The international magazine for the tube & pipe industries

TUBE & PIPE Technology

Tube Düsseldorf

NOVEMBER 2020

管道技術

VOL 33 NO 6 US$33

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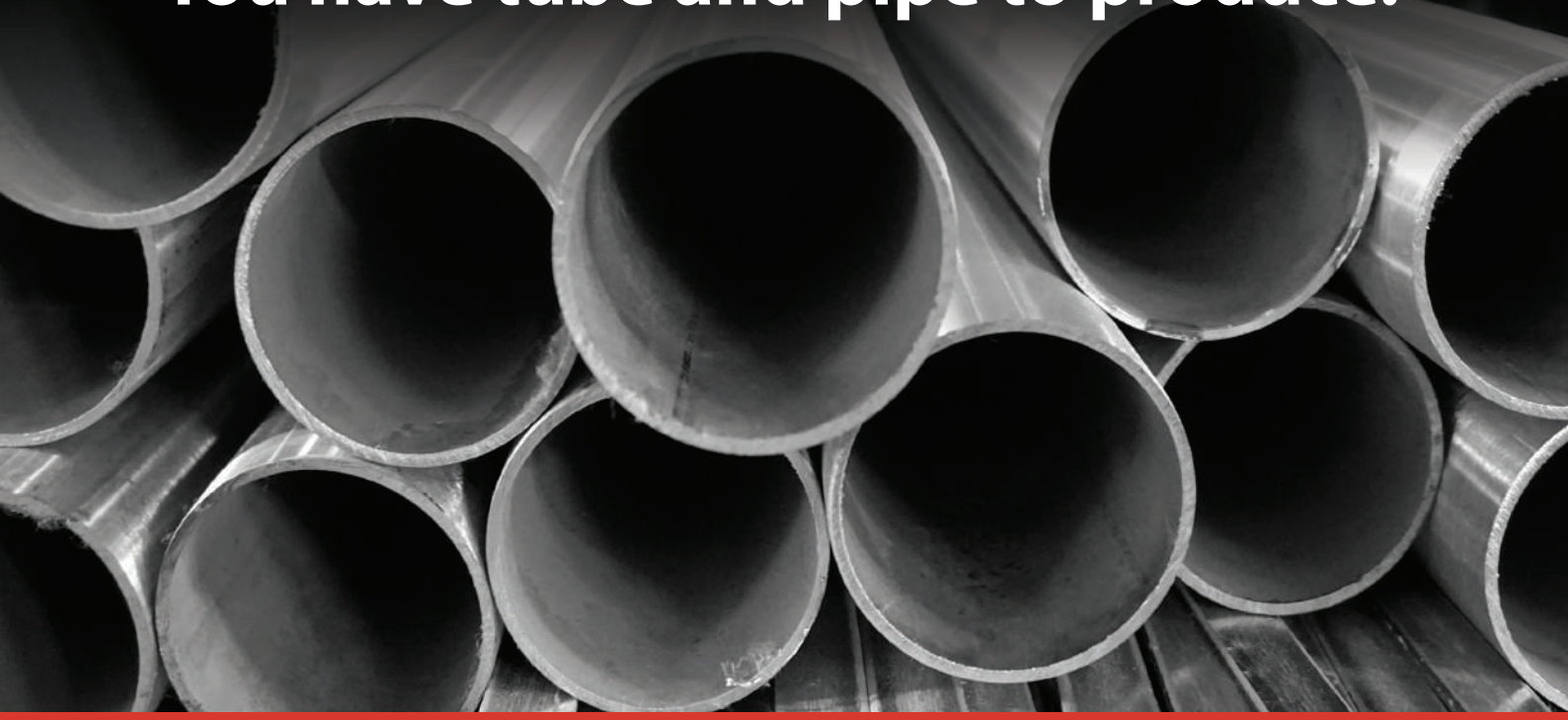

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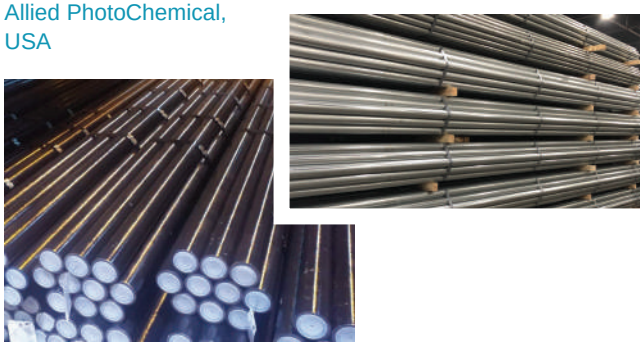
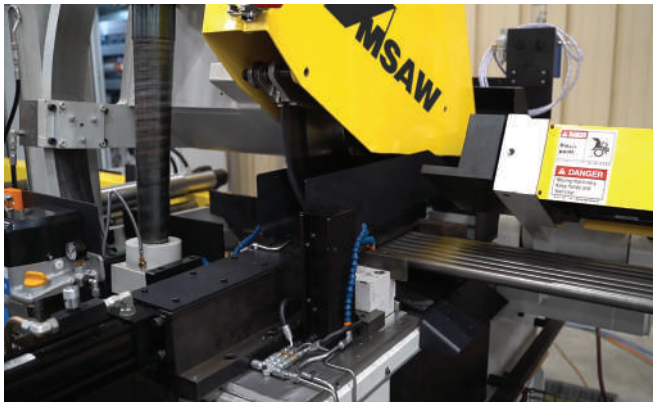




The November Issue

Rory McBride – Editor in chief

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

As a stuttering sense of normality gradually returns to the world, it feels like the specific benefits offered by trade shows are more valuable than ever.
I for one am looking forward to being at a trade show again more than ever.

While it is good to see digital innovation, there is no technology that can replace face-to-face interaction with an actual person. No video can replace seeing a machine in operation with your own eyes and with the benefit of advice from the engineer that designed it – or who has spent years relying upon it.

A recent market survey of more than 4,000 professionals from 130 countries explored the impact of COVID-19 on the global exhibitions industry, delving into key areas such as travel, budgets, and the importance of trade fairs in a post-pandemic world.

The ‘Exhibitions post COVID-19’ survey was commissioned by Messe Frankfurt Middle East and found that nearly two thirds of people agreed that, as the virus recedes, exhibitions will be more important for business (31 per cent), or just as important (38 per cent), compared to the past. A further 64 per cent plan to attend exhibitions in the next eight months, while 36 per cent plan to do so this year. One thing is for sure we will all appreciate trade shows more than ever as confidence returns.

I hope that you enjoy the magazine.

On the cover . . .

The roots of EFD Induction go back to the launch in 1950 of a universal induction hardening machine by the German company Induktionserwärmung Fritz Düsseldorf GmbH (FDF).

While FDF was expanding in the 1970s, an induction revolution was taking place in Norway, where engineers had figured out how to transistorise frequency converters for induction heating.

In 1981 three of those engineers founded ELVA Induksjon AS. In 1983 they unveiled the Minac range of mobile converters. Workpieces no longer had to be brought at great cost to a stationary induction heater – the heater could now go to the piece.

In 1991 the managing directors of FDF and ELVA met by chance. They talked and speculated. FDF was strong in stationary induction hardening machines. ELVA was the agile innovator with a track record in finding new applications for induction heating. What if the two companies got together? In January 1996 FDF and ELVA merged to create EFD Induction. And the rest is, as they say, history.

Officine MTM installs complete mill in Mexico for production of automotive tubes

OFFICINE MTM has been awarded a contract to design, manufacture and install a complete tube mill and ancillary equipment. The mill will have the ability to produce pipes from 18 to 80mm diameter, equipped with a cold saw switchable for cut-to-length or cut-to-weight mode, blowing section, testing section, packaging and strapping machines to eliminate the labour-intensive material handling process.

The Officine MTM customer in Mexico required a partner able to supply a turnkey system with all of the equipment necessary to fulfill the very specific attributes and requirements from start to finish. A spokesman for Officine MTM said: “Not only was a mill required, but a complete turnkey system for making pipe to comply with the highest standard of quality for the automotive sector.”

MTM was asked to install the complete mill in Mexico

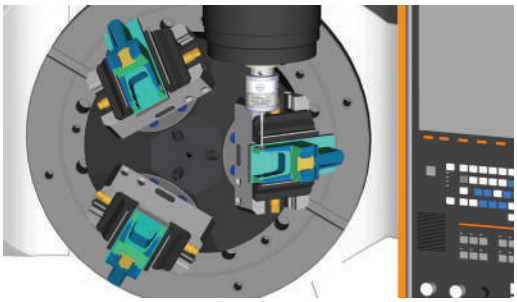
The manufacturing and installation phases have been completed during the Corona Virus disruption, thanks to the skills and the diligence of the whole MTM staff and the synergies between the MTM team at the Mexican plant and at the Italian offices that made the successful completion of the project possible.

For over 40 years Officine MTM’s has been has been providing its customers with the most suitable systems and equipment for the production of welded tubes and sections. MTM offers a complete and coherent range of high-tech tube mills, designed to fill all needs in ERW tube production.

Officine MTM
www.mtmtubemills.com

ESPRIT announces extended support for innovative Mazak Smooth Ai CNC

ESPRIT by DP Technology has announced extended support for Mazak Smooth Ai CNC. ESPRIT, a company that produces machine-optimised, edit-free G-code programs, program optimisation, and machine simulation for Mazak’s entire line of machine tools, has extended its support for Mazak’s new Smooth Ai CNCs which includes the ability to utilise the ESPRIT digital twin inside the CNC.



Extended support for Mazak Smooth AI CNC

According to ESPRIT, this new capability is the result of years of collaborative partnership between DP Technology and Mazak Japan and an exciting example of what is on the horizon for the industry at large.

With this extended support, the ESPRIT project data is synchronised with the Mazak Smooth Ai CNC. The synchronised project data includes the part and stock models, workholding, tooling, work offsets, tool offsets, and G-code program.

With the synchronisation between ESPRIT CAM and Mazak Smooth Ai, users can now preview the entire machining process virtually on the CNC, using the ESPRIT digital twin, before executing the program on the CNC machine.

As a result, manual data input is eliminated, and the machine operator is offered greater assurance of the machining process. This results in shorter setup and prove-out times, and higher quality first-article run-offs.

ESPRIT
www.espritcam.com

Roll-Kraft adds to its growing team

ROLL-KRAFT has announced the appointment of Matt LaVelle to the position of procurement manager. He replaces Gretchen Lazar, who recently retired after 41 years with the company.

Mr LaVelle comes to Roll-Kraft from Materion Corporation where he was responsible for purchasing materials for three manufacturing facilities. Previously, he was the strategic buyer and production supervisor at Soundwich. He studied business at Muskingam College in Ohio, USA.

Mr LaVelle brings his years of experience to Roll-Kraft as the main buyer for the headquarters location in Ohio, USA. He will oversee costs with a critical eye.

His challenge will be to maintain and improve Roll-Kraft's competitiveness by pursuing lower material costs, allowing the company to provide tooling of the highest quality, which has become the envy of the industry.

The Roll-Kraft standard has led to various performance guarantees, supported by on-line statistics published on the company's website and offers the guarantee that if it not right they will repair or replace the machine.

Roll-Kraft
www.roll-kraft.com

Matt LeVelle has joined Roll-Kraft

DIARY of Tube Events 2020/21

1-3 December 2020
ValveWorld Expo
(Düsseldorf, Germany)
International Exhibition
www.valveworldexpo.com

7-11 December 2020
Tube Düsseldorf
(Düsseldorf, Germany)
International Exhibition
www.tube.de

9-12 March 2021
EuroBLECH
(Hanover, Germany)
International Exhibition
www.euroblech.com

16-19 March 2021
TOLexpo
(Lyon, France)
International Exhibition
www.tolexpo.com

17-19 March 2021
Made In Steel
(Milan, Italy)
International Exhibition
www.madeinsteel.it

25-27 March 2021
Tube India
(Mumbai, India)
International Exhibition
www.tube-india.com

26-29 May 2021
Lamiera
(Milan, Italy)
International Exhibition
www.lamiera.net

7-10 June 2021
STEELFAB
(Sharjah, UAE)
International Exhibition
www.steelfabme.com

Addison Forming Technologies establishes strategic partnership with US-based Innovative Engineered Solutions Inc

ADDISON Forming Technologies has announced a strategic partnership with Innovative Engineered Solutions Inc. Addison Forming will exclusively distribute and support iES's product range in Europe and non-exclusively in other regions globally outside of north and south America.

