top-rated US corporations in the early 1980s.

Elsewhere in oil and gas . . .

 Speaking to reporters at an Australian Petroleum Production and Exploration Association (APPEA) conference in Perth, Australia’s resources minister Martin Ferguson on 9 August asserted that “the fundamentals of Australia economically are very, very sound.” He said that recent visits to Japan, Taiwan, and Indonesia had confirmed him in the view that regional demand for Australia’s commodities remained strong. Mr Ferguson took note of a record US\$443bn in outside investment in major Australian petroleum, iron ore, and coal projects, either underway or on the drawing board.

Of particular interest is the Ichthys liquefied natural gas project off the coast of Western Australia, with a final decision to proceed expected by year-end. Ichthys is a joint venture of the Japanese oil company Inpex and the French oil giant Total, which hold 76 per cent and 24 per cent stakes, respectively. At full capacity the project is slated to produce 8.4 million metric tons per year of LNG and 1.6 million mtpy of liquefied petroleum gas.

In brief . . .

 According to the 60th annual Statistical Review of World Energy, published by BP Plc, in 2010 developing countries accounted for the biggest jump in global energy demand in 37 years. As fast-growing emergent economies rebounded from recession, energy consumption rose at the fastest pace since 1973. The London-based energy giant reported that the overall 5.6 per cent rise in consumption reflected gains in all regions and in all energy categories.

Consumption in the developing world – especially in resource-poor Asian and South American countries – grew last year by 7.5 per cent. Consumption in the world’s richest countries grew by 3.5 per cent, the most since 1984, bringing it back to the level of a decade ago, BP said.

The surge last year was led by China, which increased its energy consumption by 11.2 per cent, according to BP. That put China ahead of the US as the world’s biggest consumer of energy, accounting for

20.3 per cent of global demand as compared with 19 per cent for the US. The International Energy Agency reported in July 2010 that China had become the world's biggest energy consumer. But Chinese officials, insisting that their country still lagged behind the US, fought shy of the honour. Now, apparently, BP has confirmed China's lead.

Iron and steel

Bent on greater self-sufficiency in iron ore, China's biggest steel makers will actively acquire or invest in mines overseas


Last year Australia, Brazil and India accounted for 62.3 per cent of imports of iron ore by China, the world's largest steel maker and iron ore consumer. Now, Chinese steel makers are stepping up their investments in offshore iron ore projects in the hope of lessening their reliance on foreign miners. According to Li Xinchuang, deputy secretary-general of the China Iron & Steel Association (CISA), the steel industry's twelfth Five-Year Plan has set a target of dramatically increasing ore imports from Chinese-invested resources.

Mr Li told *China Daily* that the country will be able to break the grip of the three major global miners – Vale SA (Brazilian), BHP Billiton (Australian), and Rio Tinto (British-Australian) – only if it gets half of its overseas ore requirements from sources in which it holds an interest. He said, "China currently owns less than 10 per cent of [its] imported iron ore. We should seek 50 per cent of ore from Chinese-invested overseas resources" over the next five to 10 years. ("China Aims to Increase Ore Imports from Chinese-Invested Resources During 2011-2015," 25 July)

The vice-chairman of CISA, Luo Bingsheng, had said earlier that China's overseas mining rights would support output of 150 million tons of ore annually. But, as most of these mines have yet to start production, China's strength in ore is more apparent than real. In Mr Luo's view, the major global mining companies have taken advantage of short supply relative to demand to set prices unreasonably high, squeezing profits from Chinese steel mills.


According to data from the association, the average price of Chinese steel products rose 14.8 per cent from January through May 2011 compared with the year-before period, while the price of imported ore surged 47.8 per cent. The average profit ratio of the domestic steel industry from January through May was given as 2.91 per cent, far behind the national industrial average rate of 6 per cent. According to CISA, China imported 334 million tons of iron ore in the first six months of this year, up 8% over the same period of 2010; the imports cost \$53.78bn, up 54 per cent. Last year, about 60 million tons of imported iron ore came from mines that had Chinese investment, the association said.

Elsewhere in steel . . .


 Athens-based S&B Minerals SA said its first-half profit almost doubled as global demand for steel and industrial production in Europe and the US boosted sales. The Greek company, which


manufactures and trades industrial minerals and ores for the steel, metallurgy and construction markets, reported that net income through June climbed to \$14.7mn from about \$8mn over the same span of 2010. Sales rose 13 per cent to \$328mn.


Some 60 per cent of S&B operations relate to steel production, which has "performed very well" in the half-year, CEO Kriton Anavlavis said in a 5 August telephone interview with *Bloomberg News*. While the rising price of raw materials is a concern, the company expects to pass on the increases to its customers. Mr Anavlavis told Bloomberg's Tom Stoukas in Athens, "I believe we are in a good position to continue doing that even in an adverse environment."

 Upholding a verdict by a jury in January, on 30 August a US District Court judge in Delaware ruled that Michigan-based Severstal Dearborn Inc did not infringe on a patent held by rival steel maker ArcelorMittal SA. Luxembourg-based ArcelorMittal had sued Severstal; AK Steel Corp (Wharton, Ohio); and Wheeling-Nisshin Inc (Follansbee, West Virginia) over specific chemistries in an ArcelorMittal patent on rolled aluminium-coated boron-bearing carbon steel. Severstal and other steel makers have challenged ArcelorMittal's attempted patent of the chemistries, used mainly in the production of advanced high-strength steels for the auto industry.

As reported by Dustin Walsh in *Crain's Detroit Business*, this year the US Patent and Trademark Office ruled that many of ArcelorMittal's patents are invalid. Severstal recently began a \$1bn programme of improvements at its Dearborn plant, one of two US units of the Russian conglomerate Severstal OAO. High-strength steel for the auto industry is at the centre of the project, even as steel makers continue to battle over formulations for high-strength steel.

 As a group, low-cost steel makers in Russia, the world's fifth-largest producer, posted good results in the second quarter; in the case of Severstal, excellent results. The biggest Russian steel maker reported that its second-quarter net profit had more than tripled from the year-earlier period, rising to \$602mn from \$192mn. The company benefited from a vertically integrated structure, with its mining assets realising higher prices for coking coal and iron ore.

 The Canadian steel pipe maker Northwest Pipe Co reported a profit of \$5.4mn for the quarter ended 30 June, compared with a loss of \$1.4mn in the second quarter of 2010. The Vancouver-based company said it had net sales of \$143.8mn for the quarter, compared with net sales of \$96.1mn for the same period a year before. Second-quarter sales of the company's tubular products increased 73 per cent to \$69.3mn, driven by demand for energy pipe attributable to a pickup in natural gas and oil drilling operations.

 Jindal Steel and Power Ltd, the third-largest Indian steel producer, is building an integrated steel plant in the state of Orissa with projected output of 6 million metric tons per year; and another, of 3 million mtpy capacity, in Jharkhand. From Ranchi, the capital of Jharkhand, Sanjay Ojha reported in the *Times of India* (7 August) that both plants will employ the Hismelt (high intensity smelting) method for direct-smelting iron ore fines using non-coking coal.

The technology, developed by the British-Australian mining and resources group Rio Tinto, could hold significant economic and environmental benefits for Indian steel makers now dependent on high-quality imported coking coal. A source within Jindal told Mr Ojha that the company considers the Hismelt process to represent the future of iron making in India.

Other metals . . .

➤ The Canadian integrated mining company HudBay Minerals (Toronto) said it has agreed to sell its Fenix ferro-nickel operation in Guatemala to Russia's Solway Investment Group for US\$170mn. The transaction, expected to close before the New Year, gains for Solway a fallow (since 1980) brownfield nickel laterite mine and a processing plant. Capacity of the plant, now 25 million pounds per year, is to be raised to 50 million ppy.

As reported by *Mineweb* (8 August), Fenix is believed to have 41.4 million metric tons of mineral reserves. Output over the 30-year projected life of the operation is estimated at 1.3 billion pounds of nickel. Solway, which has its headquarters in Cyprus, also operates the Pobugsky ferro-nickel plant in Ukraine; plans to build a \$3bn nickel smelter in Indonesia; and has invested in polymetallic projects in Peru and Laos as well as in Russia.

The global economy

The Organisation for Economic Co-operation and Development sees weak growth ahead but no return to 'the great recession'

While economic growth in most of the developed world is set to remain limp through the end of 2011, "a downturn of the magnitude of 2008 and 2009 is not foreseen." This is the view expressed by the Organisation for Economic Cooperation in its latest outlook, published 8 September. The Paris-based OECD projected growth in the Group of 7 economies excluding Japan of less than one percent at annualised rates on average in the second half of this year.

In Japan, growth was less negative than foreseen in the immediate aftermath of the March earthquake and nuclear disaster, the OECD said. But activity in China slowed in the course of the first half and manufacturing production there weakened.

For the three largest euro zone countries – Germany, France, Italy – the growth forecast was for 1.4 per cent in the third quarter and negative 0.4 per cent in the last three months of the year. The international research group predicted an expansion in the US of 1.1 per cent in the third quarter and 0.4 per cent in the fourth.

Writing from London in the *International Herald Tribune*, Matthew Saltmarsh noted the OECD acknowledgement of "particularly high" uncertainty surrounding its projections this time. But the report also said that the unwinding of temporary factors that had dampened growth in Germany – like the shutdown of nuclear plants – and in France, such as the phasing-out of car scrapping subsidies, "may prompt a sharper than projected rebound in activity in the third quarter."

In addition, data on the federal budget had been better than expected the US by autumn, the OECD said. The OECD report contained a few pieces of advice:

➤ Official interest rates in most advanced economies should be kept on hold;

➤ If in coming months signs emerge of enduring economic weakness, rates should be lowered where there is scope. Where there is no scope, other measures could include further central bank intervention in securities markets, even if that brings diminishing returns;

➤ To stop contagion and restore confidence, the governance of the euro area must be further improved and the capitalisation of banks in the region strengthened.

The annual competitiveness survey from Davos shows improvement in many emerging markets

"Much of the developing world is still seeing relatively strong growth, despite some risk of overheating, while most advanced economies continue to experience sluggish recovery, persistent unemployment, and financial vulnerability, with no clear horizon for improvement."

Klaus Schwab, founder and chairman of the World Economic Forum, was summing up the findings in the forum's annual Global Competitiveness Report (GCR), which assesses countries based on 12 categories including innovation, infrastructure and the macroeconomic environment. Fittingly, perhaps, the Geneva-based group known widely and simply as "Davos" – for the Swiss resort where its A-list invitees gather every summer – found an exception in a markedly advanced economy. For the third consecutive year, Switzerland ranked first in the forum's survey.

The other results in the GCR, released 7 September, contained some surprises, but not many. Here, abstracted by the *International Herald Tribune's* Matthew Saltmarsh (See "OECD", above), are the main findings:

➤ The US, which topped the list in 2008, continued its decline, also for the third year in a row – falling one place to fifth. The weaker performance was attributed to economic vulnerabilities as well as "some aspects of the United States' institutional environment," notably low public trust in politicians;

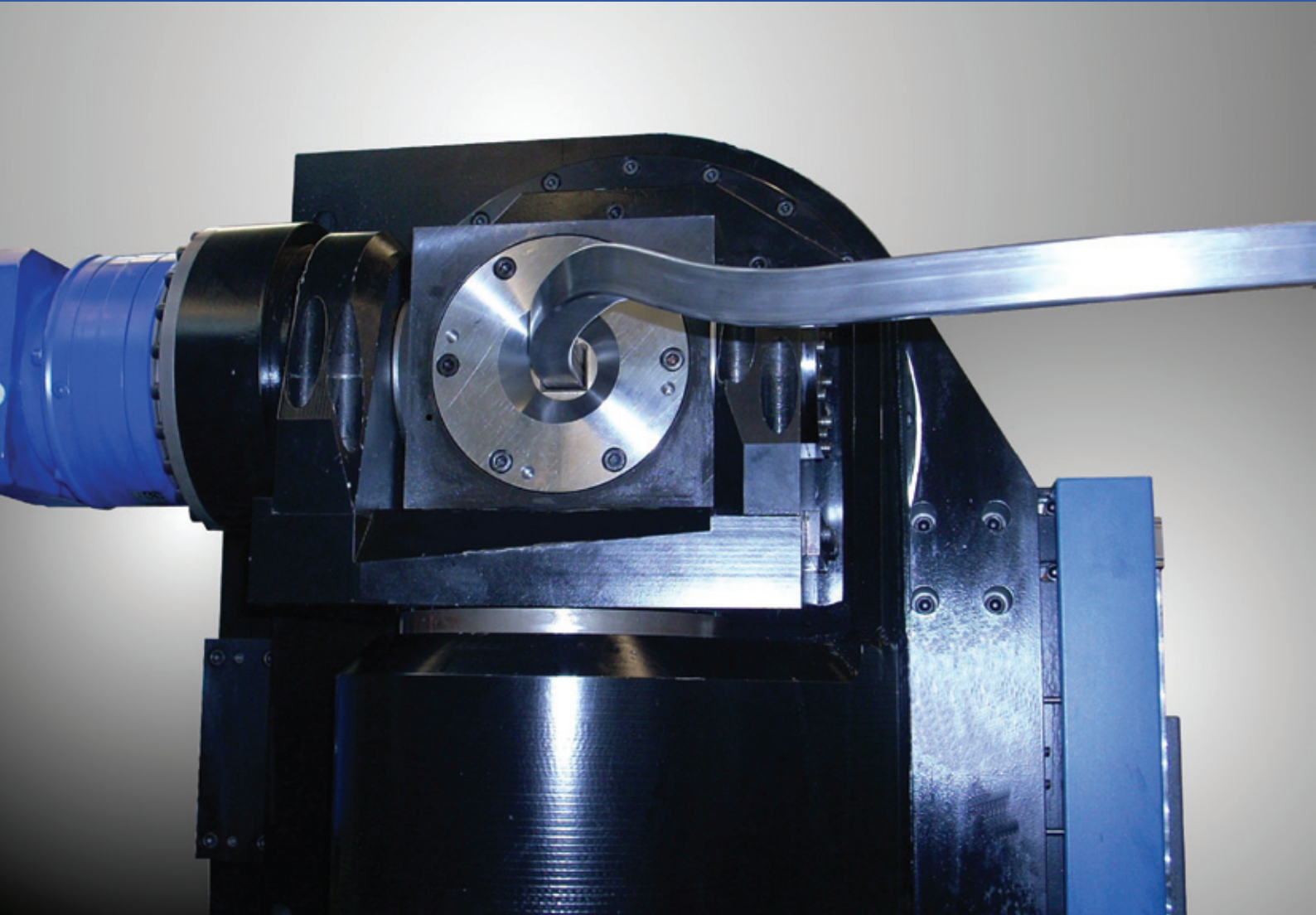
➤ While Singapore overtook Sweden to claim second position, Western European countries dominated the survey's top 10 economies. Behind Sweden, Finland ranked fourth and Germany sixth, followed by the Netherlands and Denmark. Britain was 10th, France 18th. (Heavily indebted Greece slid to 90th place among the 142 major and emerging economies surveyed);

➤ China, the highest-placed of the large developing economies, ranked 26th – up one place from a year earlier. Among the other major emerging economies, South Africa was 50th, Brazil 53rd, India 56th, and Russia 66th.

➤ Among major Asian economies, Japan ranked ninth and Hong Kong 11th. Qatar was the highest-ranked country in the Middle East, at 14th, followed by Saudi Arabia at 17th. The United Arab Emirates was in 27th place.

Dorothy Fabian, Features Editor (USA)

BENDING & TUBE MANIPULATION



In a discussion of the use and non-use of mandrels, an excellent online primer on tube bending lays out the pros and cons of both methods. The text is accompanied by simple, hand-drawn sketches of a tube “bent the easy way” and another tube “bent the hard way.” The illustrations seem indistinguishable – and that may be the point.

Manipulation of a length of tubing 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.”

Loading and unloading manipulator

APOLLO Srl has produced its first CNC Cartesian axis manipulator for loading tubes to be punched and unloading the punched tubes onto two pallets.

Designed to be placed next to the company's Twin punching line, it allows the quick change of size for the transfer of the tubes by means of a single magnetic gripper for all sizes, enabling the tubes to be precisely and rapidly positioned. The manipulator makes the punching line fully automatic, with safe positioning.

The company exhibited the machine, along with others from its range, at EMO in Hanover, in September.

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Two new models of bending machine

THE CRM140 and CRM130 from Clomea are bending machines of high and medium power with three driving shafts, moving central roller with hydraulic positioning, fixed lower shafts for CRM130 and at variable position on the size CRM140. 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 that works with the operative system with Windows XP Pro.

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, at rotations speeds, and at the versions fitted with the speed variator that enable an automatic calculation of 100 rotation speeds of the rollers.

The automatic calculation of the positioning speed makes the execution of the connection between a radius and the other easier, keeping the geometry for the coupling between different curves. The machine is programmable just with two values of the curve to be realised; while the programming of the 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, importing

AutoCAD files in DXF format into the machine. It is possible to set up a network connection to the PC for data exchange and file storage as well as the network connection for remote assistance directly with the Clomea technical department.

Particular attention has been reserved for the development and testing of the bending rolls and additional devices and

equipment. This is to respond to and satisfy the special projects and inquiries with more complex curves, like bending in 3D (on different planes), spirals, coils for cooling systems and heat exchangers.

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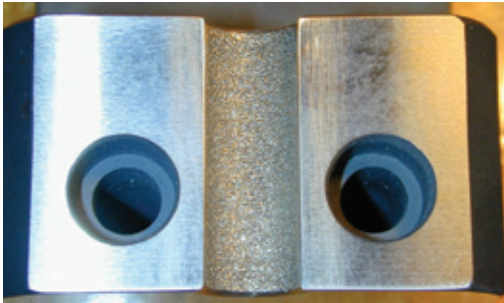


The CRM 130

Carbide coating to prevent slippage in bending operations

AN application of Carbinite coating can tighten machinery's grip on material during bending operations. When applied to the gripper arm in the holding area of mandrel or rotary draw systems the textured coating is said to prevent material from slipping or rolling during bending.

Clamp die with Carbinite coating



Carbinite is a carbide coating that is electrofused to a base metal to add texture. This texture increases the coefficient of friction between the clamping surface and the workpiece allowing for a strong, solid grip in the holding and clamping areas of the tube bending process.

Carbinite is applied by electrofusion, resulting in an incredibly strong bond since the carbide is fused into the base metal, not just applied onto it as in spray welds. Bulk heating is not required, so tool temper and heat treat are not affected. If needed, it can be applied and reapplied without stripping away existing layers.

If a metal tube or pipe requires a sequence of bends, an application



Bending die with Carbinite coating

in the gripper area of a seeker or plainer will help ensure that when the dye rotates around and the arm comes in contact with the material, slippage does not occur. This prevents the material from being knocked out of plain.

The coating is available in several grades, leaving various textures ranging from 40 to 320 emery grit. It can be applied to all steels, including stainless, as well as to certain aluminium alloys such as 6061 and 7075.

Carbinite Metal Coatings – USA

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New numerical control system for hydraulic bending machines

TRE C Srl is a manufacturer of bending machines for metal profiles. Planning and production, completely developed in-house, relates to a range of sixty models of bending machine with various powers and technological solutions, up to CNC models. Rollers and equipment are also an integral part of Tre C's production.

The company believes that the target of improving the performance of machinery and flexibility of application in various fields should not prejudice the simplicity of use. In response to these needs and thanks to customer feedback, Tre C developed the new numerical control CNW333, applicable to all of its hydraulic bending machines.

The CNW333, developed on the Windows XP operating system, can operate in single- and multi-run, and is applied to hydraulic machines both with two-speed rotation motor as standard and with speed regulator, which allows operation of four processing axes with automatic speed calculation.

In addition to the functions already present in the other versions, it provides a user-friendly programming system, programming of up to 36 radii and automatic

positioning calculation for new bending radii, facilitating processing performance and programming. Files can be managed directly in DXF format in order to obtain the geometry to be performed and to create network connections for interfacing with other PCs for data exchange.

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Tre C's CNW333 numerical control system, alongside one of the company's bending machines



Leaner, meaner and greener

ADDISONMCKEE's innovative 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 endforming 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 increased pressure/flow.

In the final analysis, the 'Hydra Green' solution, at the heart of the new HG70 range of end formers, will deliver 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 drastically 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 a remarkable 65 per cent less oil.

The technology's functionality will also allow for enhanced machine motion control by using the variable speed of the servo pump to control oil flow rate and machine speed.

And, most importantly, with the system naturally sitting in a low energy state when the machine is idle and the pump not generating pressure or flow, operator safety is also significantly enhanced.

It's fair to say that 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

a significant alternative to the existing world renowned DB 75 machine but with significant 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.

Not only that but, 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.

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

The TubePro WeldLock system locks the tube in the tubesheet, precisely sets the tube protrusion and centres the tube in the hole, while leaving small air gaps that allow weld gases to escape during the welding procedure. The TubePro WeldLock tooling's automatic centring process sets the weld gap between the tube and the tubesheet hole constant throughout 360° of arc at the tubesheet face, in around six seconds. This system eliminates the need for tack welding, or lightly rolling tubes in place to prevent movement prior to welding or tube-to-tubesheet expansion. This is said to enhance the quality and consistency of the finished weld, whether performed with automatic orbital welding equipment or by manual welding methods.

HydroPro Inc – USA
 Fax: +1 573 732 3318
 Email: engineering@hpro.com
 Website: www.hpro.com



*HydroPro's
 HPX 6000
 base system*

Custom-made bending machines

DYNOBEND, The Netherlands, manufactures a wide range of bending machines, specialising in custom-made machines to meet customers' requirements. The company's latest developments focus on the possibilities for automation in the bending process, for customers in industries such as heating/cooling, furniture and automotive.

Automation can range from automatic loading to complete functioning production cells. In these production cells it is possible to work with loading systems, weld seam detection units, transfer units, robots, cutting systems, drilling/punching and even end-forming machines. Camera systems are used for checking bend quality, and can assist in creating a work cell with higher output.

The company states that, providing bending is the main process, it is able to complete any working cell. When suitable machines are available, the company buys them and integrates them into the process. If the right machine cannot be found, the company develops one to fit the requirements.

The bending machine in the process is the master, meaning that the computer of the bending machine regulates all the other processes.

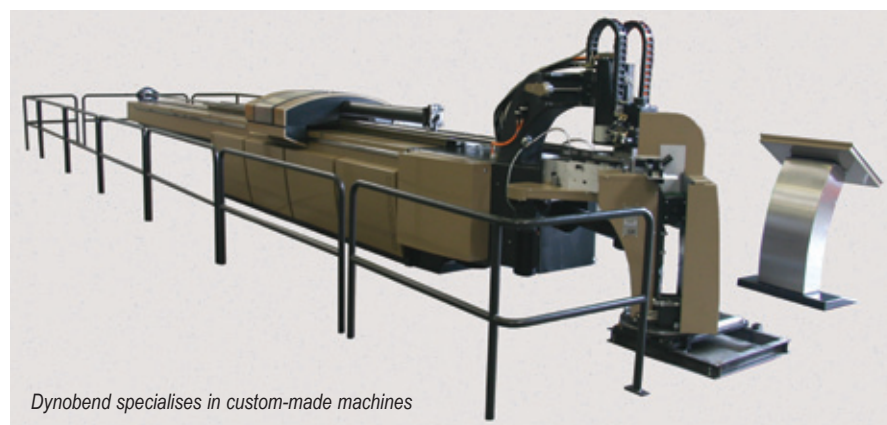
Dynobend BV – The Netherlands
 Fax: +31 53 850 7731
 Email: info@dynobend.com
 Website: www.dynobend.com



LMS HDCT
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info@lmsmachinery.com
www.slittinglinelms.com



Dynobend specialises in custom-made machines

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.

A high capacity hydraulic reservoir with auto power save feature reduces energy

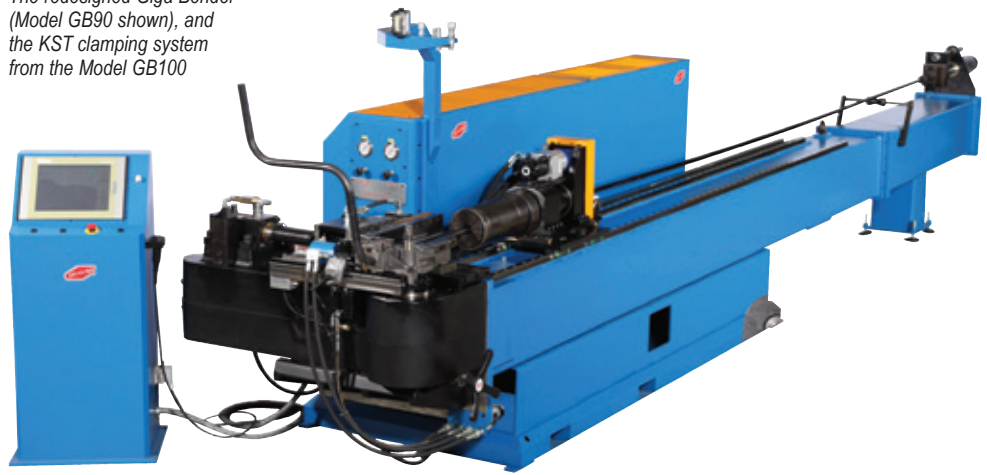
cost. The heavy certified GS500 spheroidal steel structure of the GB90/GB100SCNC provides a rigid platform, minimising work piece vibration throughout the bend cycle.

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
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 Website: www.ercolina-usa.com

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



Cold bending process for pipes and beams

DAVI profile bending machines are normally utilised to bend beams the hard way and big pipes. The pipe cold bending process in particular is becoming more and more common. In fact DAVI recently sold several machines for this purpose, including two very large units able to bend up to 20" SCH.40.