Addison Forming provides bending and robotics solutions

Addison Forming, which is located in Preston, UK is a global solutions provider of tube bending technology, tooling, automation, robotics and process support for a wide range of tube bending and forming applications in the automotive, aerospace and nuclear industries supplying complete turnkey packages and modular cells for high integrity, volume production.

iES is located in Ohio, USA and is a manufacturer of end forming machines and tooling for tube end expanding, reducing, sizing, notching, trimming and perforating as well as a supplier of hydraulic and all electric servo-presses.

Addison Forming Technologies
www.addisonforming.co.uk

Innovative Engineered Solutions Inc
www.ies-engineering.com

TMK digitises its system for operational management of tube production

TMK, a global manufacturer and supplier of steel pipes for the oil and gas industry, has completed diagnostics of its Russian division's facilities in preparation for a project to automate its operational management system, including its production planning and manufacturing execution system (MES).

An integrated solution will be designed and rolled out based on the PSImetals product by German metallurgy software developer PSI under a respective agreement signed between PSI and TMK in February 2020. The solution will include the PSImetals Scheduling, PSImetals Flow and Order Planning, PSImetals Production, Quality, and Logistics modules.

Vyacheslav Popkov, TMK's first deputy CEO, chief engineer, said: "A unified planning system covering production, sales and operations will provide TMK with flexibility in a rapidly changing market, continuous planning capabilities as well as rapid access to up-to-date information on the market, orders and existing constraints. Combined with the new MES system, it will provide us with significant advantages to achieve TMK's strategic goals, including expanding its technological leadership in the industry, increasing economic efficiency and maximising its returns on investments into modernising production facilities."

TMK has completed diagnostics of its tube facilities

During the project's first phase, TMK will re-engineer and unify operational production management processes across all of its plants. The second phase will see a rollout of the new system at pilot divisions of TMK's Volzhsky pipe plant, Seversky pipe plant, Sinarsky pipe plant and Taganrog metallurgical plant. The final phase will see the new system applied across all TMK production facilities.

"The benefits of implementing a single integrated software solution at all TMK production sites include harmonisation of MES and planning business processes and user interfaces at all plants, which allows for reduced implementation costs and time and supports centralised maintenance and lower total cost of ownership. We are looking forward to a successful project together," said Harald Henning, PSI Metals director of the strategy committee.

The project is being implemented as part of TMK's Digital Production program and is aimed at improving the efficiency and quality of the company's system for operational management of production and production processes.

TMK
www.tmk-group.com

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Made in Steel: positive trend in sales of exhibition space for 2021

Milan, Italy

THE organisers of the Made in Steel exhibition have announced positive sales trends for the main Conference & Exhibition held in Southern Europe, which is planned to take place from 17 to 19 March 2021 at Fieramilano Rho, Milan.

Despite the Coronavirus Pandemic, Made in Steel reported that the registration of exhibitors, "is in line with that recorded during the last edition and most of the historic players have reconfirmed or are reconfirming their participation in the event".

In the first four months of 2020, the Italian steel industry turnover both on the domestic and foreign markets dropped by about 26 per cent compared to the same period the previous year. This is due to the downturn in steel demand: domestic consumption is expected to contract by 18 per cent in 2020, while EU consumption is expected to contract by approximately 16 per cent. This decline is resulting in a significant reduction in steel production.

"Made in Steel can be the relaunching platform for a supply chain – the steel industry – which is the most heavily affected in Europe," said Mauro Franchina, sales manager of Made in Steel. "The real question is not "why participate?", but "why not participate?" if we all believe that together we are stronger, and if we recognise that Made in Steel has always aimed at supporting the steel industry."

Made in Steel will be held for the first time within the same week, and with some overlapping days, with two other fairs of the steel industry: MADE expo, a trade fair for construction and design, and Transpotec Logitec, a trade fair for transport and logistics.

"We would like to make this contemporaneity a definitive choice", said Mr Franchina. "We would like to present ourselves in an enlarged format, so that all visitors can feel that they are attending an event with an international scope, intended as a unique opportunity to really compete with other synergistic foreign platforms" explained Mr Franchina. "To achieve this, we have chosen to make access to Made in Steel free of charge, subject to registration."

Made in Steel
www.madeinsteel.it

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Thanks to the know-how obtained over the years, FIMI project, manufacture and install milling cut-off units able to cut pipes in the range from 13 mm up to 610 mm API outside diameter, according to Customer's specifications based on production speed and wall thickness.

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- Tubes Lengths range: 4,3 - 18.3 m.
- Working Speed: 0 - 80 m/min.

In the picture: 12" x 2" (304.8 x 50.8 mm) - 8 mm.

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Teamwork achieves a noteworthy goal for Fives despite global disruption

FIVES, a global industrial engineering group, together with Steel Dynamics Columbus LLC (SDI), the most modern mini-mill in the US, has successfully produced the first coil with a new continuous galvanising line (CGL #3) in Mississippi, USA.


The first coil was produced in July this year during lockdown

According to Fives, the first prime coil was produced in July this year in the middle of a challenging COVID-19 environment. The project involved equipment delivery from several countries experiencing different forms of lockdown, namely France, Spain, Czech Republic, Italy, Mexico and the USA.

"Our team persevered and, using a strong work ethic and stringent policies to prevent COVID-19, we achieved a positive result safely," said Jeff Roach, galvanising/paint manager at SDI.

"We worked together 24/7, including remote expert assistance to achieve this goal. For example, we programmed the annealing furnace remotely from Europe with local support. This success could not be achieved without close cooperation from the team on-site," added Anthony le Blan, project manager at Fives DMS, a Fives subsidiary in France.

"Success is achieved through teamwork. Operating in the COVID-19 situation offers unique challenges. The team managed a dynamic set of complexities stemming from supply chain constrains to travel restrictions to challenging site erection conditions," said Kevin Bertermann, vice president of sales & marketing – North America, steel business line, Fives.

In December 2018, Fives was awarded a supply contract for a galvanising line at the existing SDI Columbus plant. The new CGL with a production capacity of 400,000 tons per year is designed to diversify SDI's product portfolio. The scope includes the design and supply of entry and exit coil handling, degreasing, horizontal annealing furnace, cooling, skin-pass mill, strip leveller, strip inspection sections and automation.

Fives
www.fivesgroup.com

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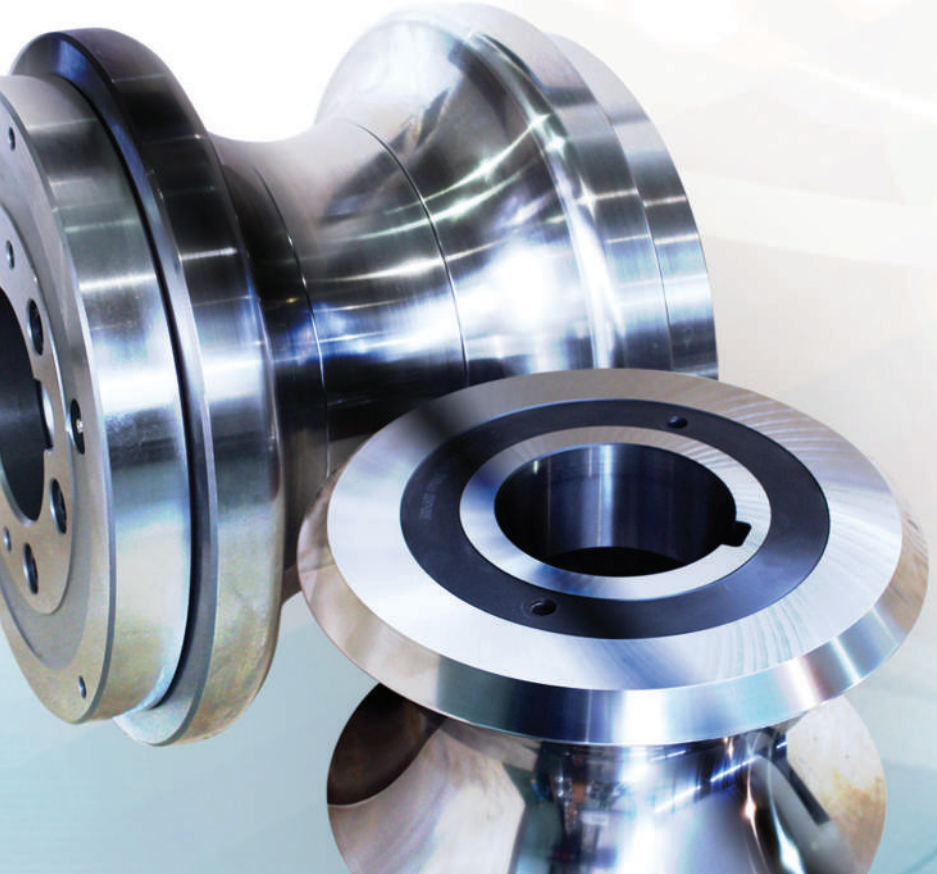

Sanyo Seiki Co., Ltd
TEL: 81-48-486-1100
www.sanyoseiki.co.jp

SST Forming Roll, Inc.
TEL: 1 847-215-6812
info@sstformingroll.com

Xiris Automation hires new director of sales for Americas

XIRIS Automation has welcomed Wassim Younis to its team as its new director of sales, Americas. With a technical background in mechanical engineering, Mr Wassim is passionate about the machine vision industry and has a long history of providing technology solutions to customers across North America, most recently as a senior sales manager.


Wassim Younis

Cameron Serles, president of Xiris Automation, said: "We are very pleased to have Wassim join our team. His enthusiasm, technical knowledge and focus on the needs of the customer in providing solutions for a diverse customer base will complement our requirements as the metal fabrication industry increases its adoption of automation technology with the use of weld cameras and inspection systems. Welcome to Wassim."

Based out of Xiris' Canadian office in Ontario, Canada Mr Wassim will be responsible for all sales of Xiris weld cameras and inspection systems across North and South America.

Xiris Automation
www.xiris.com

Marty Byrne retires from T&H Lemont

MARTY Byrne has retired from T&H Lemont.

Mr Byrne began his career in the tube and pipe industry in 1978 with Tesgo Inc as a sales representative. He then moved to Roll-Kraft in 1982 becoming its vice president of sales until he left them in 2008. He joined T&H Lemont in early 2010 as sales and marketing manager.

Michael Strand, president of T&H Lemont, said: "Marty has been a role model for the industry and one of the great personalities, always willing to help anyone that he encountered with his knowledge and experience. He will be greatly missed."

T&H Lemont
www.thlemont.com

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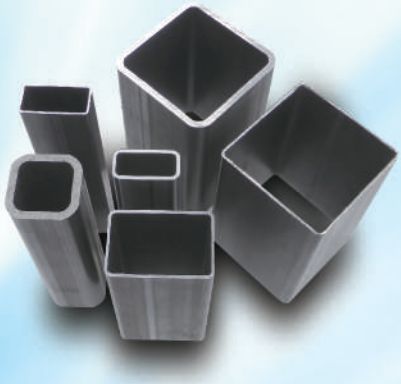
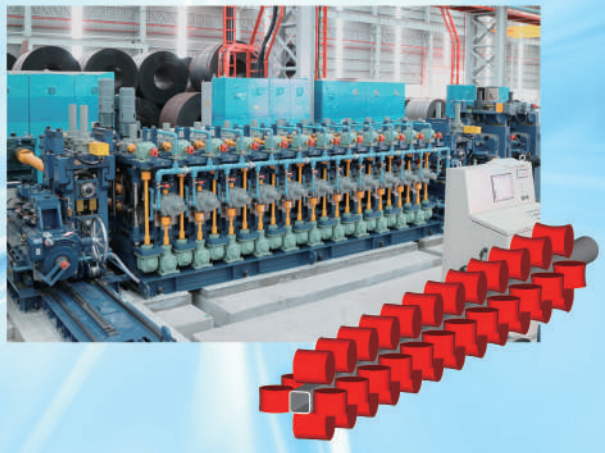


Enhancement of productivity

- ***MAX 80% reduction*** in time required for roll change.
- ***Suitable for small lot production of many sizes.***
- ***Flexible in producing new sizes.***
- ***Wider range of production possibilities*** owing to an optimized forming process adapting to various consumer needs for product size, wall-thickness and strength.