Pipes are utilised in many sectors. The most common is as fluid conveyor, mainly in oil and gas and other energetic fields. Lately pipes are increasingly used as structural element in civil engineering, due to their shape and their mechanical properties, which improves the structures resistance to torsion.

The DAVI profile bending machines are able to bend beams and pipes without deformation. However, this is possible only if the load is smoothly and properly distributed on the part to be bent, otherwise the profile will twist and deform, losing its mechanical strength. Even if a machine has suitable power, it does not mean that it can bend a beam and/or a pipe: it is also necessary to

apply the correct load and guide the profile properly while it is fed in the machine.

The machine's design is the key to success. The roll position, the dies and the accessories are key elements to preserve the mechanical characteristics of the product. Davi invested in the design of these machines for many years, building an unsurpassed experience held by the skilled technical department, utilising state-of-the-art tools, such as 3D CAD and FEM analysis to achieve the optimum solution to any customer's requirement. These results, parts bent without deformation, is not obtainable by simply increasing the size of the cylinders and of the machines, a solution adopted by many other machine manufacturers, who do not invest in developing new concepts.

Davi, always a step ahead in the sheet metal forming business, now is proposing a wide range of machines dedicated to profile bending, with unique features. This

range guarantees bending all pipes with dimension between 1" and 32". The largest one can be bent only on the very large and heavy machine, with 20½" shafts.

Davi – Italy
 Email: sbruni@davi.com
 Website: www.davi.com

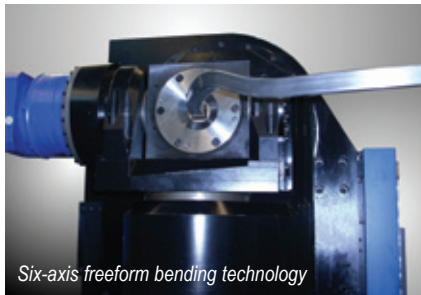


Freeform bending

WITH the Nissin Freeformbender produced by Neu Machinery it is possible to bend different radii tubes and profiles in three dimensions without tool change. This is due to a patented tooling in combination with a CNC control system. Radii can follow each other without straight length in between, and can be in different planes. The machine can produce bent tubes with homogeneous wall thickness.

Using a mandrel, thin-walled pipes can be bent on the Nissin Freeformbender, up to a diameter of 90mm. The smallest radius that can be achieved is close to 2DR. The system can bend not only round pipes, but also flat oval tubes and asymmetric profiles.

The Easy Programming software for Windows has functions that include preview, mirroring and rotation, and in combination with the optional measuring arm makes the handling of the machine easy. Bent parts can be compared and corrected automatically, and 3D CAD data can be used directly to prepare a bending program for the machine. The latest Freeformbenders are available with three,



Six-axis freeform bending technology

five or six simultaneous axes, combined with automatic loading and unloading devices. The development of a seventh axis will be completed in the near future.

The product range of Neu Machinery includes machines for chipless endforming of tubes, sawing and cutting machines for nearly all materials, and customised automation technology for tube manipulation.

J Neu GmbH – Germany
 Fax: +49 6359 87248 99
 Email: info@neu-gmbh.de
 Website: www.neu-gmbh.de

Tubular component specialist

BUIGSTAAL Tube Bending is an ISO 9001 certified specialist in tube bending, and for the assembly of tubular components in ferrous and non-ferrous materials with a diameter from 3 to 168.3mm.

Established for more than 60 years, the company supplies markets that include the automotive industry, industrial compressor manufacturers, shipbuilding and the offshore, nuclear and energy industry.

Buigstaal can offer additional processes, such as reducing/expanding a tube's diameter; partial flattening of a tube; tube end-forming (flares, bedding); drilling or milling holes; applying threads and bevel ends; and welding.

Buigstaal Tube Bending – Netherlands
 Fax: +31 725 401009
 Email: info@buigstaal.nl
 Website: www.buigstaal.nl

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 Zip code 200030
 Tel: 86-21-64079955 64079966 64079977 Fax: 86-21-64479922
 E-mail: yuanan@mail.online.sh.cn

SDSF
 Shandong Province Sifang Technical Development Co., Ltd.
 Shandong Sifang Pipe Producing Equipment Manufacture Co., Ltd.

The technical level and service life of high chromium alloy roll for pipe and cold roll forming steel has reached the advanced level in the world. High chromium alloy roll is comparable to the rolls made of tool steels as D2, H13, X155CrVMo121, X38CrMoV51, SKD11 and SKD61. High chromium alloy roll for pipe and cold roll forming steel has been awarded "Second Prize of Scientific and Technological Progress" in Shandong Province, China and "First Prize of Technical Innovation" in Jinan, China. The rolls have been exported to steel pipe enterprises of Korea, Israel, Kazakhstan, India, Byelorussia, Oman and South Africa.

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 Web: www.cn-sdsf.com Email: sdsf@vip.163.com
 Tel: 86-531-88876609 88876629 Fax: 86-531-88876693 Post Code: 250101

Economically from tube to isometry and vice versa

OBJECT tubing is a frequent application in the shipbuilding industry in general and here especially in the 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 e-mail) 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



transfluid unites its software to control effectively and economically

measure the desired geometry directly at the object with the drawing tablet, draw and send it via e-mail 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 3-D 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 e-mail 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.

transfluid Maschinenbau GmbH – Germany
Email: info@transfluid.de
Website: www.transfluid.de

Curvatube ETM76

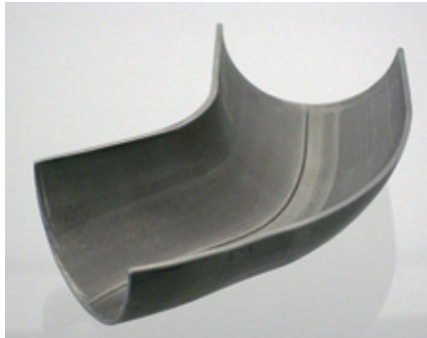


ETM 76 tube bender

THE new Memoli ETM76 is a pipe bending machine on which you can mount various moulds specific for pipes with different diameters. The machine works by means of a motorised central hub. The rotary movement of the hub is enabled by two trapezoid drive belts driven by a self-braking

electric motor. Some of its advantages are: sturdy, precise and fast; completely run and aided by an incorporated microprocessor.

Memoli – Italy
Email: memoli@tin.it
Website: www.memoli.it



Press bending with special transfluid technology



For strong compounds, a newly developed transfluid bending process avoids reduction of wall thickness



Bent with the transfluid solution, a tube with diameter of 50 x 2mm and a bend angle of over 90°

Efficient process for smallest bending radii

BENDING radii can rarely be assembled smaller than $1 \times D$ with higher tube diameters. transfluid has designed an efficient process with a sophisticated bending radius of $0.8 \times D$ for high-grade steel tubes.

Efficiency and high-quality results are factors in the tube processing sector that are crucial for success. Regarding this matter, the bending standard is far from it: for tube clamping in conventional single bend bending processes clamping lengths are required that have to be cut after bending. A transfluid customer was looking for a solution without cutting after bending, to avoid this unnecessary loss of material. The challenge was the development of a tube bending machine for single high-grade steel bends with $70 \times 2\text{mm}$. Furthermore, a centre bending radius of $0.8 \times D$, the avoidance of a bend exit ovalisation and a reduction of the wall thickness of less than 3% were desired.

"With conventional processes such requirements cannot be realised, especially with those high-grade steel tubes," commented transfluid CEO Gerd Nöker. "Our solution is a procedure that does not point the bends after the rotary draw bending process but presses them."

With its bending machine the German specialist guarantees a reduction of the wall thickness of 0%. This at the same time

offers the advantage of additional material saving. An ovalisation of the bend exit can also be avoided with the transfluid bending process. "A cutting of overlength of the components can be completely avoided. They can be locked in further processes immediately after production. If required, the next steps for further tube processing can be assembled in the same machine," emphasised Mr Nöker.

Tool-related bending angles between 10° and 180° are possible. If appropriate cutting lengths are locked in the process, a cycle time of 3.5 seconds is possible, even with tube sizes as in the example mentioned above.

"What we can do best is realising an idea beyond standards. That is why we have made possible not only a solution with an impressive bending radius but also designed an extraordinarily efficient complete process. Considering the mere machine investment it is clearly below the investment for a CNC tube bending machine with multiple tooling that is usually deployed for such sophisticated tube processing," Mr Nöker concluded.

transfluid Maschinenbau GmbH – Germany
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Tri-dimensional 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.

Tube Tech Machinery Srl – Italy
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 Email: info@tubetechmachinery.com
 Website: www.tubetechmachinery.com

Optimisation of material properties

FABRICOM, Belgium, a manufacturer of induction bends, has the advanced technological and machine operating capabilities required to produce pipe spools with bends in multiple planes from a single length of straight pipe. This advanced bending technique is the result of experience gained throughout more than 30 years of manufacturing and development work, and is of particular value in onshore and offshore oil and gas pipeline systems as well as specific applications in the chemical, petrochemical and energy sectors.

Some of the key benefits of producing weldless pipe spools from straight pipes are that it reduces the amount of welding required, and as such the associated costs and risks; and by reducing the number of welds in the system, increases plant

integrity and safety while reducing the required amount of in-service inspection.

Fabricom operates six induction bending machines with diameters of up to 64", all of which offer a high degree of flexibility in terms of bend radius, bend angle and bend plane, and being computer controlled, are able to achieve close tolerances. The company is able to work with all types of material, including seamless or welded pipes in carbon steel and stainless steel, as well as the most sophisticated alloy steels.

After bending, especially of heavy wall materials or special alloy steels, it may be necessary to restore the mechanical properties using heat treatment. Such treatments include stress relieving heat treatment, normalising heat treatment,

normalising and tempering heat treatment, quenching heat treatment, and quenching and tempering heat treatment.

In order to be able to perform these types of heat treatment, Fabricom has five furnaces, all of which can be heated to 1,200°C. In order to meet the strict requirements set by the oil and gas industry with regards to corrosion resistance and superior material hardness, Fabricom also has a quench tank at its facilities in Belgium. Following heat treatment, bends can be cooled down immediately in order to obtain the right resistance and hardness.

Fabricom – Belgium

Fax: +32 2 251 17 90

Email: bending.be@fabricom-gdfsuez.com

Website: www.fabricom-gdfsuez.com

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. 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 used 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



Free-standing bending machines

GREGSON Induction Benders Ltd, UK, has 30 years' experience in the design and manufacture of induction bending machines. In the late 1970s and early 80s there was a high demand for quality large bore pipe bending for the oil and gas industries. During this period the company developed machines to meet these demands.

Acknowledging the weakness and shortcomings of machines that use the workshop floor as an integral part of the foundation support, Geoff Gregson formed a team of professional engineers

to develop a range of advanced, free-standing machines where the bending moment is contained within the machine chassis.

The machines were initially developed for internal use only, but the company quickly started to receive enquiries to supply machines.

Modern Gregson bending machines are used throughout the world in all major pipe-bending industries. The latest installation is a 36" machine for a bending company based in Houston, Texas. This machine has been adapted

to bend structural steel as well as pipe, giving greater flexibility. Features of Gregson machines include the capability to perform compound bending, a unique induction coil design, top or end loading, infinite bend radius, user-friendly and easy to operate, composite arrangements, low-cost tooling, and flexible software packages.

Gregson Induction Benders Ltd – UK

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Website: www.gregsoninductionbenders.com

SOFTWARE & CONTROL SYSTEMS



The expression “human-machine interface” was once spoken with awe, as the direction and management of a production run of tube and pipe were being moved from the plant floor to a room with windows, high above “the action.” Now, that interface is taken so much for granted as to have fallen out of the working vocabulary – the universal sign of a rousing success.

But the exchange of information between human and machine has the same purpose as when it was a thing of wonder: to facilitate the task of the operator and ensure the safety of the system in all circumstances. Now, as then, it is judged by the ease and speed with which the operator is enabled to detect and understand an event and deliver an efficient response.

The companies reviewed here are dedicated to the use of electronics to enhance and customise that quiet but very busy dialogue.

RAMP – Tube shop control and workflow management



IN the field of tube processing the use of CNC-controlled machines has become wide-spread. Machines for cutting, flame-cutting, bevelling, bending and flange-welding can be used more efficiently with CNC-systems. But software can be used to control more than a single machine. In fact, to fully utilise the full potential of modern CNC-controlled machines, an integrated workshop control system is essential.

Inefficient flow of material or workload planning, which results in either bottlenecks in fabrication or idle times at the machines, cannot be solved with the purchase of new machines alone. The machines need to be connected, the flow of material needs to be balanced so that each machine and work place has both the materials and the required data for the next work order at all times. The machine should never have to stand idle while operators wait for new pipes to be delivered or calculate and enter the CNC data manually. Nor should the machines receive more work orders than they can handle.

To coordinate all the tasks required for efficient production, a workshop control system, like 3R software solutions RAMP (Resource Activity Material Planning) can be used.

Tasks that can be handled with RAMP include, but are not limited to:

- **Balancing/nesting:** the software automatically creates work packages for daily production, based on schedule, material availability, machine capacities, etc. Machines and work stations receive neither more work orders than they can handle, nor less, making optimal use of the daily capacity.
- **Cutting and tooling optimisation:** RAMP automatically calculates the cutting/flame-cutting order that will result in the most efficient use of materials, and the least amount of scrap. In addition the work packages created by RAMP take the tooling on bending machines into consideration, so that tooling changes can be minimised.
- **Material handling/transportation:** ideally machines should never have to wait for the next tube to arrive, but should work continuously without interruption. In a RAMP-controlled, fully automated pipe shop, the operator of the band-saw or flame-cutting machine can see the upcoming orders, and can request the required material from the pipe rack ahead of time. A fully automated transport system retrieves the requested

tubes and automatically delivers them to the machine, so the operator never has to interrupt his work.

- **Status tracking and change management:** with computers at every workplace, it becomes easy not only to give each worker up-to-date work orders in a paperless environment, but it also becomes possible to track the fabrication status for each spool or component. If the engineer had to make changes after releasing the drawing for fabrication, it is possible to update the work orders immediately. This reduces the risk that a spool has already been fabricated by the time the changed information arrives in the workshop.

Getting CNC-controlled machines to increase workshop efficiency is a good first start. But if there are underlying problems, it requires intelligent coordination and integration of your machines to solve them. Therefore you should never see your machines as independent from each other, but as interdependent components of a greater system. A system that 3R software solutions' RAMP can control for you.

3R software solutions – Germany
Website: www.3r-solutions.com

Correction of bending machines

WITH the launch of the new software version 4.7, Aicon's optical tube measuring system TubelInspect will be extended by a practical function: now the operator has the possibility 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, TubelInspect determines the tube geometry within seconds, and thus proves accuracy to gauge. Beyond that, 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 TubelInspect allows the connection to up to 100 benders.

However, sometimes the correction values suggested by TubelInspect cannot be transferred one-to-one, for example if they led to collisions at the bending machine or if corrections are suggested at parts which cannot be affected because of solid bending tools. Now the new simulation module comes into play: When TubelInspect evaluates a measured tube as a bad part and suggests correction values, the operator can adapt them at his own discretion. After all, only he knows the actual circumstances and

characteristics of his bending machine. By doing so, the operator does not take any risk because from now on TubelInspect simulates the results of the changes and shows with a virtual gauge check if this bending process could actually produce a good part. Just when the right settings are found, another real bending test will take place. Therefore, in the future, fewer bending tests will be necessary, which makes the setup process even leaner.

Aicon 3D Systems GmbH – Germany
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Website: www.aicon3d.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. 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.

We are clearly not referring here to evident costs, which have obviously been eliminated; we refer to the numerous little wastages that we do not eliminate simply because we are unaware of their existence. Recovering efficiency can no longer involve a single major point of improvement, because if we had already done this long ago we 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. The company's 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.

Here is an example. We 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 3 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% 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's MES solutions – installed in numerous important companies and integrated with standard ERP – have enabled many clients to use data collected automatically from the field and convert it into an invaluable and strategic asset for the company, increasing their productivity and marginality to double figures, often well beyond their expectations. The main organisational and economic advantages are:

- automatic recording of times and numbers of OK parts and rejects, with accurate costing at each stage
- in-line inventorying, with stock reduction and the elimination of physical inventory times and costs
- reutilisation for other tasks of human resources previously used for manual production processes

- total elimination of transcription errors and omissions as field production reports no longer need to be compiled by hand
- real-time updating of work progress and stocks, giving optimised scheduling and reduced delays in delivery
- complete traceability of each container, right back to casting of the raw material in the event of non-conformities
- recovery of financial resources to minimise stocks of unfinished products (WIP)
- minimisation of tooling times and computerised tool management (moulds, matrices, inserts, plugs, spindles and so on)
- increased awareness of global company indicators by heads of department
- shorter stoppages thanks to an accurate identification of causes
- accurate and prompt recording of rejects by cause and field checks to enhance product quality
- computerised inline checks at piloted frequencies per article/machine to prevent rejects and out-of-process errors.

If designed and implemented as a support for organisational and cultural change in the way of running a business, MES systems can become a powerful means for recovering margins as they discover hidden costs, which are difficult to identify without real-time integrated information and become a strategic tool for the continuous improvement of processes and our way of operating. There are, however, two fundamental requirements before this can take place. First, both management and organisation must believe firmly that having integrated field and operating information that is exact and functional to the company's organisational model is a real competitive advantage and a strategic objective to pursue with the necessary human and technological resources. Second, the choice of a competent and reliable partner with specific skills in the sector that can provide its experience in organisation, technological development and, more importantly, methodology in applying new technology in the production bays.

Thanks to its lengthy experience in the business and proven method of project development and management, STAIN can help businesses improve the efficiency of their production and logistic processes, via tailored advice and a comprehensive standard suite with add-on modules, all at a competitive price and extremely easy to use.

STAIN – Italy
Website: www.stain.it

Production optimisation and life cycle management for pipeline construction

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 ship building and offshore industry or plant engineering), Tracto-Technik (TT) always has the right solution 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

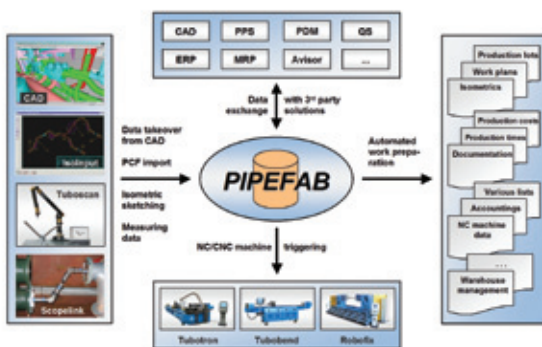
behind the PIPEFAB development was to reproduce demands from the practice in efficient systems and link them to universal solutions.

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. Additionally, 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. The isometric pipe drawings are stored in a central database; 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 already 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 data

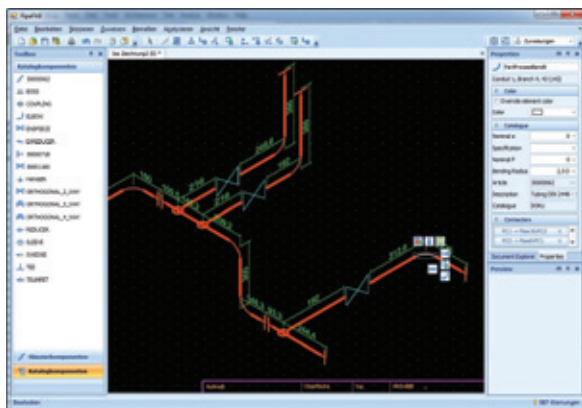
relevant for the production of an order are available at the single work places in due time. The work place sequence defined for each production unit is shown in integrated routes. Additionally, the determined work times and hourly wage rates are given for every single work place to enable the direct calculation of the factory costs within the production process.

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



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

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



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Acoustic microscope finds “invisible” leaks

by Tom Adams, consultant, Sonoscan, Inc.

Tested under pressure, a bronze alloy pipe that was part of a pump assembly appeared to be leaking at numerous locations, but close visual inspection found no cracks. An acoustic microscope revealed not only the cracks but also their unusual arrangement.

The sample of pipe described here measured 2.5 inches long, 1.25 inch in OD and 1.00 in in ID. Since it was designed to carry potable water, the bronze alloy from which it was fabricated had been modified to remove lead (Pb) and replace it with non-toxic bismuth (Bi), a requirement of both state and federal regulators in the US. This sample was one of a small number in one of the earliest bismuth alloy lots to exhibit an unusual leakage pattern.

As part of routine testing, the pipe was filled with water under pressure and observed for leaks. Water soon appeared on the outer surface of the pipe, but it could not be traced to a single leakage point. Instead, it appeared that water was leaking through the wall of the pipe at numerous locations, and the pipe appeared to be sweating. Pipes that leak during testing typically leak along a single definable crack.

The next step was to stop pressure testing and examine the outer surface of the pipe for leakage points. None were found, even at very high optical magnification, although it is possible that the texture of the machined surface might help to conceal very fine cracks. The presumed cracks didn't seem to be good subjects for X-ray, so C-SAM® acoustic micro imaging was used because of its reputation for being able to identify and image exceedingly thin internal gaps, cracks, delaminations and the like. For acoustic imaging, the sample was sent to Sonoscan's (www.sonoscan.com) headquarters laboratory in Elk Grove Village, Illinois, USA.

A C-SAM system uses a highly focused ultrasonic transducer that raster-scans the surface of the sample at speeds up to 40 inches per second. Each second, it sends thousands of pulses of very high frequency ultrasound into the sample, and receives the return echoes a few millionths of a second later.

The ultrasonic echoes come only from material interfaces. If the sample is homogeneous (as the wall of the pipe sample should be), there will be no echoes from the interior. If the sample contains two or more bonded materials, echoes will be sent back from the material interfaces, such as a metal to ceramic interface. The highest amplitude echoes are reflected from an interface between a solid and a non-solid; the non-solid is nearly always the air inside a gap of some type. A homogeneous solid material such as the pipe sample would be expected to have no internally visible features

except cracks which, if present, will appear bright white (indicating the highest possible amplitude) in the acoustic image.

Suppose that a metal to ceramic interface has over part of its area a crack (or disbond, or delamination) that is 1mm thick. More than 99.99% of the ultrasonic pulse will be reflected when it strikes the solid-to-air interface. If the crack is less than 1 μ thick, it will still reflect the same 99.99%+ of the pulse. What matters is the interface between the solid material (metal, in this case) and the air in the crack. The thickness of the crack doesn't matter because essentially no ultrasound crosses the crack to be reflected from the interface at the bottom of the crack.

Most samples for acoustic imaging have at least one flat surface, and the internal features, whether good bonds or gaps, are also often flat. The transducer scans in a single x-y plane and creates images of planar defects.

This sample, however, was cylindrical. Cylindrical samples are not unusual, and Sonoscan has developed a fixture that permits the transducer to scan along a single longitudinal line, pulsing and receiving return echoes, and then pausing at the end of the line. During the pause, the sample is rotated a fraction of a degree. The transducer then scans back along the length of the sample, which is then rotated again. Although reasonably fast, rotational imaging is too slow for production environments and is best suited to laboratory analysis. The transducer typically scans slightly more than the entire circumference of the cylindrical sample – 365°, for example – to give evidence in the acoustic image that the entire sample has been examined.

The acoustic image of a small portion of the sample surface and several cracks is shown in Figure 1. The sample was imaged using an ultrasonic transducer with a frequency of 50MHz, selected to give sufficient penetration and good spatial resolution. The ultrasonic echoes that were used to make this image were “gated” on a very shallow depth immediately below the sample surface. This means that echoes only from this narrowly defined depth were used to

Figure 1: Acoustic image, focused and gated just below the pipe surface, reveals cracks that are invisible optically

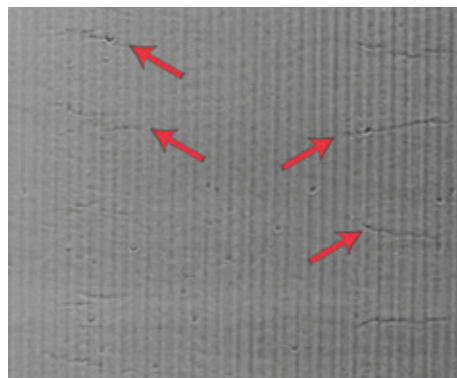
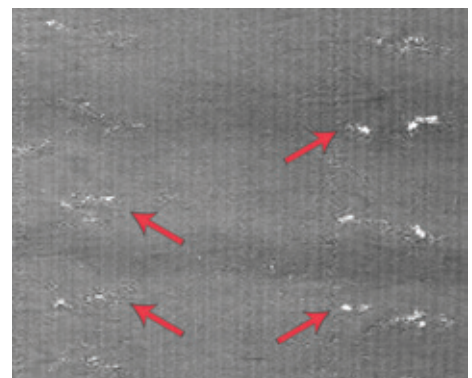


Figure 2: Deeper acoustic image shows the cracks within the pipe wall



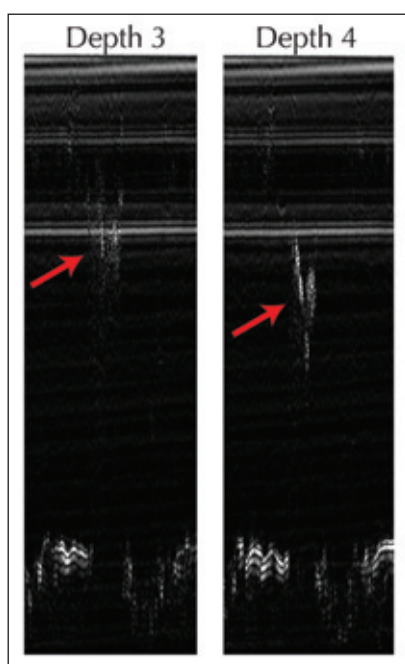
make the image, while echoes from other depths were ignored. In this image, this technique was selected in order to permit reflected ultrasound to shadow the top of each crack and make it appear dark. The echoes to be used in an image can be selected by "gating" the echoes according to their arrival times at the transducer. Gating is important because it permits the system operator to image only a desired depth rather than the whole thickness of the sample, which might result in overlapping features.