•For small and medium diameters (less than 10")



•For large diameters (above 12")

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

http://www.nakata-mfg.com

Seamless, composite, welded and finned tubes from Shanghai Steel Tube Association

SHANGHAI Steel Tube Association (SSTA) was founded in April 2000 with Baosteel as the first chairman of the group. There are 150 members belongs to the association, which is based in east China. Its member's products include seamless tube (hot-rolled and cold-rolled), welded pipe (ERW, SSAW, LSAW, LBW, PAW, GTAW), double metal composite pipe, cold-formed hollow section and finned tubes. The materials include stainless steel, nickel alloy and carbon steel. Member companies also include pipe industry upstream and downstream production equipment manufacturers, logistic service providers and service providers and traders.

Shanghai Steel Tube Association's expert committee has 60 experts specialising in piping products. Many of the experts have working in this field for nearly 50 years. The association can provide suitable support and advice to mills in production and operation.

The aims of the association are to: strengthen the industry services, industry self-discipline, industry representatives and industry coordination; organisation of industry training, technical consultant, information exchange, exhibition and product promotion; participate in government decision-making, debate related to industry development and industry reform; provide suggestion related to economic and industrial policies and legislation; on behalf of the industry companies to participate in anti-dumping, anti-trust countervailing and other investigation or responding to the activities, or to the relevant government departments to apply for investigation; set industry quality standards, technical procedures, service standards; carry out industry statistics, survey, issue industrial information, credit certificate, price coordination, industry access qualification and qualification audit; and to carry out economic and technical exchanges and co-operation in domestic and overseas markets.

The members of the SSTA from East China

Shanghai Steel Tube Association
www.gghy.org

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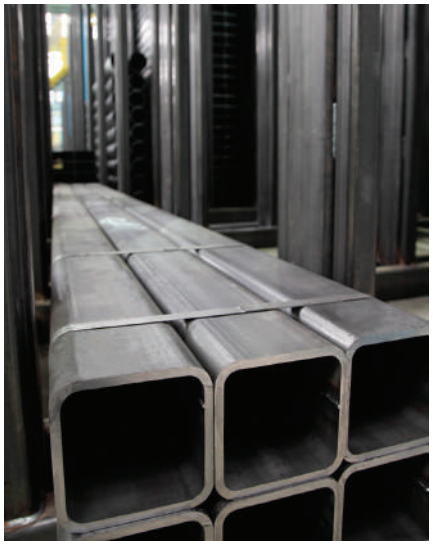
Marcegaglia named among the 2020 Global Awards for Steel Excellence winners

THE Marcegaglia group has won the award for 'Best Operational Improvements' and 'Information Technology Services' in the '2020 Global Awards for Steel Excellence'.

The industrial group in steel transformation was nominated for five awards at the award ceremony, which took place in July 2020, however the annual dinner was not hosted this year due to COVID-19. The virtual ceremony can be watched online.

According to a statement from Marcegaglia Group: "These awards are the result of the strategic role that research and development has taken on in the Marcegaglia Group in recent years, focused on the continuous improvement of processes and the development of innovative solutions. For five years, an R&D structure has been implemented in the Ravenna plant, based on skills from bodies of excellence, which supports process engineering for the improvement of the production area and researches product solutions customised to customer needs."



Margegaglia has won an award for steel excellence

Tensil Pro is an online detection system for the mechanical characteristics of materials. It was created to improve product quality and process efficiency. Tensil Pro is applied to all metallic materials, all magnetic and non-magnetic steels, to aluminium or copper alloys, starting from the hot rolling process.

Smart Line, on the other hand, was born from the collaboration between Marcegaglia and Fives, from the combination of Tensil Pro and Fives' great experience in industrial automation. Smart Line integrates all the coil transformation production processes starting from hot rolling up to the finished product.

Tensil Pro and Smart Line allow the user to improve production costs thanks to energy saving and productivity increase, to obtain a greater homogeneity of mechanical characteristics (in particular for the automotive sector), to study quality and process trends as they vary of the input material (to alleviate the differences between the different supplies, steel makers).

Marcegaglia
www.marcegaglia.com

Comau MATE is announced as the first EAWS-certified exoskeleton for safer lifting

COMAU MATE is the first exoskeleton on the market to receive the EAWS (Ergonomic Assessment Work-Sheet) certification, which attests its effectiveness in reducing the "risk of biomechanical overload" of the upper limbs.

Based on the evaluation system promoted by Ergo Foundation, Italy's reference for the organisation and measurement of work and ergonomics, the successful recognition studied workers who used MATE to perform daily tasks requiring flexion-extension of the arms.

The first exoskeleton to receive the EAWS award

"Comau is proud that the MATE exoskeleton is awarded EAWS certification from the Ergo Foundation", explained Duilio Amico, marketing and network development director of Comau Robotics & Automation Products. "This result is a further confirmation of the importance of investing in the development of innovative devices, as wearable robotics, to improve the way operators work and make production processes safer and more sustainable".

This certification proves Comau meets the expectations of companies that need to understand concretely how an industrial exoskeleton like MATE can impact their operations. More specifically, to what degree it can reduce the physical stress of their employees, helping them to carry out their tasks in a more comfortable way, reducing the risk of developing musculoskeletal pathologies over time.

Developed by Comau in partnership with IUVO, a spin-off of the BioRobotics Institute of the Scuola Superiore Sant'Anna in Pisa, and ÖSSUR, an Icelandic company in the field of non-invasive orthopaedic devices, MATE is a passive mechanical exoskeleton has the capacity to support the shoulders and arms in their natural movement. It allows workers to feel less physical fatigue, thus improving the overall quality of their activities.

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www.comau.com

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Tri Tool Inc highlights dynamic leadership education with senior training appointment

TRI TOOL Inc has appointed Eric Frohardt as the new vice-president of training.

Mr Frohardt will be instrumental in developing and streamlining Tri Tool's comprehensive education of sales and service technicians, as well as providing leadership growth and team building throughout the organisation.

Mr Frohardt had a distinguished career in the US Navy, serving as a SEAL for nearly 12 years. He is the recipient of numerous medals and commendations for combat deployments to Iraq, Afghanistan and other locations globally.

Eric was an operator at various SEAL Teams including Naval Special Warfare Development Group. He also served at a training command as a Navy Instructor and earned his Master Training Specialist certification. He was awarded the Purple Heart for injuries sustained in combat that ultimately led to him being retired as a SEAL Operator Chief (SOC / E7).

Mr Frohardt said: "Throughout my career, in both the military and private sector, I have always been involved in training. The emphasis we placed on training and being prepared is the reason for our success in the SEAL Teams: as individual operators, teammates, and leaders. It's exciting for me to work with a company as innovative as Tri Tool. They are committed to training their people, helping their partners, and being leaders in the industry."

After leaving the Navy, Mr Frohardt was able to leverage his background and experience to develop, manage and administer training programs for both commercial and member organisations, while successfully co-founding a number of private businesses. Mr Frohardt was the CEO of StrongFirst, a global fitness education company with nearly 4,000 instructors in over 40 countries teaching their system to thousands of students annually in multiple languages. Most recently, he served as the director of education and training for the National Rifle Association (NRA), leading and serving over 110,000 NRA Certified Firearms Trainers responsible for reaching or teaching nearly one million students annually nationwide.

Tri Tool's CEO, Chris Belle, said: "As you can see, Eric Frohardt possesses a remarkable and practically unsurpassed background of developing, refining, administering, and managing dynamic training programs. We're extremely excited to integrate his knowledge and development skills into Tri Tool's leadership team."

Tri Tool Inc
www.tritool.com

NDC Technologies unveils new vision, purpose and values strategy

NDC TECHNOLOGIES, a global provider of intelligent, connected measurement and control solutions, has unveiled its new vision, purpose and values statements, setting the tone for its strategic growth and business direction.

The company stated: "For over 50 years NDC Technologies has been a trusted partner to manufacturers around the world.

"We're truly proud of our rich heritage as a leading provider of precision measurement and control solutions, as it reflects the longevity and sustainability of the value we've been delivering to the marketplace. And we're excited about our organisation's future, because we're entering the next chapter of NDC Technologies. With this, we're delighted to announce our new Vision, Purpose and Values statements which will guide our organisational culture and instill an unwavering commitment to better serving our valued customers…while caring for our people and the community."

The new vision, purpose and values are: "Vision: intelligence that transforms the world. Purpose: we solve complex problems for producers around the world using analytics and intelligent measurement and control technologies in a scalable, sustainable manner. We are a culture committed to delivering the one thing our customers desire most -- peace of mind. Values: be true, own it, aim high."

NDC Technologies
www.ndc.com

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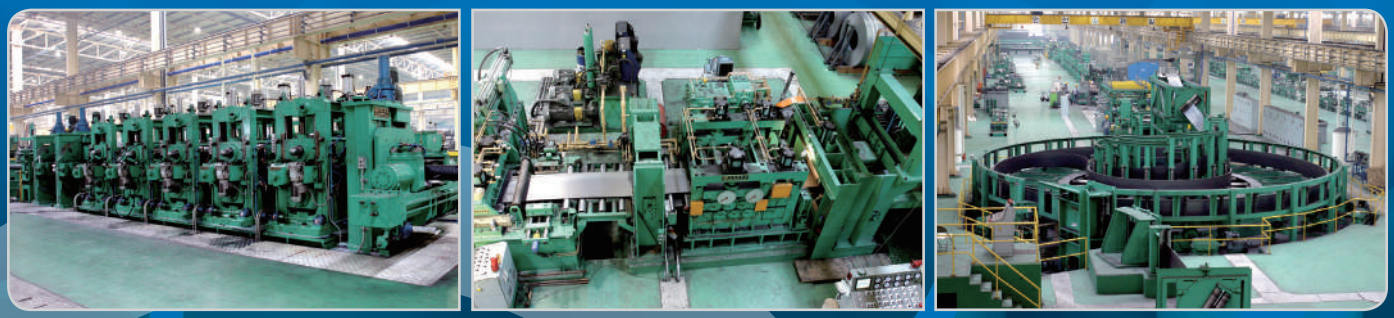

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12” ~ 24” O.D, Up to 20mm wall thickness TUBE MILL LINE

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Combi-CS pedestrian stacker wins IFOY Award

COMBILIFT has been announced as a winner at this year's IFOY Awards, which honours the best products and solutions of the year. The company won the Warehouse Truck Lowlifter Category with its innovative Combi-CS pedestrian counterbalance stacker.

The Combi-CS is the only pedestrian counterbalance stacker that will operate in a conventional reach truck aisle for space saving and productive storage and handling. It features Combilift's unique, internationally patented and award winning multi-position tiller arm, which can be turned to the left or right of the unit to position the rear drive wheel, allowing the operator to remain in the safest position- at the side of the machine, rather than at the rear as is the case with other pedestrian stackers. This ensures optimum visibility of the load and surroundings as well as guaranteeing maximum safety in areas where other personnel or members of the public may be present.

Combilift CEO, and co-founder, Martin McVicar said: "On behalf of the whole Combilift team I am delighted to receive the IFOY 2020 Award and proud that this innovative product has been recognised as valuable solution for the intralogistics sector. We extend our thanks to the IFOY jury for selecting us for this important award."

Due to the current circumstances, the hundreds of people that normally attend the IFOY ceremony could not get together personally, so the organisers rolled out the virtual red carpet for the winners on the internet at www.ifoy.org.

IFOY founder and executive chairperson of the IFOY Jury, Anita Würmser, said: "Special times require special solutions and this year's IFOY Awards were dedicated to the best innovations in intralogistics and moreover to the people who make intralogistics happen."

Finalists' products underwent stringent IFOY audit and innovation checks by industry experts and journalists from leading logistics media from 19 countries also tested and evaluated the equipment for qualities such as technology, design, ergonomics, safety, marketability, customer benefit and sustainability.

Comments on the Combi-CS included: "The Combi-CS is a really compact smart pedestrian operated truck and a nice hands-on solution. It offers significant added value in terms of narrow aisle operation and safety in confined environments. It is a customer-focused solution with a very high level of market relevance."