The vertical lines in Figure 1 are machining marks running around the circumference of the pipe. The more or less horizontal features, four of which are marked by arrows, are the tops of the cracks through which water escaped from the interior of pipe during testing. The cracks are aligned with the long axis of the pipe. They are all of similar length, and are rather evenly spaced in more or less straight rows running the length of the pipe. The reason for this somewhat orderly organisation of the cracks at the surface is unknown, but it seems to explain why the pressurised pipe was observed to be leaking water over its entire surface.

The pipe was then imaged acoustically below the surface using a fairly narrow gate. The same pattern of cracks is evident (Figure 2). In any single crack, some portions are bright white (meaning that there is a gap that has an unobstructed path by which to send high-amplitude echoes to the transducer), and other portions are less clear. The cracks seem to be irregular rather than planar, and analysts suspected that they were somewhat slanted rather than vertical. This acoustic image also suggests that there are no other internal anomalies in the pipe. Note that the region between the two vertical rows of cracks in Figure 2 is featureless, just as one would expect from a homogeneous material without anomalies.

It would be possible to image the cracks by making planar acoustic images at increasing depths encompassing the entire wall thickness, but researchers chose instead to use a different form of C-SAM imaging in order to view the actual vertical structure of the cracks. One reason for selecting a different method: truly vertical cracks

Figure 3: Progressive B-Scan images (non-destructive cross sections) were used to follow the progress of individual cracks. The cracks were typically slanted, like this crack



can be very difficult to image acoustically because the internal feature from which ultrasound should be reflected has more or less the aspect of a knife blade. In some ceramic samples such as chip capacitors, vertical cracks are both fairly frequent and significant in their impact on reliability. They can be imaged, though, by a method that causes the vertical crack to cast a dark acoustic shadow.

The alternate method selected here, known as B-scan imaging, is also called acoustic cross sectioning, and involves pulsing ultrasound into the sample along

a straight line marking a vertical plane. The resulting acoustic image will look much like an optical image made after physical cross sectioning. If, for example, a small sample thought to contain defects is imaged by the B-scan method and then physically sectioned through the same vertical plane, the two images will show the same features in the same locations.

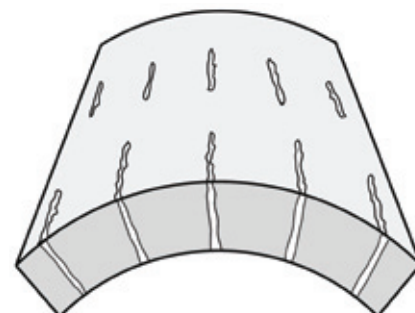


Figure 4: End view and surface view of cracks. The thickness of the cracks is greatly enhanced in this diagram

In a flat sample, a B-scan image is made by selecting a specific vertical plane defined by a straight line along the surface and making one transducer scan along that line. The transducer is then gated at a slightly deeper point and scanned again. Multiple scans produce the acoustic echoes needed to make the cross-sectional B-scan image.

In the case of the bismuth alloy pipe, the surface is not flat, but the rotational fixturing makes it possible to select a plane for data collection. Researchers also considered an additional factor: the cracks are unlikely to be truly vertical, and may therefore deviate from the selected vertical plane as the gated depth increases. To compensate for this deviation, it was decided to rotate the sample very slightly after each line was scanned.

The result of this innovative imaging method is shown in Figure 3, where arrows indicate a single crack imaged at two depths arbitrarily designated #3 and #4. The outer diameter of the pipe is at the top. The irregular white features near the bottom are the inside diameter. The horizontal lines above the cracks are artifacts of imaging, and not features in the pipe.

Figure 4 shows the arrangement of the cracks in diagrammatic end view. One row of cracks is shown in section, while two rows are shown at the surface. The widths of the cracks are greatly exaggerated in this diagram to make them visible.

Acoustic imaging is often used to image tubes and pipes, generally to look for cracks or other anomalies within the wall, or to image the inside diameter for anomalies. In this instance acoustic imaging revealed the cracks that could not be seen optically, and used the B-scan mode to track their vertical extent. The actual thickness of these cracks might be a small fraction of a micron, but they were still visible acoustically.

Acoustic micro imaging systems can handle cylindrical, spherical and even conical samples. Two factors made the analysis of this unusual sample possible: the high sensitivity of very high frequency ultrasound to gaps 1 μ or less in thickness, and the data-collecting flexibility gained from multiple acoustic imaging modes.

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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。

Rosendahl钛管厂

钢管市场接缝焊接钛管生产趋势强劲。钛管因其高耐腐蚀性、重量轻以及强度大而被用于航空发动机或框架、化工和核电厂。每个核电厂需要300吨钛管。因此，目前钛管生产能力不足。钛的原材料价格比同等钢材价格高10到20倍。目前的现状是不锈钢管轧机制造钛管时不能将最高的钢管质量水平、生产可靠性和足够快的生产速度以及最低的报废率结合起来。

为此，Rosendahl开发了新的钛管轧机系列TH-G Ti。这些轧机设计用来生产钢管，用于高安全性相关问题，比如用于发电的换热器产品。主要工艺步骤是根据钛合金性能和最终用户要求进行全部重新设计的：

- 钢管成形和标定来处理高回弹和确保光滑的表面
- 焊接和热处理过程可避免可能导

致材料脆化和腐蚀的大气气体限制性吸收。

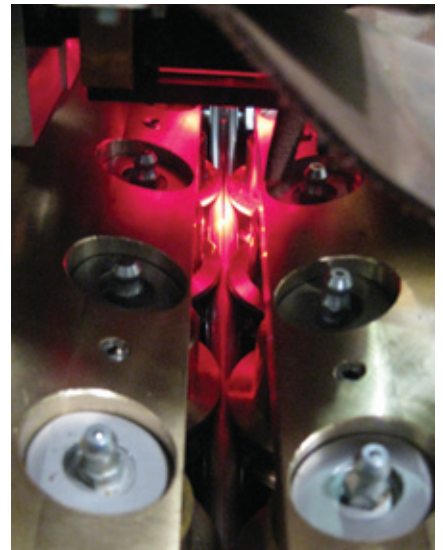
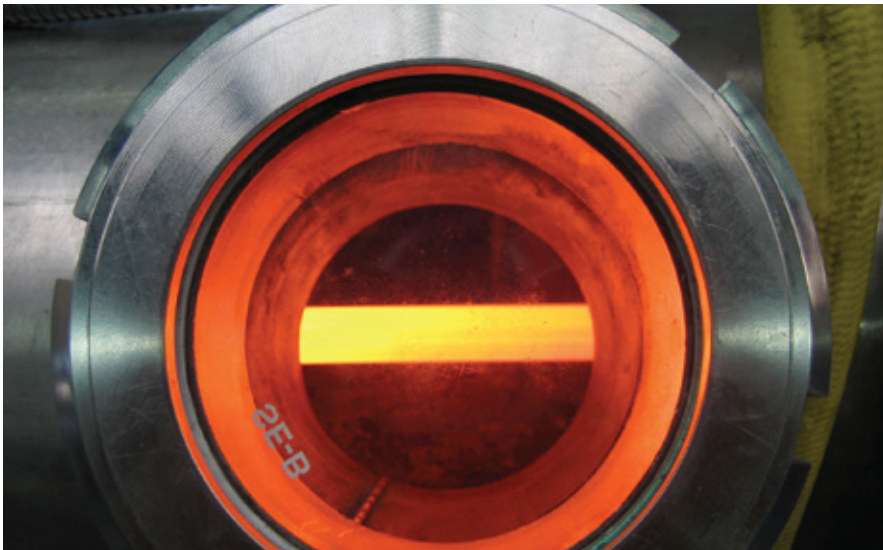
TH-G Ti系列尺寸范围达到120毫米直径，并能覆盖0.2至3毫米壁厚。

TH-G Ti系列独特的特点包括：用于钛管生产的Rosendahl混合成型结合了可移动和不可移动工具的优势；通过高端TIG等离子或激光焊接技术的使用引进高性能水平钛管生产；

全集成质量控制系统，包括焊缝连续热图分析。

零缺陷焊接接走式生产使报废率最小化；Rosendahl钛管轧机配有在线退火系统，能处理激光焊接系统能达到的速度范围。

Rosendahl Maschinen GmbH – 奥地利
电子邮件: office@rosendahlustria.com
网址: www.rosendahlustria.com



不同长度管道的双挤压: Everbell 160 DE

SICA的Everbell 160系列扩口机最近增加了Everbell 160 DE版，设计用于同时加工不同长度的管道。该机器适合生产电缆管以及小直径室外污水处理系统用的PVC-U管道双挤出生产线。

Everbell 160 DE扩口机能加工最小32毫米、最大160毫米直径以及长度在150毫米和3米（加上套接口）的管道。如果需要，可以提供适合6米长管道的机器。该机器的扩口系统与另一个Everbell 160型机器一样，有接触炉以及空气吹扫成型站。套接口可以是胶合溶剂或O形圈。小直径管道双挤压通常与PVC-U生产线相关；但是当装配适当的扩口工具

头时，Everbell 160 DE能够加工PP和HDPE管子。

DE系统使用带电力驱动辊的双输送机并且配有集束卷绕装置，对齐但是管道进给和控制系统完全独立操作。它隔离切管、挡住他们，并将他们安置在对应的扩口机头内。

一个机械装置将定位好的管道拿起，并且由于专门的缓冲站，与机器的循环时间自动同步。即使是在两条生产线挤出速度不一样的情况下或当切管长度顺序不同时也可以接收和组织管子。

该机器的电子控制单元采用先进的软件逻辑根据切管的不同长度

控制从两条生产线进来的管子的分配，以优化生产和套接管道的数量。

和Everbell 160型号一样，除了用于在相同的双挤出生产线内多种机器安装外，Everbell 160 DE扩口机能与自动环形件装置（Masterfit型）以及捆扎和堆码管子的下道包装机（合包型）结合。

有或没有其他机器装置操作，Everbell 160 DE机在搬运和加工各种长度和不同速度挤压的管子时将保证最大的灵活性和自动化。

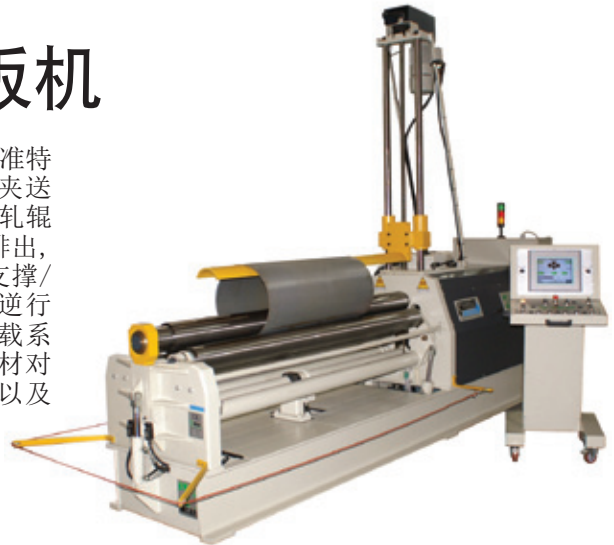
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高科技自动循环液压4辊卷板机

CARELL Corporation公司推出新的HTH 20-150四辊、双初始夹弯板机，设计用于通过使用自动工作循环提高圆柱形和半径段部件生产的制造效率。这一高科技以高效经济的方式快速制造弧形和圆柱形部件，从一开始到结束只需按一下按钮。机器设计用于高速连续生产。使用耐用的机械和电子限制装置轻松配置。添加一个自动装载和喷出器系统，Hi Tech装置成为一个强大的生产工具，用于增加产出同时将搬运时间减少到绝对最小值。

HTH系列引以为豪的主要的标准特征包括自动弯曲循环、顶辊和夹送辊驱动、硬化和抛光轧辊，高速轧辊速度、周期结束后的自动尾料排出，紧凑的节省空间的设计、顶部支撑/导向板和板材进料固定臂以及逆行停止。可选组件包括：板材装载系统、圆柱体喷出系统、自动板材对准系统、板材托盘接送系统、以及用于专用生产的专用机械配置。

Carell Corporation – 美国
网址: www.carellcorp.com



微型隧道顶管，用于合流污水收集池

在柏林非开挖技术展会上获得ISTT (国际非开挖技术协会)的国际非开挖2010最佳工程奖后，在法国VST (Ville Sans Tranchée)非开挖技术交易会上，Hobas已被评为管道供应2010最佳施工现场。

FSTT (法国非开挖技术协会)授予的该项目是由微型隧道为3,300立方米合流污水收集池安装的1,340米外径为1940毫米的管道组成的，是在法国的雷恩市完成的。

该城市在2008年采纳了一个长期计划来改善其污水系统管线和水力性质。目的是为了减少50%暴雨期间溢流到河里的量。合流污水系统储存总量将增加到共计8000立方，其中3300立方已在市区执行，沿维莱纳河，在公共绿色交通车道下面。

对于后者，城市的技术服务部门设计了一个1340米长的收集池，带有一个泵站来控制流向废水处理厂。平均安装深度为7米甚至部分达到表面的高地下水位要求非开挖安装——微型隧道。Hobas GRP管道系统被选用，因为他们耐硫化氢引起的化学侵蚀，产品的水力性质最优，以及内外密封性好。

这些内外壁光滑、外径精确（这些特性非常适合非开挖领域）的管道被设计为1,940毫米DE以及77毫米壁厚。尽管他们较轻（此处是3吨每3米管子）但能承受所需的沿整个管长均匀分布的800吨轴向负载。管道内壁的富树脂保护层，即所谓的衬里，可确保抵抗PH值可能达到10以及可能含硫化氢的城市污水的侵蚀。0.01毫米的低粗糙系数提供最佳的水力性以及耐磨性，而且达到100年长的产品寿命增加了好处。

两个接收池安装在1340米管道的两端，顶管站布置在中间，顶推长

度分为565米和775米。在均匀的0.2%坡度上以及半径为1,000到1200米的大平面曲线上进行顶推，不需要减少顶力，而在那时这还是GRP在法国最大的顶推。指定的承包商决定了分七个中间站执行工作，每段约为150米（三个小段的，四个长的），每段顶推力为1,078吨。这些通常被用于启动顶推。

每隔200到250米安装三个下水道，以及两个特殊的腔，一个收集涌流水，一个配有真空系统用于除臭，这些都是沿收集池装配的。为安装准备时，承包商整洁地挖土和浇筑混凝土，沿着部分管路建好墙体，无需提前开挖作业，而且是在钻探机已通过此段前完成。在混凝土养护好后，钻头钻过已建好的墙体，然后混凝土腔内管道四周的土被挖出，为了安装切向下水道，要么完全到涌流收集和除臭室，要么下至管道。后者是通过切割和分层垂直于DN 1800的顶管上的Hobas DN 1000 GRP管道来安装的。

整套项目施工，包括配套设备安装和泵站，在13.5个月内完成——一个短的时间，考虑到工作范围和复杂的

地质状况，包括不均匀的浸泡了地下水的磨料土。

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顶管井

电阻焊管检测系统

OLYMPUS推出了最新的超声波工业无损检测系统：在线电阻焊管检测系统使用先进的相控阵技术检测电阻焊管(ERW)焊缝和热影响区(HAZ)。

该系统的主要优点是使用先进的相控阵检测技术取代传统的超声波技术执行电阻焊管检测。相控阵(PA)提供广泛的热影响区覆盖范围同时保持恒定振幅。该解决方案为整个检测范围提供恒定振幅的检测，即使是当焊缝相对于探头显著运动时。此外，PA技术允许焊缝形状电子优化来提高小缺陷的检测，比如灰斑。

电阻焊管检测系统能够检测直径60到245毫米(2.375"到9.625")、壁厚2到16毫米(0.079"到0.63")的管子。该系统最大检测速度为1.5米/秒(295英尺/分钟)。

Olympus电阻焊管检测机械解决方案是建立在一个执行检测、自动校准、校准检查和维修操作时定位在线或离线检测头的小型自动桥架(门架型)基础上。

然而系统的主要功能是使用位于焊缝两面的圆柱形相控阵探头，位于焊缝顶部的第三个圆柱形相控阵

探头来检测纵向缺陷，并且0度发射可能用于焊缝外形生成来生成一个真实的焊缝侧面图，用于简单快速的外形分析。第三个PA探头以及一个独特的以飞行时间为基础的专利算法使得系统能自动检测嵌接区，并将反馈送到PLC，用于每个检测头位置的自动调整。

Olympus NDT公司制造无损检测仪器，用于从航空、发电、石马萨诸塞州(化、民用基础设施和汽车到消费品的工业和研究应用中)。领先的检测技术包括超声、超声相控阵、涡流、涡流相控阵以及荧光分析技术。公司的产品包括探伤仪、厚度检测仪、在线系统、自动化系统、工业扫描仪、脉冲发生接收器、探头、传感器、及各种配件。Olympus NDT还是美洲远程外观检测仪和高速摄影机经销商。公司总部位于美国马萨诸塞州沃尔瑟姆，并在全球所有主要工业区都有销售和服务中心。

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领先一步的技术

经过14年紧张的技术开发、营销和销售战略，Axxair被公认为轨道市场的核心，通过其经销商和子公司的积极网络，公司已覆盖了超过35个国家。Axxair提供“全程工艺”，是市场上车间和现场钢管轨道准备和焊接最完整的解决方案。其全程供应主要覆盖半导体、制药、食品和饮料行业，以及化学品和石化、太阳能和水脱盐等。

创新特征存在于各种刀具可互换性原理内：1机器3应用，全程工艺Axxair；切割机最大直径范围(从5毫米到1100毫米)；新型专利型硬质合金刀头坡口加工工艺；由封闭和开放切割头以及管道对管板的切割头完成的、市场上独一无二的、预制时的轨道焊接；切割、坡口加工和焊机新的设计；3种新型焊接电源(从160 amps到500 amps)；钢管和管板(换热器)新型焊接头；新品牌低成本ECOTOM机；满足客户需求规格的专用机器；以及其他新产品将于年底面市。

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LASER Series 6000系列实现令人信服的直径测量

除了成功的LASER Series 2000*系列2轴和3轴直径测头外，SIKORA现在提供3种新型LASER Series 6000测头，用于软管和钢管挤出生产线。这些新设备具有与精度、设计和可靠性相关的许多创新。测头所覆盖的产品直径为0.25至18毫米、0.5至38毫米以及1至78毫米。

LASER Series 6000测量速度达到每轴每秒2,500次测量。在这个测试频率，直径测量是全面的，表面不平整性检测也是可靠的。高测量速度和极高的单值精度可确保极佳的线路控制以及提供可靠的统计数据。LASER Series 6000直径测头包括

一个集成的测量值显示器提供产品直径就地显示。这样，操作者看一眼就可以找到精确的直径值。

电子创新不是该系列唯一的性能特征进步。结构改进也相当可观。该设备有一个比能用该设备测量的最大产品大两倍的开口。这使挤出线操作工能够很容易地将软管和钢

管穿过测头。集成到测头里的是一个模块化通用接口，用于传统的现场总线和以太网为基础的现场总线。所有连接都是防水、防尘或机械影响。无外部插头。

测头的紧凑设计以及测头旋转功能是其视觉上也很突出，这个是比较大的LASER Series 2000系列机型已经提供的。这使得操作工能非常容易地将测头从挤出生产线向上移出。这种新开发的机架高度可调而且可安装在每个挤出生产线上。

3个测头继续享用LASER Series 2000系列得到技术证明的创新。去掉的移动部件能确保测头在整个操作时间内保持精度。只需在Sikora调校一次，以后就再不需要了。

LASER Series 2000系列2轴测量设备仍可用于直径0.05到500毫米的产品。2000系列3轴测头专门用于0.2到100毫米直径的产品。

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LASER Series 6000系列直径测头

卡车排气部件制造从 AddisonMckee 得到彻底更新

汽车行业所有部件，近年来很少有比排气系统部件受到更为详细的审查的。目前，整个世界都想要轻型汽车排气系统来使车辆更节能，以及环境友好，但这个说起来容易做起来难。

这就是世界领先的管道弯曲和管端加工技术专家英国兰开夏郡 AddisonMckee 的专业知识和经验已被证明是无价的原因。

因为使用具有难度的材料来弯制薄壁、较小半径钢管已成为 AddisonMckee 的某种专长。

不仅如此，更高的质量期望和对生产成本减少的不懈追求使得许多公司更深入地考虑他们目前的制造工艺，因此排气部件制造商正要求比以前的工具/部件更换更灵活、更快、更坚固更精确的机器。

为应对精确度和材料效率提高的需要，AddisonMckee 公司已站在推动前列，向汽车制造商和原始设备制造商展示了管道弯曲和管端成型技术创新是怎样帮助他们实现显著的成本节约的。

实现这一效率和随之而来的成本节约的关键是公司专注于与每个客户紧密合作，将客户的视觉和实践需要，甚至是更复杂更具挑战性的卡车排气管弯曲和操作要求，变成一个独特有效的包含开拓性设计特点、先进的制造能力和快速交货到市场的解决方案。

为实现进一步的成本节约，AddisonMckee 还向客户提供收益于技术更新的机会，使客户现有的 AddisonMckee 机械使用寿命完全实现最大化。

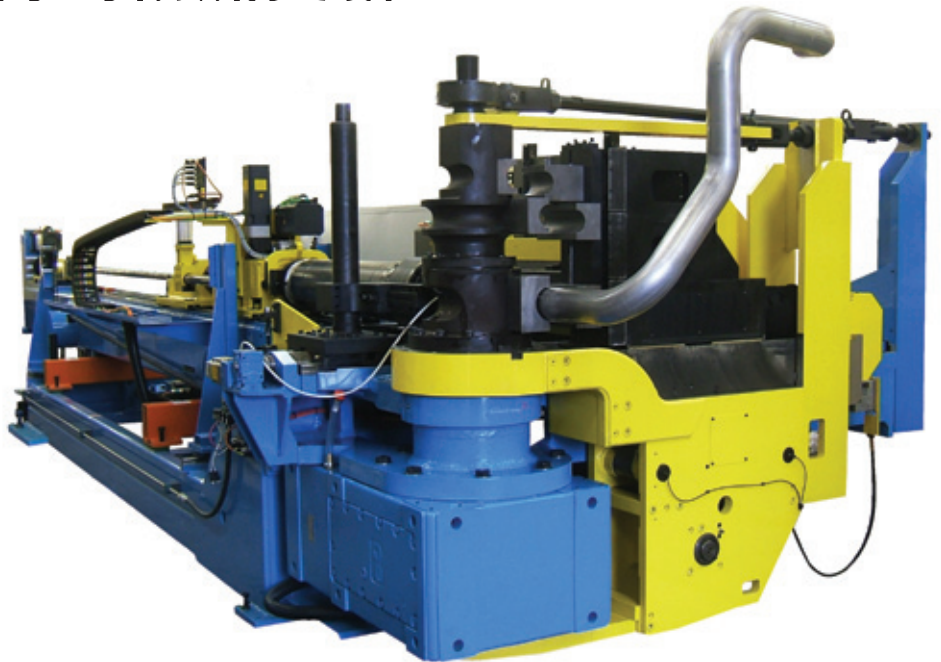
AddisonMckee 帮助实现生产效率大大提高的一个最好的例子是最近向领先的卡车排气组件制造商证明了组件制造商通过投资其 DataBend 系列怎样大大加速了 30%。

一系列相比的制造试验也充分证明了投资 AddisonMckee 技术能带来的显著的精度水平、可靠性和可重复性。

因市场走出萧条期，最近几个月 AddisonMckee 自身的运势也已经好转。

新所有权已经激发了公司通过推出一系列措施确保在汽车、航空、卡车和造船行业以及其他行业客户更平稳的过渡。

重要的是，公司同时保持对全球合作者的真正的全球关注，应对欧洲客户势不可挡的需求，AddisonMckee 已恢复了英国 Bamber Bridge 的 HQ 生产设施，以恪守



公司对欧洲合作伙伴的承诺，尤其是大大降低成本的承诺。

不仅如此，凭借在美国和英国的生产设施，AddisonMckee 能够提供一些昔日的竞争对手无法提供的东西：即非常灵活的市场供应链。

公司目前已有不小于 55 个工程师，致力于研发工作，在每个大陆都有现场服务人员。

而新所有者本身也受益于丰富的商业和工业经验，尤其是在远东的重要的新兴市场。

然而，当很多事情都可能在 AddisonMckee 改变时，很多事情却也保持不变。

比如，AddisonMckee 对质量、耐用性、时效性、价格、诚信和灵活性等核心价值的恪守就从未动摇过。为高度复杂的钢管成型问题向客户提供独特的解决方案，不管是在消声器组件和半成品机械、催化转化器制造解决方案、液压冲床、检测系统、单元自动化解决方案、生产单元集成还是在润滑剂方面。

除了这些能力，AddisonMckee 也提供一整套刀具和附件选择，综合维修和服务合同，培训和教育计划以及财务服务。如果可行的话，AddisonMckee 也能提供机器改造、翻新、升级和置换。