Combilift
www.combilift.com

Systems Spray-Cooled receives an order to upgrade Optimus Steel EAF

OPTIMUS STEEL has placed an order for a furnace upgrade solution with Systems Spray-Cooled of The Systems Group. The fourth quarter 2020 turn-key project includes a new Spray-Cooled™ Electric Arc Furnace (EAF) Roof, a new Spray-Cooled™ Elbow, the accompanying equipment that will replace its existing tubular equipment, and a complete engineering package that covers a laser scan of the entire melt shop, design and layout all of the piping, and engineering of the required infrastructure changes.

The engineering portion includes modifying their current 4-point gantry lift roof to a 2-point gantry lift design. By removing the existing long gantry arms and replacing them with customised short arms, Optimus Steel will eliminate the associated downtime and maintenance issues with their old gantry arms design. The new design will address current operational issues and will allow for better roof alignment and delta changes. The elbow spray water will be supplied and drained from the roof minimising hoses and connections.

A furnace upgrade solution from Systems Spray-Cooled

The roof diameter will be oversized to allow for a larger furnace sidewall in the future. This project is expected to be the first phase of a multi-phase melt shop upgrade to a more optimised design with the upper shell and off-gas system to follow.

Optimus Steel, located in Beaumont, Texas, produces a wide range of high-quality wire rods, coiled rebar, and billets. This mill has been recognised with awards for safety, community service, outstanding engineering, and environmental improvement throughout the years. Optimus Steel is logistically situated near Houston to provide value added solutions that help their customers in the construction, automotive, energy, consumer, and manufacturing markets.

Optimus Steel's decision to install Spray-Cooled™ equipment was based on the need for the safest, most environmentally friendly, lowest cost option (supply and maintenance) along with the extended life and performance for water-cooled equipment.

Optimus Steel
www.optimus-steelusa.com

Fives recognised by Fastmarkets Global Awards for Steel Excellence

FIVES, a global industrial engineering group, has been honoured by Fastmarkets Global Awards for Steel Excellence, by sreceiving industrial recognition.

This year's ceremony marked the 11th Annual Fastmarkets Global Awards, held virtually in July 2020. The nominations chosen were selected from 30 different categories, determined by a combined panel of industry professionals. Fives wins in two categories.

Fives received the award as a Technology Provider of the Year for its heat treatment and real-time quality management technologies, enabling steel manufacturers to improve operational efficiency, increase the quality of finished products and enhance the flexibility of operations.

"Fives has been a global leader in a variety of industries for more than 200 years. We have been involved in landmark projects leading technological innovations for the steel industry with solutions that provide increased productivity and flexibility of operations, while drastically reducing environmental impact. I am very proud of our team and am honoured to receive this prestigious award," stated Guillaume Mehlman, president of steel & glass at Fives, during the Fastmarkets Global Awards Ceremony.

Fives won the Fastmarkets Global Awards for Steel Excellence

Additionally, Fives was the winner of the Joint Award for Information Technology Services Provider. As a collaborative initiative, Fives and Marcegaglia developed the SmartLine, a fully automatic strip processing line control system based on predictive modelling. In 2019, the SmartLine was commissioned for Marcegaglia's continuous galvanising line in Ravenna, Italy.

"This was a joint effort between Marcegaglia and our Fives' teams. Marcegaglia had a vision for a fully integrated control system of the coil finishing lines based on predictive modelling, incorporating all the upstream metallurgy and all the processing steps down to the finished coil in order to achieve the highest quality yield and productivity. The result has been a great success for both of our organisations," added Mr Guillaume.

Fives
www.fivesgroup.com

Change in management at Tenova LOI Thermprocess

TENOVA LOI Thermopress, a global company in the field of heat treatment plants based in Essen, Germany has recently undergone a change in its management organisation.

Erik Míček, who has been the managing director of LOI Thermprocess GmbH since 2010, left the company in June this year and Mr Christian Schrade fully assumed his responsibilities.

According to the company, Mr Schrade is an industry expert and has gathered extensive experience in the steel mill technology for many years. Since 2010, he has been responsible for the management of Tenova Metals Deutschland GmbH, which was merged into LOI Thermprocess GmbH in August 2019. Mr Schrade was then appointed as a member of the management board of LOI Thermprocess GmbH in October 2019.

A change in organisation for Tenova LOI Thermprocess

Tenova LOI Thermprocess
www.tenova.com

T-DRILL Oy appoints new managing director

T-DRILL Oy has announced that Jouni Matikainen has been appointed as the company's new managing director.

Mr Matikainen has a strong background in international sales and leadership positions – most recently during three years as T-DRILL's sales director.

Before that, he worked for 11 years as the managing director of Epec Oy, and 10 years at ABB in sales and marketing management positions.

The CEO of Leinolat Group, and T-DRILL's chairman of the board, Mr Lars-Erik Schöring, commented: "I would like to congratulate Mr Matikainen and wish him all the success as he embarks on this important and challenging task. I am very happy that we were able to choose a new managing director from within the company, being already familiar with T-DRILL.

"In fact, I am convinced that T-DRILL Oy's development and strong growth in recent years will continue under the leadership of Jouni and that T-DRILL will also in the future be the world's leading provider of tube fabrication machines and solutions."

Mr Matikainen assumes the role from Anne Hanka, who is retired in September this year after a 40-year career at T-DRILL. Mr Schöring added: "Anne Hanka can be very proud and happy about what she has accomplished together with T-DRILL's employees and representatives during her nine years as T-DRILL's managing director. I would like to thank Anne for how well she has led T-DRILL to this point where we are today.

Mr Matikainen added: "The T-DRILL company is in a good condition and the beginning of the year was succesful, so we can also be confident about a positive future even though the near future is full of a degree of uncertainty. Together we will succeed."

T-DRILL Oy
www.t-drill.com

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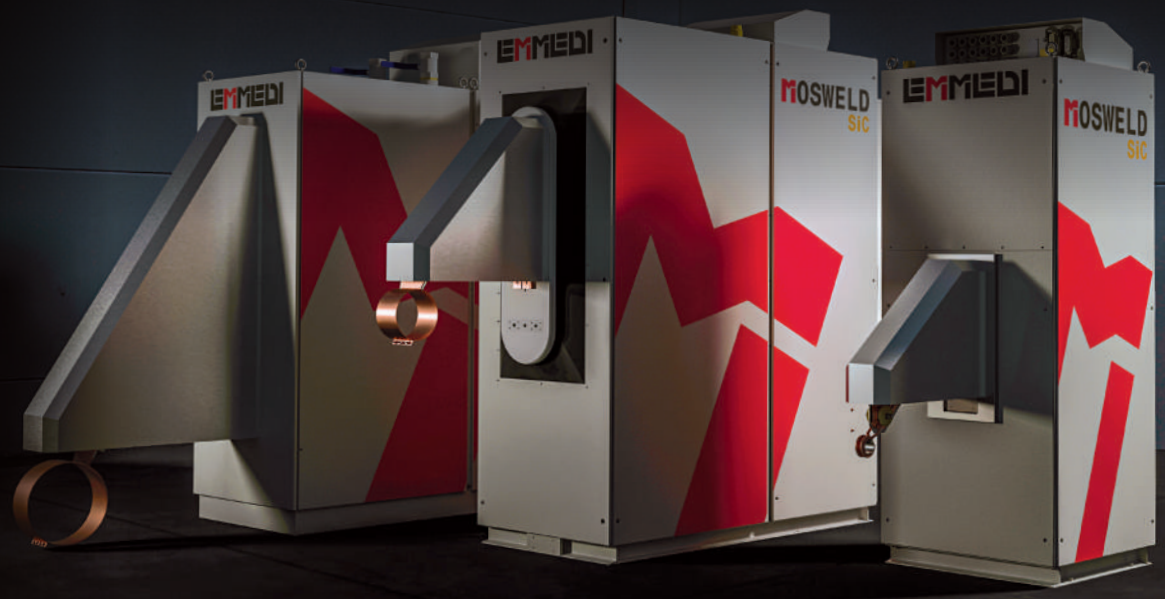

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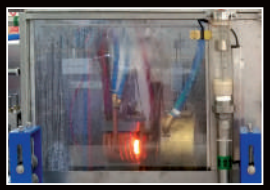
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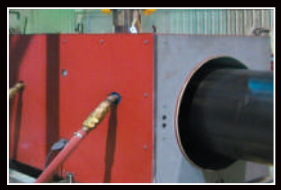
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Valve World Expo 2020 will present many innovations

FAST and effective means to fight the coronavirus pandemic are being sought by countries around the world. Valves, which are used in respirators, for example, are also part of the solution. In addition, facilities equipped with valves must be available to effectively produce treatments and vaccines against Covid-19 in millions of units in short time periods. The valve industry is working flat out on components to play its part in overcoming the crisis.
Hospitals must be supplied with enough medical oxygen – an essential requirement that has been intensified during the coronavirus crisis.

"In addition to stationary oxygen tanks, mobile tanks are increasingly being used in the wake of the coronavirus pandemic, which are urgently needed for temporary hospitals and medical stations", explained valve company Herose. The company's own valves are used for the technical configuration of these tanks.

According to Herose, the products require a high degree of precision, as well as complete purity, and are therefore particularly suitable for medical oxygen. "They are 100 per cent free of oils, greases and other contaminants. This is essential, as in an oxygen-enriched atmosphere, oils and greases are at risk of quickly self-igniting."

In order to meet the increased demand for valves and to protect the health of employees, the company has worked to optimise its work and production processes. "We are aware that our valves help save lives", said Martin Maas, managing director of the Fluid Technologies EMEA division.

The global demand for respirators has been rapidly increasing in intensive care units in hospitals. To help meet this demand, IMI Precision Engineering has expanded its production capacity for Flatprop valves in Palézieux, Switzerland. These valves control flows "and facilitate highly precise dosing of gases and gas mixtures. These properties make them essential components in respirators", explains IMI Precision Engineering.

The global demand for respirators is rapidly increasing in intensive care units in hospitals. To help meet this demand, IMI Precision Engineering has expanded its production capacity for Flatprop valves in Palézieux, Switzerland. Respirator manufacturers require a great number of complex individual parts – including safety valves for protection. "We also supply respirator manufacturers and in this way we are contributing to the protection of human life", explains Goetze Armaturen. But the company's products are not only found in respirators. "We also support manufacturers in disinfection technology by providing them with parts."

Innovations in the fields of valves will be presented at Valve World Expo, the international leading trade fair taking place from 1 to 3 December 2020 at Düsseldorf Fairgrounds.

Valve World Expo
www.valveworldexpo.com

High-tech tube and bar straightening system for cold and hot metal profiles

VIOLI SRL, a company that specialises in the design and production of industrial machinery dedicated to the manufacture of tubes and wires – typically used in the processes of drawing, winding, straightening and cutting – was founded in the 1992 by Mr Giorgio Violi.

Violi Srl now boasts an established presence on the main international markets offering a range of reliable and cutting edge straightening machines able to process cold and hot metal profiles. The full line includes equipment for straightening tubes or bars made of steel or other metals having a circular, cross or complex profile and ensuring excellent results and high productivity.

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

All the rollers are mounted on motorised and independent supports flowing within bushings that allow the operator to modify the height and the angle of the system. Acting on the vertical axis it is possible to adapt the straightening machine to different diameters and to correct the line of the advancement of the profile in order to create a process of metal stressing and to get products perfectly straight. Two motors with inverter and switch to reverse the direction of the motion allow the operator to control and adjust the speed of advancement of the profiles under process.

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

The wire-straightening machine with fly cutting system model VM/MRTVS-C is designed to straighten and cut to length – through a cutting system with circular saw blade or shears – metal wires with diameter from 1 to 8mm without stopping the advancement during the cutting operation. The machine is composed of a coil holding system, a central dragging group, a rotating straightening group and a cutting group.

The range of the Violi straightening machine is completed by the RPD Series, a family of products for square or rectangular profiles to process hot or cold drawn bars of different thicknesses and widths. The devices consist of motorised rollers adjustable in height with decimal display system; acting on the vertical axis is possible to correct the line of the advancement of the profile in order to get perfectly straight products. Simply replacing the traction rollers is possible to process almost all the profiles included into the working range.