在公司的 Bamber Bridge 工厂的许多核心人物一直都是跟 AddisonMckee 的，不仅是贯穿最近的经济衰退的波折，而是很多很多年了。

AddisonMckee 的首席执行官 Alastair Tedford 评论到：“公司比以前更强大，有很多健康的订货单。作为一个管理团队，我们相信这不仅是因为恢复了我们在英国的生产设施，而且也是因为公司建立了向客户提供比以前更好的服务的核心价值观。这实际上意味着正继续追求新产品开发创新计划，外加降低客户成本的重大举措。”

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Wortelboer推出PBM-16的2011机型



来自荷兰制造商Th Wortelboer BV的PBM-16坡口机近几十年已证明了其价值。该机器非常可靠且易于操作。同时，维护成本极低。该PBM-16机适合很多种插入物固定器，可以完成2"到16"的管道所需的焊接准备。

高功率电机和坚固的棱镜夹，使其能够在一个道次内加工壁厚25毫米的管子。该PBM-16机一直都是固定坡口机的标准。

今年，Th Wortelboer以2011版坡口机为固定加工坡口设定了新的标准。该新型PBM-16坡口机在很多地方做了改进。该记性功率更大，大容量。而且尽管设计在实际上是一样的，但是改进了人体工程为操作工提供了更好的安全措施。该新机器有一个滑盖，上面有一个大的视镜以便更好的观察管端。为提高实际的坡口加工效果，PBM有一个主轴进给和可调的速度。老款的在一个齿轮箱上有四种速度。新型PBM有4个步进式开关以及变频器。这使其能够设置不同的客户要求速度。为了更稳定，振动更少，新型PBM有较重型导架。

Th Wortelboer BV – 荷兰
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Unispeed系列

管件环刀的精确预装配和钢管37°扩口对采用DIN 2353和SAE J 514管件接头的任何系统的安全来说是非常重要的。环刀的不正确装配以及管道的不精确扩口可能危及系统，而且，在极端情况下，可能会引起财产和人员伤害。为避免这种情况，意大利公司OP提出了各种Unispeed系列型号。

新型Unispeed USFL 24/37使得预装配DIN 2353环以及直径42毫米、最大壁厚4毫米的液压管37°扩口。该机器配有双工作面：一个上工作面用于弯曲到180°，和一个下层面用于标准管道。电子控制保证了增强性能并使得USFL 24/37 ES尤其适合于大批量生产。



新的Unispeed USFL 24/37 ES

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SMS Meer PQF轧机生产的无缝管

中国钢管制造商Jiangsu Valin-Xigang Special Steel Co Ltd有限公司调试了新的PQF®(高效优质精轧机)无缝钢管轧机。该轧机将降低公司的检修维护周期，提高无锡工厂的生产率。未来年产量将达到50万吨，产品最大直径为10"。该生产线围绕LCO(侧向换辊式)6机架三棍连轧机构成，其中机架是从侧面进行切换的，以简化检修服务。该轧机能生产精密公差内的薄壁管道，只需很少

的材料和能源消耗。“该PQF轧机能生产高质量钢管，从而巩固我们的市场地位，” Jiangsu Valin-Xigang的Lei Youtong说到。公司将主要使用该设备生产石油与天然气行业用钢管。

SMS Meer和SMS Innse为新PQF生产线中辊轧设备提供了核心部件，包括Carta自动控制系统和质量保证系统。范围还包括用于检查修整后轧辊和轴承座的PQF校准机架。此外，SMS Meer还负责项目管理、安装

监督和调试，以及对操作人员进行实际训练。

Jiangsu Valin-Xigang的该无缝管设备是成功运行的第11套PQF管轧机，而且接下来还有五套这样的无缝管轧机将在2011年投入生产。

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新一代减径定径机组

GEORGS-MARIENHÜTTE GmbH (GMH)是欧洲一家汽车工业特殊棒材 (SBQ)生产厂。该公司将优化位于德国Georgsmarienhütte的棒材厂生产工艺，根据市场要求长久提高产品质量。GMH公司向位于德国希尔登的家族公司Friedrich Kocks GmbH & Co KG (Kocks)下了订单，对一个将于2002年调试的三棍减径定径机组进行大范围地现代化改造以及扩展。

订单包括一套实时闭环控制系统(SCS - 尺寸控制系统的交付和调试，该系统是专为RSB开发的，以便尽可能快地达到机组最佳工作状

态，并且在稳定和重复性水平上保持轧制产品生产质量。

该项目的另一部分是将现有的五机架三棍减径定径机组从五机架扩展到六机架位置，所有机架位置都要修改到能容纳新开发的三棍机架，在荷载下可调(AUL)。该尺寸控制系统连续控制这些机架的轧辊间隙，以优化本已很严密的成品尺寸公差。

当开发两个部件时，Kocks尤其关注的是已在运行的减径定径机组还可能配备SCS以及AUL型新机架这一实际情况。新机架AUL是建立在已取

得成功的轧辊公称直径为370毫米的重型机架基础上的，而且有相同的外形尺寸以及驱动联轴器。SCS结合机架AUL将是最新一代RSB的基础。这一设计将简化RSB的操作，同时也将确保整个生产范围每个单独的棒材全长公差严密。Georgsmarienhütte是第一家执行这一变化的工厂，计划于2012年夏天调试。

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Experiences gathered in the operation of the 12^{3/4}" tube welding plant

By Frank Lagac, SMS-Meer GmbH and M Caldonazzo, Arvedi Tubi Acciaio SpA

Summary

Minimised changing times, high flexibility, superior quality and challenging products. These were requirements of Arvedi Tubi Acciaio for the investment in a new 12^{3/4}" ERW tube welding line for large wall thicknesses.

The chosen supplier was SMS Meer, Germany. The following article shows the technical details and how the expectations were achieved. The first production results are very positive and prove that the expectations were fulfilled.

1. Arvedi Tubi, brief survey

The core business of the Arvedi group comprises the steelmaking industry and the processing of carbon and stainless steel products. In 2010, steel production (hot rolled coils) amounted to approx. 2.3 million tons and consolidated turnover to approx. €1.8 billion. The Group employs about 2,000 people.

Arvedi Tubi Acciaio is the branch which produces carbon steel welded tubes. The factory, located in Cremona, Italy, was founded in the early 70s and is equipped with state-of-the-art manufacturing facilities. The company concentrates on the production of quality and special products and has a leading position on both the domestic and the European markets.

Arvedi Tubi Acciaio is equipped with a hot stretch reducing mill and five lines for ERW tubes and has an annual production capacity of 600,000 tons. The product mix comprises round tubes from 17mm to 323.9mm as well as the corresponding square and rectangular tubes. The products are mainly used in the automotive, petrochemical, thermal, construction and mechanical industries.

Arvedi Tubi Acciaio is the majority shareholder of Metalfer, the most important Italian and one of the most significant European manufacturers of cold drawn tubes destined for the automotive and hydraulics market.

2. Customer's expectation

In 2007 Arvedi started to plan the expansion of its production capacity by means of a new tube welding plant. With the new plant, Arvedi intended to increase its product mix with respect to dimensions and products (Figure 11: full scale and Figure 12: blue marked area).

Arvedi planned to extend the formerly produced maximum dimension of 168.3 x 12.7mm to 323.9 x 16.0mm. In addition, the plant was intended to serve for the production of smaller dimensions with larger wall thicknesses.

With the plant, Arvedi intended to focus on high-quality and special products in the boiler pipe, line pipe, hollows for cold drawn tube such as hydraulic cylinders and thick-walled construction pipe ranges of both round and special section sizes.

The plant must be designed for rigid, smooth operation, and, at the same time, meet all the demands placed on a state-of-the-art plant, in particular

- above-average product quality
- high yield
- highest possible production flexibility
- high production speeds
- short size changing times
- high level of automation
- easy and reliable operation,

which are to be fulfilled by the plant technology.

To achieve the mentioned targets, SMS Meer was selected as the plant supplier, in order to coordinate the plant equipment concept and execution in close cooperation between the customer and the supplier.

3. Plant manufacturer's implementation concept

In order to fulfil the customer's expectations, SMS Meer combined existing proven equipment with completely new solutions.

A high production capacity at a maximum speed of up to 60m/min requires adequately fast and automated units.

Figure 1: Strip preparation and spiral strip accumulator





Figure 2: Forming section

Wall thicknesses up to 16mm and material grades up to 800N/mm² need sturdy equipment and drives.

The strip preparation line and the spiral strip accumulator are designed for filling speeds up to 120m/min. The cross-welder with integrated crop shears positions, measures, crops and connects the strip ends almost fully automatically. Thanks to the high filling speed and the short coil connecting time, a very flexible production with high production speeds is ensured (Figure 1).

The forming section and the sizing section form the heart of the plant. High-quality forming of sophisticated and variable products, allowing the use of modern high-strength materials, can only be achieved by means of an individually adapted roll set. The use of universal or straightedge forming concepts is not acceptable. The plant is configured with 5 breakdown stands followed by one side closer each, 3 fin-pass stands (of 4-roll design) and a 5-roll welding stand (Figure 2).

The so-called W-forming (Figure 3) allows the production of thick-walled sizes such as 114.3 x 15mm or 139.7 x 16mm.

All stands are designed as URD® stands, thus ensuring an extremely high deformation rigidity, which, in turn, enables a high and uniform product quality (Figure 4).

Heating of the strip edges to welding temperature is effected by means of an SMS Elotherm 1,200 kW HF generator. Heating is

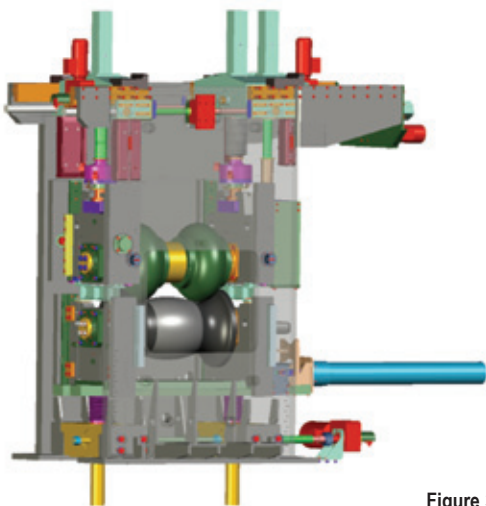


Figure 3: Breakdown stand

inductive; the generator is transistor-controlled in the frequency range between 80 and 140 kHz and represents state-of-the-art technology.

The quality and functionality of the inside flash trimmer are decisive factors for the yield and for satisfying the product requirements. The patented inside flash trimmers supplied by SMS Meer allow very precise inside flash trimming (Figure 5).

The very robust design permits smooth operation and has a considerable influence on the plant running time. For sizes with an inside diameter greater than 170mm, a self-supporting construction with a hydraulic shearing system is used, which chops the inside flash into short pieces. This system is of advantage when cutting the tubes and, in particular, when removing the inside flash from the tube later.

The sizing section (Figure 6) is equipped with a de-twisting stand, 4 sizing stands of 4-roll design and a universal Turk's head.

Figure 4: URD® stand design

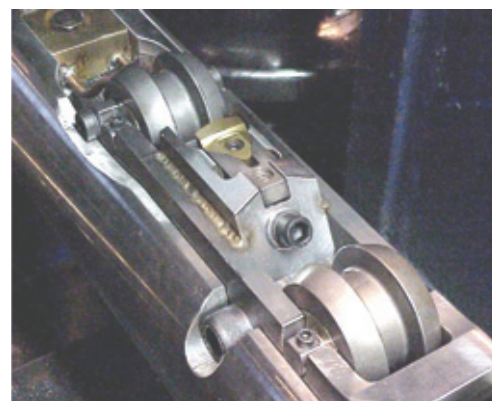
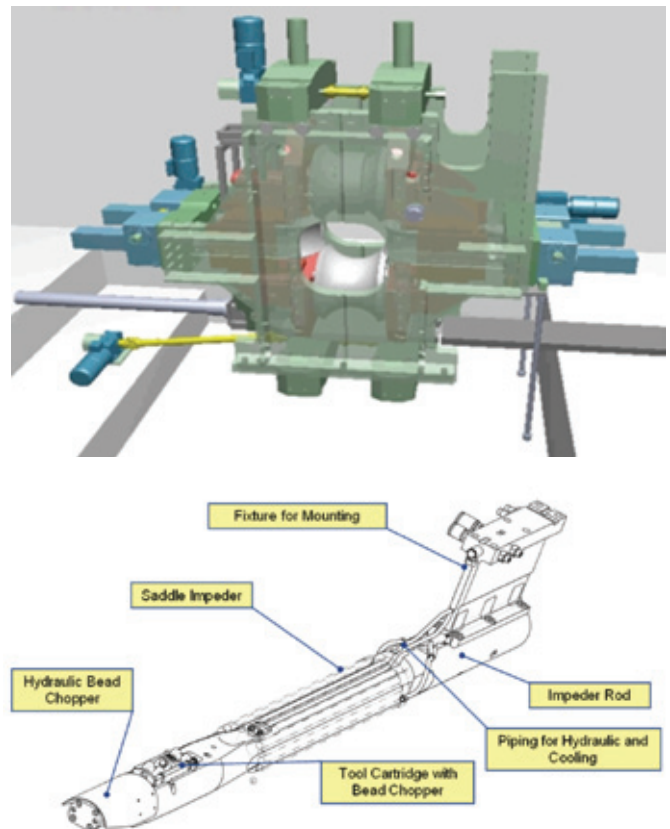


Figure 5: Inside scarfer with integrated hydraulic chopper



Figure 6: Sizing section

The de-twisting stands serve to stabilise and correct the seam in the 12 o'clock position. The sizing stands are identical with the fin-pass stands.