Violi Srl
www.violimacchine.it

The MRT series from Violi Srl

New turnkey phased array ultrasonic solution for evaluating ERW welded tube

MAGNETIC Analysis Corp's Echomac® Phased Array system offers mechanical, OCTG and automotive tube manufacturers a high performance, automated solution to detect longitudinal weld zone defects and/or monitor weld profiles, with minimal operator interaction. Installation can be online in the hot zone after the welder, for profile and flaw detection at temperatures up to 252°F (122°C) or in a lower temperature area (below 140°F (60°C) for flaw detection after forming and shaping. The system is available for sale or by taking advantage of MAC's unique leasing option.

Phased Array electronic transducer scanning ensures the entire weld zone is covered while sequentially monitoring scarf, evaluating laminar defects, or detecting longitudinal OD/ID defects, typical of the welding process, including lack of fusion, hook cracks and misalignment of the parent material. All this is accomplished using the same phased array transducer without the need for mechanical movement or operator adjustment to realign the system with the weld location.

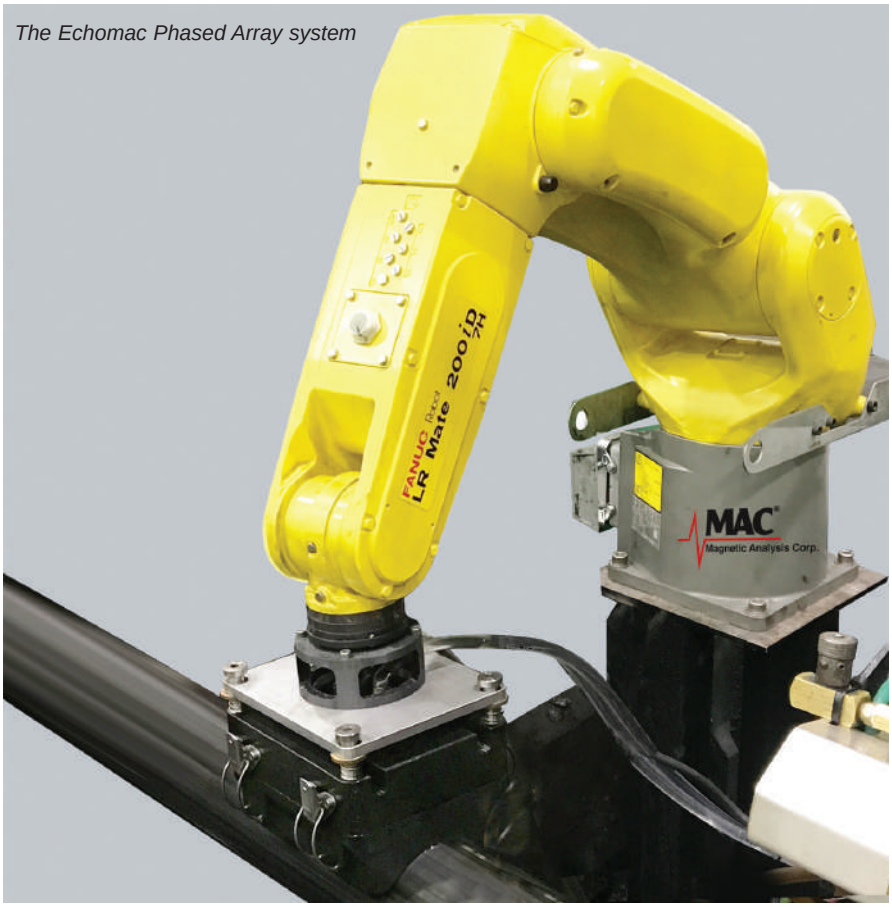
Live feedback on the quality of the weld and seam trim tool is provided and no averaging or AGC is used for processing the data. B-scan and C-scan views result in real time images of the weld profile and defects, quickly alerting the operator to any issues with the scarfing process. The PA system is preprogrammed with the delay laws and ultrasonic setting for each pipe diameter. Programmed thresholds show a go/no-go image. An integrated strip chart records the test for a permanent record allowing the operator to review data post-test. Once test settings have been saved, minimal operator intervention is needed allowing high productivity.

The system consists of a phased array electronically controlled transducer test head, which is held and positioned by a 5-axis robot. The robot can be preprogrammed to move to the weld line test position, a calibration position, or quickly retract to safety when integrated signals from the mill's PLC indicate open welds, cut outs and other conditions that could cause damage. The robot's small footprint allows the customer to select the exact part of the process to be monitored ensuring the highest possible yield on production pipes.

The test head provides coupling (usually mill coolant) and houses a single phased array transducer which follows the surface of the tube and can handle an approximate 2" range of tube diameters using wear shoes that MAC customises for the exact tube OD being tested. For weld mills with a large diameter range, multiple test heads and arrays can be supplied to support an entire range from 2" up to 12" diameter and wall thickness ranging from 0.12" to 0.68".

Where a second mode of NDT is required, the Echomac® Phased Array ERW system can be supplied with MAC's MultiMac® eddy current or Rotoflux® magnetic flux leakage testers.

Magnetic Analysis Corp
www.mac-ndt.com



The Echomac Phased Array system

Rapid asset repurposing provides productivity leap for tube processing

THE incorporation of electronic controls into machine tools surged in the 1980s and 1990s leading to decades of tremendous productivity growth in the industrial world. Haven Manufacturing was a participant in that growth with the introduction of multiple new tube processing systems that incorporated the then 'state-of-the-art' in production machine controls.

However, repurposing long productive mechanical assets with outdated control systems is a significant challenge in manufacturing facilities.

Replacing these assets with new machines is not only costly but may lead to a significant interruption of production as old equipment is removed and new machines installed.

Haven has focused its resources on the development of a 2020 state-of-the-art controls and hydraulic package suitable for retrofitting into existing machines with decades of successful production history.

The key goals of this development were: to be backward and forward compatible. Through direct customer input we learned that they wanted a system upgrade that was a straightforward installation on their existing mechanical platform and forward compatible with their new machine purchases. In the words of one user "I want my existing machine to have all of the control features you offer in your newest products."

Secondly, the complete field retrofit could take no more than one week. Machine tool assets make no money if they are not up and running. Taking a key piece of capital off-line for even a short period of time is a big investment. The upgrade had to executable in the shortest possible length of time. Finally, "Make it easier."

Gaining operator acceptance of any new technology is always important but especially critical in a machine upgrade. Nothing sets back acceptance of new technology more than hearing an operator say. "This is a lot harder than the old machine."

To meet these challenges, Haven developed the new Haven 2020 SecureCut control system.

The new control system utilises the latest available hardware to ensure ready availability of replacement components should the need arise. Its full suite of features includes the ability to optimise operations, collect and analyse data, troubleshoot faults and communicate with remote support resources all from a single user- friendly touch screen HMI.

Haven Manufacturing
www.havencut.com

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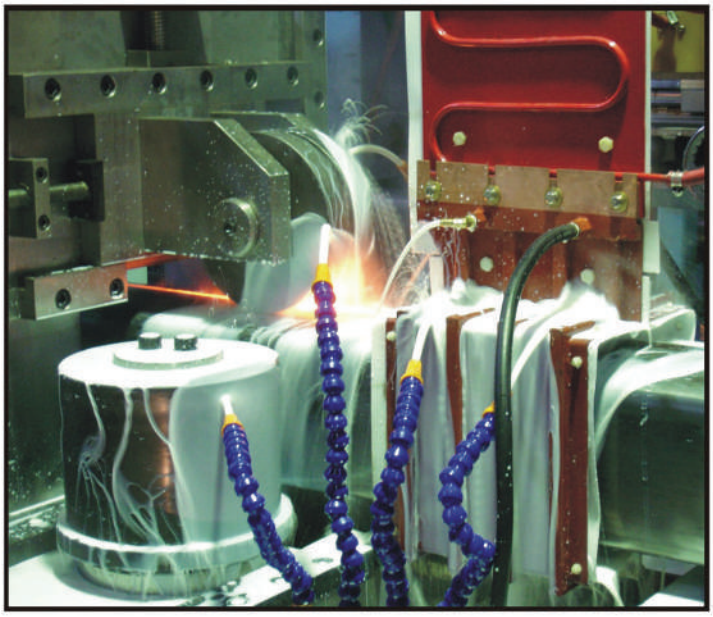

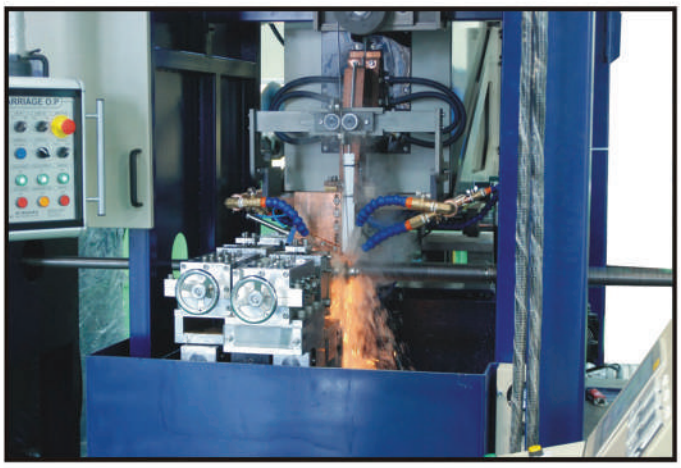

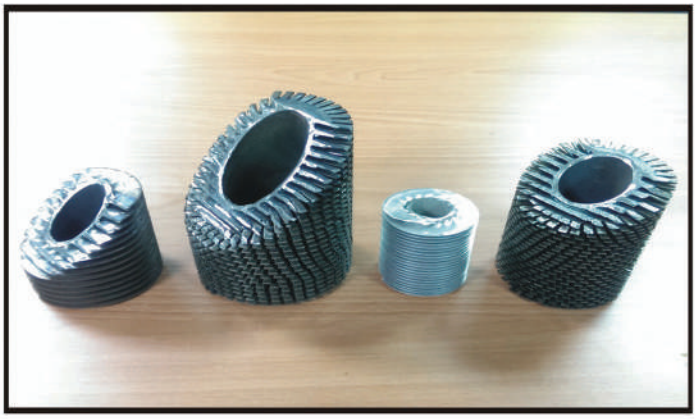

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The Viking 3350 XG PAPR welding helmet

LINCOLN Electric has introduced its new helmet, which comes complete with exterior grind controls that are often preferred by welders. It also features a Powered Air Purifying Respirator with respiratory performance, versatility and optics that are designed to improve the overall welding experience.

The Viking™ 3350 XG PAPR features a low-profile external button to switch between weld and grind mode, a smart blower system, and an extra-large 12.5 square inch auto-darkening lens with Lincoln Electric's exclusive 4C® Lens technology. Featuring a lens with superior 1/1/1/1 optical clarity, extreme colour accuracy, light weight and an even shade from any angle, this feature increases operator comfort for long hours of welding.

Chase Rutti, product manager, accessories, said: "When welding must be performed in enclosed or other areas where it's difficult to access effective ventilation or control exposure to welding fume, one option is personal protective equipment for the individual operator. Our new VIKING™ 3350 XG PAPR system, with a popular exterior grind control, helps the operator save time with easy access to the most common fabricator activities – welding and grinding for pre- or post-joint preparation. Offering comfort and safety for the welder, the helmet also features a unique, patented airflow design. The airduct is integrated into the top of the headgear and features two air flow baffles, which the user can adjust to change the direction and distribution of the set air flow. This feature maximises operator comfort and helps prevent eye dryness.

With the system's superior battery life, operators can work a full shift without interruption, improving efficiency. While the VIKING™ 3350 XG PAPR comes with a battery that outlasts competitor battery lives, Lincoln Electric also offers an extended battery which can operate for up to 16 hours, providing flexibility when working overtime and functioning as a safeguard if the battery is not charged overnight.

It can be difficult to access effective ventilation in a small area

Lincoln Electric
www.lincolnelectric.com

Customised in-line bright annealing systems

THANKS to a reputation gained with traditional and consolidated bright annealing solutions, EMMEDI has been awarded, within less than one year, the supply of three unconventional in-line bright annealing systems from one of the major stainless-steel manufacturers worldwide – Sandvik.

The first two have been installed and started-up in September 2020, the third one is due by the end of January 2021.

The systems, developed by EMMEDI in strict cooperation with the Sandvik team, consist of three complete bright annealing lines for coil-to-coil production of seamless tubes of small diameters.

Cristian Iuliano, sales manager for the tube division of SAET SpA, said: "We are proud to have been commissioned three bright annealing furnaces for stainless-steel and nichel alloys tubes: design and performances over the standard make this system the perfect solution to meet Sandvik requirements and will contribute to the success of its great business lines worldwide. The highly customisation of the whole

process and of the equipment itself have been possible thanks to SAET EMMEDI skilled engineers who are always willing to look over the standard solutions."

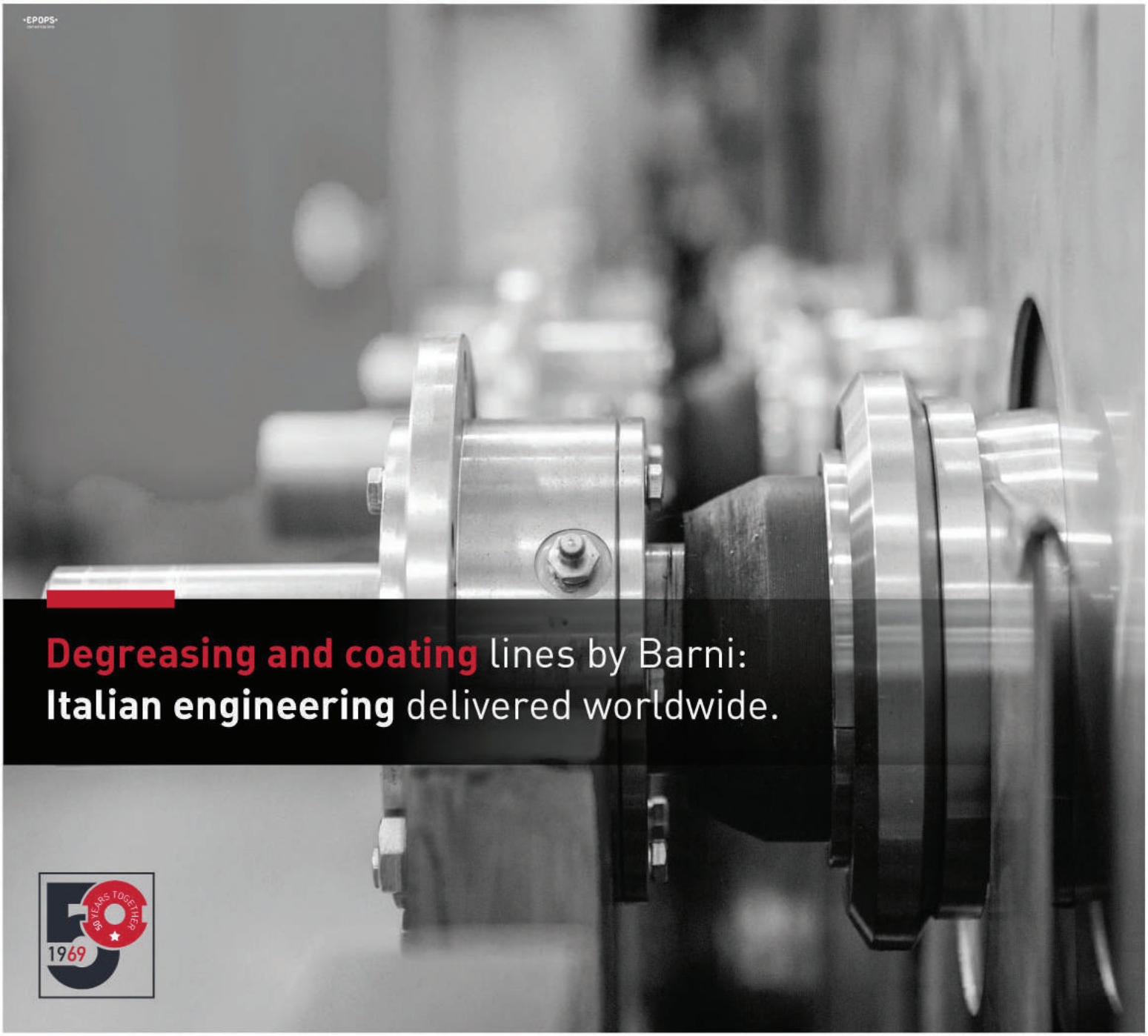
EMMEDI know-how has been entrusted with the development of a highly customised system that innovates the technical approach to stainless steel seamless tubes production. Induction heating applied to this process reduces start-up times to a minimum and permits a power density higher than the conventional furnaces with a consequent reduction in the length of the heating section.

Both the heating inductor and the cooling section are assembled on a specific support frame, able to traverse on rails, perpendicularly to the production line, in order to clear the mill area when heat treatment is not required. The complete system (heating inductors and cooling tunnel) are cooled by means of a closed loop demineralised water-cooling system, mounted on an independent structure.

To achieve brightness and hardness required by the annealing process, non-recycled pure hydrogen gas at a low rate is used for a perfect cleaning of tube surface in safety condition. The outgoing hydrogen is burned to prevent gas dispersion in the environment.

SAET EMMEDI
www.saetemmedi.com

Ajax TOCCO
www.ajaxtocco.com



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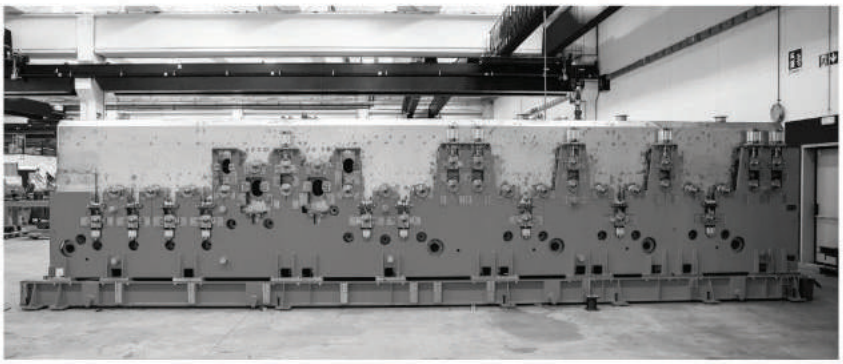

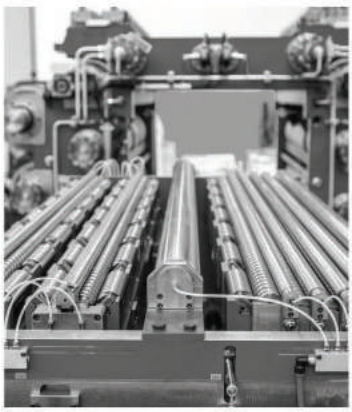

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Ergonomic Caddy® MIG inverter welding

COMPACT, lightweight and powerful, the inverter-powered Caddy® MIG C160i and C200i are simple to operate, semi-automatic and ruggedly designed, bringing industrial welding performance to even the most remote locations. Both the Caddy® MIG C160i and the more intelligent Caddy® MIG C200i are stocked in Europe and available for delivery from local ESAB distributors.

Caddy® MIG C160i – 160A Inverter MIG/MAG welding system with integrated wire feeder for 200mm spools: the Caddy® MIG C160i is used for MIG/MAG welding of mild steels for repair, maintenance and assembly work. This easy-to-use and powerful unit offers excellent welding properties and is easy to take along to the job at hand. With Caddy® MIG C160i, the operator only needs to set the plate thickness before starting to weld. Hotter or colder welds can easily be obtained by using the heat adjustment knob.

Caddy® MIG C200i- 200A Inverter MIG/MAG welding system with integrated wire feeder for 200mm spools: the Caddy® MIG C200i features QSet intelligent setting of welding parameters. This means a perfect arc every time for all material and gas combinations.

The machine features single-knob control for consistent and optimal weld quality for all plate thicknesses; the operator selects the material, sets the plate thickness and starts welding. The more advanced digital panel and greater power of the Caddy® MIG C200i also offers an expanded variety of welding options, optimised for wire diameters from 0.6 to 1mm and plate thicknesses from 0.5 to 6mm: this easy-to-use, intelligent and powerful unit offers excellent welding properties and is easy to take along to the job at hand. It is also equipped with QSet™, an intelligent setting of welding parameters giving a perfect arc for all material and gas combinations and single-knob control for consistent and optimal weld quality for all plate thicknesses.

Weighing less than 12kg, these portable MIG/MAG welding units offer welding professionals industrial performance for a broad range of remote applications, from light metal fabrication, general and auto-repair, maintenance and assembly work to agricultural repairs and industrial tack welding – in the workshop or on the move and and designd ergonomically.

ESAB
www.esab.com

The compact Caddy® MIG C160i

Garnalex chooses Combilift forklifts

GARNALEX has made substantial investments in its new extrusion factory in Derbyshire, UK to revolutionise the way aluminium windows and doors are fabricated, installed and sold. It has also invested in a fleet of Combilift multidirectional forklifts, which play an integral role in ensuring maximum efficiency at this advanced facility.

CEO Roger Hartshorn was one of Combilift's first customers around twenty years ago when he used the original C-Series trucks at a previous company he owned, and he had no hesitation in choosing Combilift once again, stating that "the trucks are now a standard in the industry, crucial to high levels of safety and operational flexibility".

The scale of production in the 100,000ft² factory, which can extrude four tonnes of aluminium an hour, requires a coordinated approach, and the Combilifts are fitted with weighing scales, bar code scanners, QR code readers and PCs. These feed information into Garnalex' bespoke management and tracking system, enabling the precise location of all products to be identified at any time.

Garnalex has invested in a fleet of Combilift multidirectional forklifts

The four C4000 LPG powered models were chosen for their ability to be used as universal trucks, outside as well as inside, for handling long lengths of raw materials and finished products in all areas. They offload incoming 7m long logs, bring baskets of extrusions to the ovens, and back to storage areas once the process has been completed. The 5.5m triplex masts enable them to pass under low doorways, and lift goods to high storage bays when extended.

The Combi-CB, the first truck of its kind to combine compact counterbalance design with multidirectional capability, can carry pallets as well as longer loads and is also used for handling plastic extrusions at LB Plastics, part of the Garner Holdings group and co-located with Garnalex. "This truck's clever design and versatility is a great asset," said Mr Hartshorn.

He continued: "Before we had Combilifts in the companies I used to own, we had tried all sorts of different pieces of equipment, but once we discovered the C4000 we had the ideal solution. Martin McVicar and Robert Moffett came up with a good idea that that just keeps on getting better. The engineers at the factory in Ireland continue to enhance and customise products to individual requirements as they did for us by incorporating the technology we needed."

Combilift
www.combilift.com

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Amada Weld Tech announces MM-410A handheld resistance weld checker

AMADA Weld Tech, a manufacturer of equipment and systems for resistance welding, laser welding, laser marking, laser cutting, laser micromachining, and hot bar bonding, has announced the new MM-410A handheld resistance weld checker.

The compact unit supports a wide range of resistance welding technologies including AC, DC inverter, AC inverter, transistor, and capacitive discharge.

Featuring a simple and intuitive user interface and colour touch panel display, the MM-410A provides information on current, voltage, weld time and force and is ideal for use in process troubleshooting, where it can be used to correlate waveform and numeric data with process results and provide detailed weld data for process optimisation and validation.

MM-410A handheld resistance weld checker

If used continuously in a production environment it reduces scrap by detecting drifts in the weld process and alerting operators before process failure. The MM-410A also reduces the frequency of destructive testing and provides an independent way of monitoring the welding power supply by detecting any drifts in welding power supply calibration.