The 4-roll design (Figure 7) allows the sizing of round tubes as well as the shaping of special section tubes with rectangular and square cross-sections.

Round tubes are straightened by off-centre positioning of the 3rd sizing stand whereas special sections are straightened on the downstream universal straightening Turk's head.

All stands and side closers are motor-adjusted and are positioned via the quick-setting system. Positioning is computer-controlled and reproducible. The roll change is performed by means of the changing carriage.

For changing, the changing assemblies, consisting of the roll, shaft, shaft bearing assembly and bearing, are automatically moved into the changing position, pushed onto the changing carriage in a horizontal direction to the operator side, and replaced with the prepared changing sets equipped with the new rolls.

This concept allows the use of individual rolls and the reduction of the changing time to a minimum. The system permits a total changing time from good tube to good tube of approximately 90 minutes.

Figure 7: Sizing roll arrangement (4-roll design)

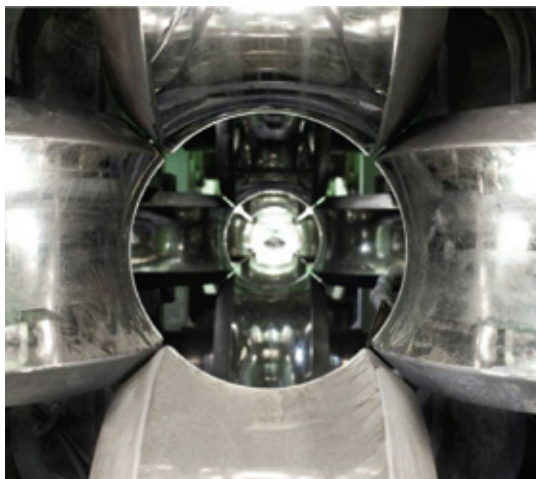


Figure 8: Travelling milling cut-off unit with milling cutter blade

Precise cutting-to-length of the tubes and square and rectangular section is effected by means of a travelling milling cut-off unit. Two milling cutter blades, 380mm in diameter, perform a burr-free quality cut (Figure 8).

4. Production results

After a joint technical clarification, the tube welding plant was ordered in November 2007 and supplied in March 2009. The start of production was in July 2009.

From the start, the plant produced the intended quality at the designed speed. After an initial training period, the plant, from the strip preparation line through to the cut-off unit, is run by five operators (per shift) in total.

To date, the following dimensions (Table 1) and grades (Table 2) have been produced. The dimensions/products, in particular, are products which represent a special market segment.

The plant achieves an average operating time of 70%, with an output per day of up to 500 t in the running-up phase.

Thanks to the rigid plant design and the reproducible plant setting, optimum production settings are quickly achieved, resulting in a very small number of defective tubes. Arvedi intends to achieve a future annual output of 150,000 t in 2-shift operation.

The products manufactured to date are characterised by their very high quality.

Table 1: Size range of new 12¼" ERW line

Diameter (mm)	Thickness (mm)	Steel grade	Standard / Application
127 ÷ 219	8.0 ÷ 16.0	S355	DOM
127 ÷ 323	4.0 ÷ 16.0	S355 & HSLA	Mechanical and structural with dimensional tolerances ½ of that specified by the standards
100x110 ÷ 250x250			
120x80 ÷ 300x200			

Table 2: Standards and grades

Standard	Grade	Note
EN 10129	S235N ÷ S355N	Structural Carbon steel
EN 10129	S275M ÷ S460M	HSLA
API 5L	B ÷ X70	
API 5CT	J55 ÷ N80	

Dimensional tolerances lower than 1/2 of that specified by the Standards are achieved (Tables 3 to 5).

The required standard tolerances EN 10219, EN10217, EN 10296, EN 10208, EN 10305-3 and API5L are adequately fulfilled.

Besides, special products can be manufactured and special customers' requirements met.

The welding quality (Figure 9), which is decisively influenced by the forming section and the HF generator, allows the welding of critical sizes and grades.

The tube quality is inspected directly downstream of the welding table, where the tube is submitted to a 100% check for welding defects on an ultrasonic tester (Figure 10).

Another important and growing requirement to be satisfied by the product is the quality of the inside scarfing.

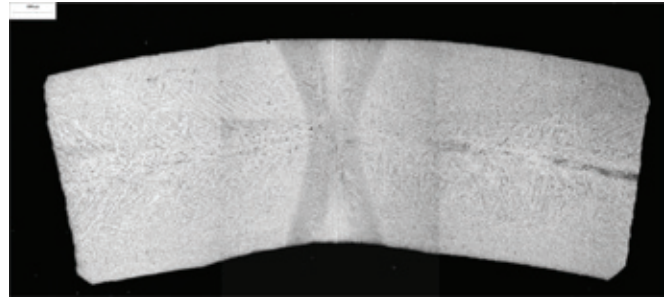


Figure 9: HF-Welding: Ø 139.7 X 9.7 –S355

In addition to production quality and yield, the dimension changing time is an important factor regarding plant efficiency. At present, about ten wall thickness changes and two diameter changes (complete changes) per week are performed. On average, a wall thickness change takes from zero to 15 minutes, depending on the fact the tube is not inner scarfed. Presently a complete size change over take approx. 2½ hours with five operators assigned.

Characteristic	The nearest tolerance to: EN10219 – EN10208 – EN10217 – ISO3183 – API5L		ASTM A450	EN10305-3 (max thick 6mm)	Example 1 Ø 127. x 12. S355	Example 2 Ø 323.9 x 16. S355
	body	ends				
Diameter (body + ends)	± 0.5% with a min: ± 0.5mm & max: ± 1.0mm ends: Ø ≤ 168.3 min: -0.4mm		Ø 101.6 ÷ 190.5: -0.64 / +0.38mm Ø 190.5 ÷ 228.6: -1.14 / +0.38mm	< Ø 120.: ±0.60 Ø 127. ÷ 139.7.: ±0.80 Ø 159. ÷ 193.7.: ±1.00	126.91 ÷ 127.42 = 0.51mm	323.90 ÷ 324.37 = 0.47mm
Ovality	body	2%	2%	In the tolerance of the diameter	0.4%	0.14%
	ends	1.5%				
Straightness	1.5mm/mt on the total length & locally ≤ 3mm on 1mt			< 1.0mm/mt	< 1.0mm/mt	

Table 3: Dimensional tolerances of round products

Characteristic	EN10219		EN10305-3 (sp max 4mm)	ASTM A500	Example 1 Ø 100. x 100. x8. S355	Example 2 Ø 300. x 150. x 14. S355	Example 3 Ø 250. x 250. x 12. S355
	H,B<100mm	with min: ±.5mm					
Side dimension	100 ≤ H,B ≤ 200mm	±0.8%	±0.70	Ø ≤63.5: ±0.51mm 63.5<Ø≤88.9: ±0.64mm 88.9<Ø≤139.7: ±0.76mm Ø>139.7: ±1% of the greater dimension (tolerances for B=H & H<1.5*B) For: 1.5*B≤H≤3*B : 1.5 tolerance of B H>3*B : 2.0 tolerance of B	99.74 ÷ 99.82 99.83 ÷ 100.20		
	H,B>200mm	±0.6%	/			299.80 ÷ 300.20 149.35 ÷ 149.80	249.75 ÷ 250.10 249.4 ÷ 249.80
Concavity / convexity	±8.5% with min 0.5mm		Included into side dimension tolerances	Included into side dimension tolerances	0.40mm	0.20mm	0.30mm
Squareness of sides	90° ±1°		90° ±1°	90° ±2°	90°	90°	90°
Radius of corner	T ≤ 6mm	1.6xT<r≤2.4xT	r≤2.2xT	r≤3.0xT	17.3 ÷ 19.5 (16 ÷ 24)mm	39.3 ÷ 40.5 (33.6 ÷ 50.4)	33 ÷ 36 (30 ÷ 45)
	6<T≤10mm	2.0xT<r≤3.0xT					
	T>10mm	2.4xT<r≤3.6xT					
Straightness	1.5mm/mt on the total length & locally ≤ 3.0mm on 1 mt			10.4mm/5*L	< 1.0mm/mt	< 1.5mm/mt	< 1.5mm/mt
Twist	2.0 mm + 0.5mm/mt		Max 3mm/mt	Max 2 ÷ 3mm/mt	< 0.5mm/mt	<0.5mm/mt	<0.5mm/mt

Table 4: Dimensional tolerances of square and rectangular products

Characteristic	The nearest tolerance to: EN10219 – EN10208 – EN10217 – ISO3183 – API5L		Example 1 Ø 127. x6. x6.000 S275	Example 2 100. x100. x8. x 6.000 S355	Example 3 1300. x150. x14. x 10.000 S355	Example 24 Ø 323.9 x 16. x 12.000 S355
	Exact length	L < 6mt	-0.0 / +5.0mm			
6. ≤ L ≤ 10 mt		-0.0 / +15.0mm	6.007 + 6.012mm	6.006 + 6.012mm	10.008 + 10.014mm	
L > 10 mt		-0.0 / +5.0mm + 1mm/mt				12.006 + 12.016mm

Table 5: Length tolerances

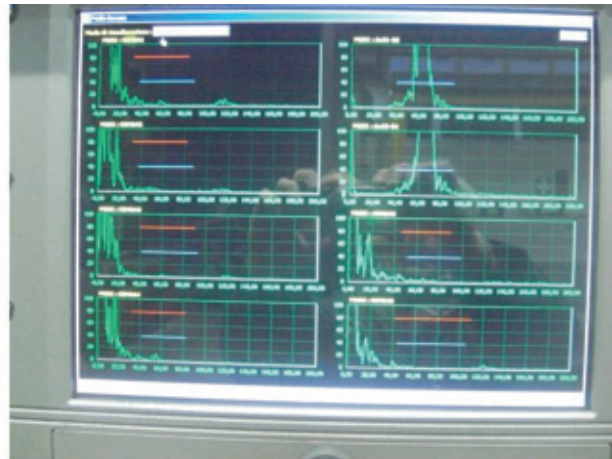
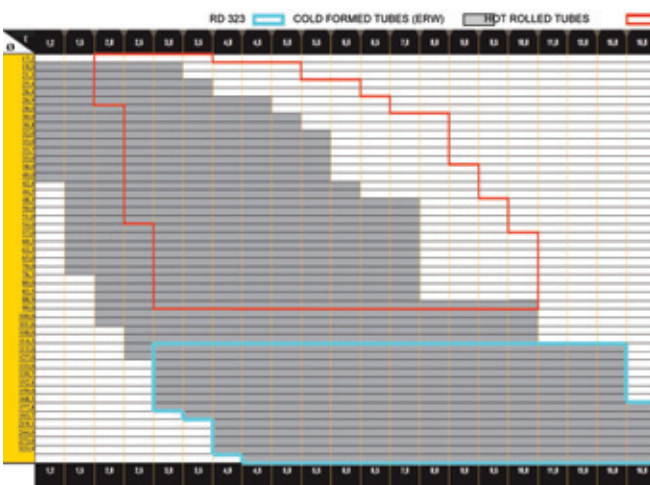


Figure 10: US – Seam testing device

SQUARE	4,0	4,5	5,0	6,0	8,0	10,0	12,0	12,5	14,0	15,0	16,0	RECT.
100x130												120x80
110x110												120x130 140x80 160x80
120x120												150x130 160x80
140x140												200x80
150x150												200x130
160x160												200x120
180x180												300x150 250x130
200x200												250x150 300x130
220x220												300x150
260x260												300x200
SQUARE	4,0	4,5	5,0	6,0	8,0	10,0	12,0	12,5	14,0	15,0	16,0	RECT.

Figure 11: Square and rectangular tube sizes of the new line

Figure 12: Arvedi's product range of round tubes



In future, increased experience and optimisation of the operations will allow even shorter changing times. Arvedi intends to achieve 1½ hrs for a complete size change from good tube to good tube.

5. Future measures

Increasing operational experience will allow the production results to be further improved. With operating time increasing and by means of systematic optimisation processes, the target is to achieve an optimum of line speed, yield, runtime and change over time.

An extension of the product mix is possible by integrating an additional seam annealing unit into the welding line, allowing the production of higher weld seam qualities for new products and other material grades.

6. Conclusion

The tube welding line installed at Arvedi represents the latest plant technology available for effective production of a wide, but nevertheless specialised size range.

The experiences gathered to date have shown that the market demands on special and mass products can be satisfied with this plant. Moreover, the plant offers sufficient potential for developing new products and serving future markets.

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