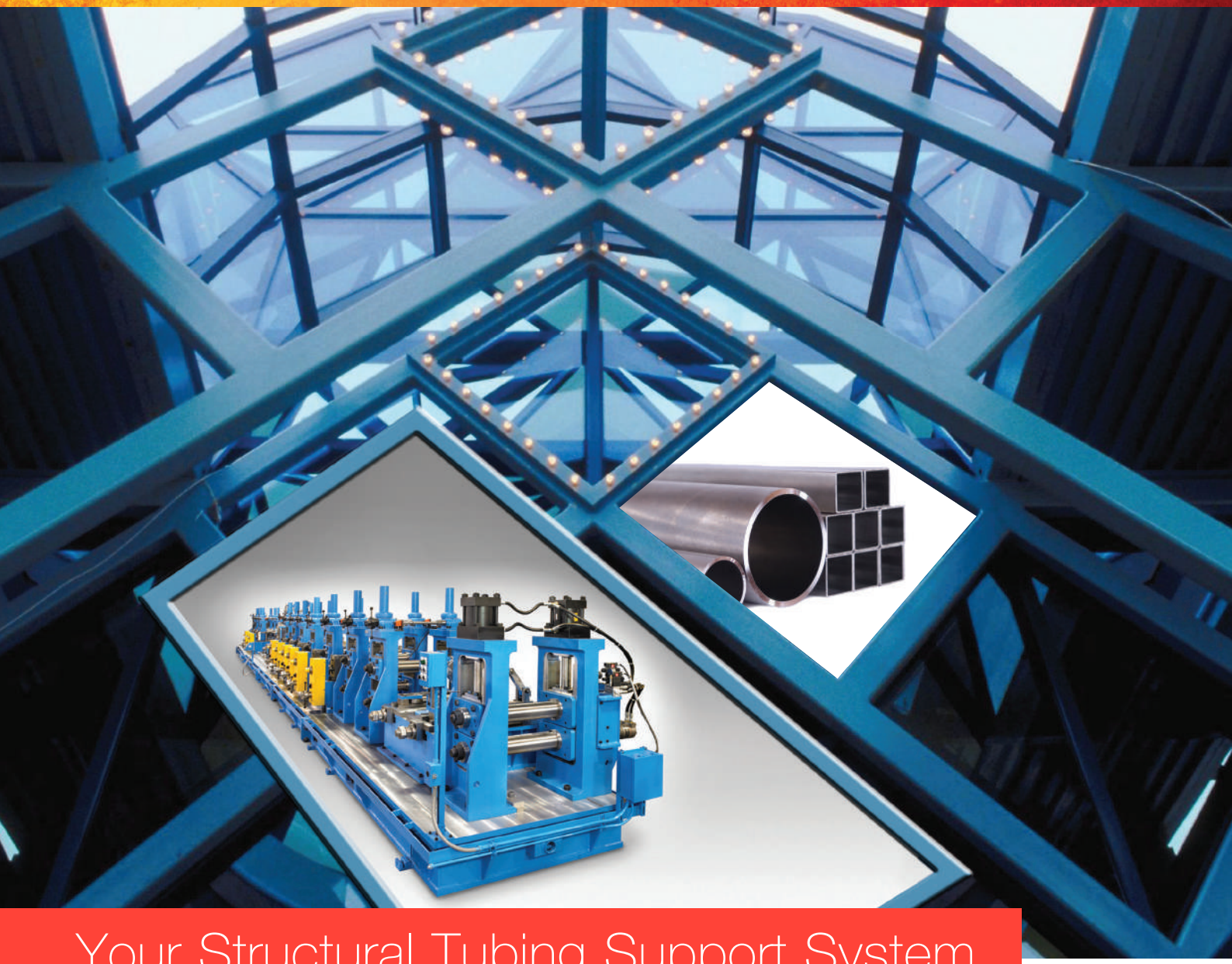
The unit provides ISO17657-compliant measurement for current (when used with available ISO-compliant toroidal coil).

It offers easy set up using the 5.7" colour touch panel. The unique seam welding mode monitors AC current and voltage or DC voltage for up to five minutes. Data storage is available using an onboard flash drive. The MM-410A offers Ethernet (TCP/IP) and RS-232/485 communication. Multi-language support includes English, Spanish, Japanese, Chinese, Korean, German and French.

Available accessories for the MM-410A handheld resistance weld tester include toroidal coils, force sensors and current/force sensors.

Amada Weld Tech
www.amadaweldtech.com

INDUCTOTHERM GROUP



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Victrex launches VICTREX AM PAEK filament optimised for additive manufacturing

Victrex, an expert in high-performance polyetheretherketone (PEEK) and polyaryletherketone (PAEK) polymer solutions, has launched the VICTREX AM™ 200 filament, which has been specifically developed and optimised for additive manufacturing. The first 3D printing equipment supplier to offer Victrex´s new AM PAEK filament is INTAMSYS, based in China, a high-tech company that provides high-performance 3D printing materials, direct additive manufacturing solutions and software.

Jakob Sigurdsson, Victrex CEO, said: "This new generation of Victrex additive manufacturing PAEK filament represents an important step forward for Victrex and we are excited now to work closely with INTAMSYS. Due to excellent co-operation with companies and institutions that pursue innovation in additive manufacturing, such as INTAMSYS, as well as Victrex´s continued research, we have been making sustained progress toward creating truly innovative components based on the design freedom of additive manufacturing, combined with the high performance of PAEK polymers."

INTAMSYS has conducted physical and mechanical performance tests on the new VICTREX PAEK filament material. The tests were performed on different printers including the smart dual nozzle FUNMAT PRO 410 3D Printer.

This industrial-grade, high-temperature 3D printer can print parts up to 305*305*406mm, can handle a variety of complex structures and can print a variety of materials such as PEEK, PEEK-CF, PEKK, PC, PC-ABS and other high-performance materials.

Charles Han, founder and CEO at INTAMSYS, added: "Our test results to date have shown that the VICTREX AM 200 filament has a better interlayer adhesion than other PAEK materials on INTAMSYS´ machines. Compared with unfilled PEEK, it is designed with slower crystallisation, lower melt temperature and a viscosity finetuned to the filament fusion process – such as easier flow in the build chamber after leaving the nozzle. Higher flow in open air (low shear rates) also promotes interlayer bonding and stability during printing.

"All of this contributes to an improved interlaminar adhesion, easier printing (less shrink and warp), and a better suitability for FDM 3D printing, compared to other similar options, based upon the testing we have done at INTAMSYS up to this point."

INTAMSYS is also the first company to be part of Victrex´s proposed filament fusion network supporting this new filament. The network aims to facilitate the use of the innovative high-performance VICTREX AM materials based on PAEK polymers and includes further material solutions specifically developed for use in additive manufacturing technology. These materials are designed for high temperature resistance with excellent mechanical properties for AM parts.

Victrex´s new PAEK AM filament has been developed to support a variety of demanding applications because of its very high wear resistance, high temperature resistance, fatigue resistance and corrosion resistance to fluid/chemical, which when combined have the potential to increase design freedom and production cost efficiency.

Victrex
www.victrex.com

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Guild International introduces redesigned model of its PSA portable shearwelder

The redesigned PDS portable shearwelder

GUILD International, the coil joining equipment specialist for the steel processing, tube producing and stamping industries, has announced the availability of a redesigned version of its popular portable shearwelder now simply called the PSA.

This shearwelder is a compact semi-automatic shearwelder ideally suited for a small tube mill, roll form line or stamping presses.

The unique "C" frame design and its portability makes the PSA easy to shift from one processing line to another regardless of strip flow. This new version of the PSA has been reconfigured to comply with the latest worldwide safety standards. Features of Guild's PSA Portable Shearwelder include patented, split elevating quick change, solid copper alloy back-up bars, which ensure proper fit and perfect torch tracking. A vertically and horizontally adjustable torch holder allows the operator to quickly and properly align the tungsten over the weld seam. A weld window offers a safe view of the weld process, and a customisable weld power supply allows the PSA to fit any application.

Additional features of the PSA Portable Shearwelder include a pneumatically powered, three-blade shear for distortion-free shearing with spring loaded stripper pads for a uniform cut, automatic relay to sense that welding arc is correctly established, and quick change backup bars. All PSA models come standard with a universal step-down transformer that allows Guild International to have machines available for immediate shipment, even to countries with different voltages.

Guild International
www.guildint.com

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GF Piping Systems launches paint-free SeaDrain® White piping system

GF PIPING Systems has launched SeaDrain White marine drainage pipe system, which offers the marine industry a paint-free, corrosion-free drainage solution.

SeaDrain White is used for black and gray water drainage, and according to GF Piping Systems, is lighter in weight, lighter on maintenance requirements, lighter on installation time and labour and lighter in lifetime system costs than competing metal systems.

"SeaDrain White is the first purpose-built thermoplastic piping system specifically engineered for marine drainage applications," said Roberto Chiesa, global business development manager, marine. "With applications from service lockers, open decks, balconies, class A0 and class A60 fire-protected decks to customer-facing areas you can see the difference throughout its lifetime versus metal."

The paint-free, corrosion-free drainage solution

Made of polypropylene plastic, SeaDrain White is reported to take less CO_2 to manufacture, making it an eco-friendly alternative to metals, and it is suitable for cruise ships, passenger ferries and luxury yacht installations, in both new-build and retrofit construction projects.

SeaDrain White is also said to reduce the risk of bacterial contamination of the ship, with factory tests over 100 psi (6 bar) conducted, it features a push-fit and lock mechanism, the SeaDrain Fast-Lock® jointing system, which makes installation up to five times faster than alternative metal solutions and the bright white external colouring includes additives for UV resistance against discoloration, negating the need for external paint.

Made entirely from a non-corroding thermoplastic, SeaDrain White is engineered for a minimum of 25 years life compared to 5 to 10 years for metal alternatives.

GF Piping Systems
www.gfps.com

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SLICKERS Technology

www.slickers-technology.de

Weld purging on-site with the durable PurgEye Site

WELDERS often face weld purging difficulties when working under the conditions experienced on-site including exposure to extremes of heat and cold, harmful sand and dust and even hazardous fumes, where an expensive Weld Purge Monitor® may not always be ideal. Huntingdon Fusion Techniques HFT® have designed and developed the PurgEye® Site, which is manufactured inside a protected secure, safe, waterproof and dustproof, tough carry case, perfect for on-site welding.

Georgia Gascoyne, CEO for HFT, said: "Welding on-site does not eliminate the need to measure oxygen levels when welding metals such as stainless steel, zirconium and titanium. Often, welders are left to guess at purge levels, due to some Weld Purge Monitors® not being able to handle various on site conditions."

"Now with our networking device PurgeNet™, the PurgEye Site is our on-site monitor, that has been specifically designed for extreme conditions. By using the PurgEye Site, welders can ensure non-oxidised, zero colour welds are achieved regardless of conditions."

The PurgEye Site has a fast response, long life sensor and it is equipped with PurgeNet, allowing the monitor to connect to a variety of accessories. One of the accessories, an automatic welding machine interface, allows controls to be based upon the oxygen level, to prevent welding if that level is too high.

With the housing case open, the PurgEye Site is IP65 rated and IP68 rated with the lid closed. The PurgEye Site measures oxygen levels very accurately from 1,000 ppm, right down to 1 ppm (accurate to 10 ppm) with readings in parts per million (ppm) or percentage, depending on the users preference. The small, low volume, almost indestructible case, can be carried anywhere and the PurgEye Site used either with its internal battery, which lasts up to 10 hours or connected to mains electricity from 90 – 250V, single phase A.C.

The PurgEye Site from HFT

The large, bright, OLED display allows the data to be easily read and is mainly symbol based, rather than text. The display does not need a backlight and can be viewed from greater angles than LED screens.

Huntingdon Fusion Techniques
www.huntingdonfusion.com

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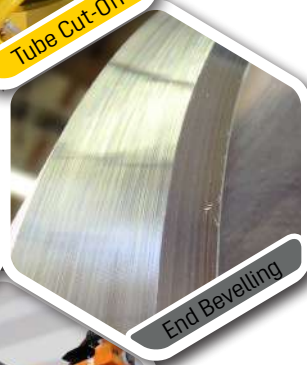
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Kasto modernises Heine + Beisswenger storage system

STEEL trading company Heine + Beisswenger has been using a Kasto Unitop overhead storage system since 1995, enabling the company to offer its customers an extensive product range and fast deliveries. However, almost 25 years of constant operation have had an impact on performance and availability – so Kasto updated the system with a comprehensive retrofit.

Heine + Beisswenger is one of the largest family-run steel and metal wholesale companies in Germany. Throughout its years in business, the company, based in Wuerttemberg, Germany has developed into an internationally active group of companies with 14 sites and almost 600 employees.

The product range encompasses carbon and engineering steels, unalloyed steels, stainless steel, rolled steel and non-ferrous metals – a total of more than 25,000 articles in various grades, profiles and dimensions. With an inventory of around 55,000 tonnes of material and a sophisticated logistics system, Heine + Beisswenger ensures that orders reach the customer within the shortest possible timeframe.

The company also has a site in Langenzenn, Franconia since 1995. As a full-service provider, Heine + Beisswenger has an extensive range of stock and modern machinery for various processing steps such as sawing. From the outset, the heart of the subsidiary has been a Kasto UNITOP automatic bar stock and cassette storage system.

After almost 25 years in continuous service, however, the storage system was showing signs of old age: The control and automation technology was no longer up-to-date, nor were the drives and measuring systems of the storage and retrieval machine operating correctly. Breakdowns were becoming more frequent and procuring spare parts for the 25-year-old was also increasingly difficult. Performance-wise, the storage facility had reached its limits due to the increasing number of orders at Heine + Beisswenger. “Mechanically, however, it was still performing normally,” recalled Torsten Meincke, plant manager at Langenzenn. “The system is also ideally integrated into our processes, and our employees are familiar with it – so we decided not to replace the system completely, but to modernise it with a full retrofit.”

For this project, the steel trader turned to the manufacturer of the storage system, Kasto Maschinenbau GmbH & Co KG. “In many cases, modernisation is much more economical than a new purchase,” explained Gerd Jakob, Retrofit Project manager at Kasto. “After all, large parts of our storage systems, such as the steel construction, are almost indestructible and we can continue to use these components with a clear conscience.” Nevertheless, Kasto consistently replaces any components that no longer meet current requirements – and at Heine + Beisswenger, the switch cabinets were no exception. The experts replaced the existing S5 control system with a modern S7 400 PLC.

Kasto Maschinenbau GmbH & Co KG
www.kasto.com

ESAB introduces Cryo-Shield Ni9 globally

ESAB Welding & Cutting Products has introduced Cryo-Shield Ni9 globally. It is a Ni Cr Mo alloy flux cored wire used for all-position welding of 9 per cent Ni steel LNG fuel and storage tanks with 100 per cent CO_2 shielding gas.

This modified 625-type wire offers excellent crack resistance and is superior to conventional NiCrMo-3 wires.

Mechanical properties are similar to Hastelloy ENiMo-13 flux cored wires, but at lower purchase price because of its modified formula. Further, because it uses 100 per cent CO_2 shielding gas instead of an argon blend, it lowers operating cost. The wire carries approvals from the ABS, BV, DNV GL, KR, LR and CCS classification societies.

"We developed Cyro-Shield Ni9 in response to ship propulsion systems shifting from heavy fuel oil to LNG fuel to reduce oxide emissions," said Neil Farrow, global product manager, Cored Wires, ESAB.

Cryo-Shield has been introduced around the globe

"This wire also meets the needs of LNG storage tank fabricators and other 9 per cent Ni steel applications. In benchmark tests against leading 625-alloy wires, Cryo-Shield Ni9 provided superior crack-resistance tolerance, which is especially critical for root welding. Customer field tests with 100 per cent CO_2 shielding gas also confirmed better tolerance to porosity formation, wet-out for a flatter bead crown and slag release compared to conventional 625-alloy wires. In addition, the slag system supports all-position welding, including over-head."

ESAB offers Cryo-Shield Ni9 in 1.2mm diameter and packaged on 300mm wire baskets or plastic spools; vacuum-seal foil packaging prevents moisture absorption. Typical as-welded mechanical properties are a yield strength of 440 MPa, tensile strength of 730 MPa, elongation of 44 per cent and an impact value of 65 J at -196°C.

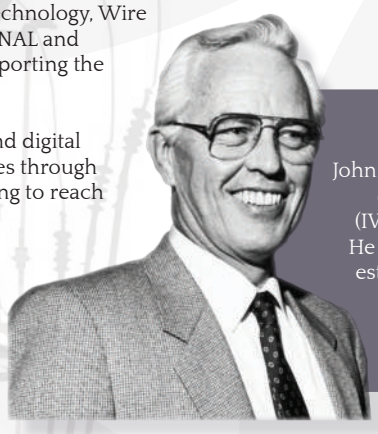
ESAB
www.esab.com

At the heart of the wire and tube industries for 40 years

Intras Ltd – independent publishers of Tube & Pipe Technology, Wire & Cable ASIA, EuroWire, Tube Products INTERNATIONAL and wiredInUSA magazines – has a proud tradition of supporting the wire, cable, tube and pipe industries since the 1980s.

With an unrivalled global distribution in both print and digital formats, we have a firm belief in supporting businesses through combining editorial excellence and targeted advertising to reach the far corners of the globe.

Our magazines and staff can be seen at numerous exhibitions worldwide every year, ensuring our clients receive the maximum publicity. Our readership is from the boardroom to the shop floor, with many companies retaining copies of our magazines down the years as technical journals.



1970s

John Hogg, founder of Intras Ltd, was also a co-founder of the International Wire & Machinery Association (IWMA) and the International Tube Association (ITA). He played an instrumental role in the negotiation and establishment of international wire and cable shows, including the founding of 'wire' – the leading international wire and cable exhibition, now organised by Messe Düsseldorf.

Wire & Cable ASIA线缆

1992

Wire & Cable ASIA – aimed at the increasing Asian market – was published for the first time. Now issued five times per year, it includes industry news, technology news, informative columns on telecom news and a glance at the American market, as well as technical articles.

www.read-wca.com

euroWire

1998

Published for the first time in 1998, EuroWire (EOW) is the leading international magazine for the wire and cable industries. Covering corporate and technology news, technical articles, and informative news from the Americas.

www.read-eurowire.com

TubeProducts INTERNATIONAL

2008

Tube Products INTERNATIONAL, reporting on specialist areas of tube and pipe products for applications such as aerospace, automotive, civil, energy, OCTG, structural and mechanical, published for the first time, and now produced five times per year.

www.read-tpi.com

Telephone: +44 1926 334137 Email: intras@intras.co.uk

1984

Intras Ltd was founded by John Hogg as a management company to administrate the activities of IWMA and ITA trade associations. Intras begins to create a worldwide database of companies and products involved in the wire, cable, tube and pipe industries.

TUBE & PIPE 管道技術 Technology

1988

Tube & Pipe Technology (TPT) was first published in 1988. Covering technological developments concerning tube and pipe manufacturing methods, production machinery and processing equipment, it is now published six times per year.

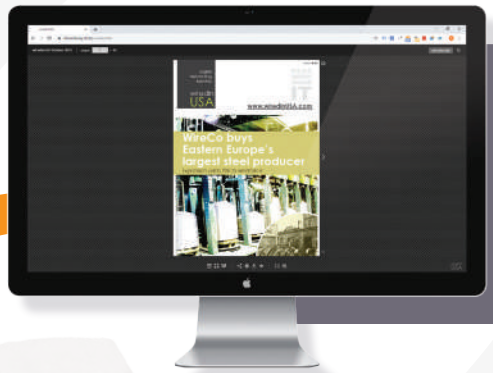
www.read-tpt.com

wiredIn USA

2011

Embracing the digital world, wiredInUSA – the monthly online ezine and web-based publication – was published for the first time. A vibrant and informative ezine, this has now become a well-respected format aimed at the Americas.

www.wiredinusa.com



euro fasteners Fasteners ASIA 紧固件

2020

Euro Fasteners & Fasteners ASIA first published in 2020. In-depth feature sections dedicated to the fasteners industry within our wire magazines.

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www.read-fastenersasia.com

A commitment to the future

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Like many publishers, we also embrace the use of digital and web-based technology and actively encourage engagement with us through our Twitter and Facebook social media sites.

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Intras PUBLICATIONS

Here to serve the industries we helped to shape

Ultra-Cut® 130 XT plasma power source

THERMAL Dynamics® Automation has introduced the Ultra-Cut® 130 XT high-precision plasma power source with an improved 130-amp XT torch and new consumables.

The system has a cutting output of 130 amps at 100 per cent duty cycle and is optimised for piercing and cutting 20mm steel, stainless and aluminium. Compared to the previous Ultra-Cut 100 XT, it offers 30 per cent more power, 20 per cent faster cutting speed and 50 per cent longer parts life at 130A on mild steel. The Ultra-Cut 130 XT cuts 20mm at 1321 mm/min and 12mm at 2159mm/min and has a maximum cut capacity of 40mm (edge start).

"The Ultra-Cut XT 130 offers industry's best combination of cut quality, cut speed and lowest cost of operation," said Dirk Ott, vice president, global mechanised plasma systems, Thermal Dynamics Automation.

"The Ultra-Cut 130 XT covers the 20mm market – which is a large portion of all applications – at an aggressive price point." He noted that the Ultra-Cut 130 XT offers a good retrofit opportunity for those with older 100- or 130-ampere systems.

The new 130-amp XT torch features Thermal Dynamics' patented SpeedLok consumables cartridge, which allows users to change consumables in seconds. An improved torch head alignment in the torch reduces variations between cut sides for better tolerances. To increase flexibility when mounting the torch in a plasma bevel head, Thermal Dynamics now offers a 76mm shorter torch mounting tube.

The new 130A consumables design also reduces oxygen (plasma gas) consumption by 40 per cent compared to other systems, further lowering cost of operation. In addition to oxygen, plasma gas options include Nitrogen, Air, H35 and argon for marking; shielding gas options include oxygen, air, nitrogen and water). All XT torches use existing parts for cutting when fabricators want to reduce smoke and glare.

The Ultra-Cut 130 XT, coupled with an improved version of Thermal Dynamics Diameter PROä software (found in the iCNC Performance Controller), offers better cut perpendicularity, sharpness and consistency, allowing for outstanding hole quality. Bolts fit even better, and holes require little or no rework. OptiHole database is also available for integration with any third party CNC control.

The Ultra-Cut 130 XT offers all the familiar features of the Ultra-Cut power sources, including StepUP™ modular power technology that allows 130-, 200- and 300-amp systems to be upgraded to a maximum output power of 400 amps.

"The ability to add inverter blocks means fabricators never have to worry about purchasing a system that does not have enough capacity to meet future needs," added Mr Ott. "Fabricators can easily and economically upgrade to a more powerful system when they require greater cutting capacity."

The Ultra-Cut 130 XT also cuts aluminium and stainless steel using Thermal Dynamics' Water Mist Secondary (WMS) process, which incorporates nitrogen as the plasma gas and tap water to generate the shielding gas..

Thermal Dynamics Automation
www.thermal-dynamics.com

PermaFlex™ conforms to curved surfaces for durable identification of tubes

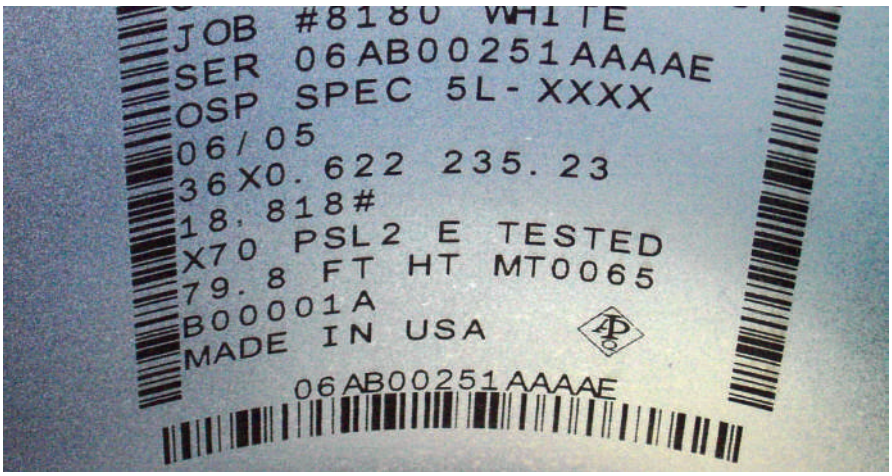
PermaFlex™ is the newest metal identification tag to be added to the PermaLabel® family from InfoSight. PermaLabel® is the scratch proof metal tag that has been the standard for durable asset identification.

InfoSight followed this with the PermaLabel® VI, which added colour coding for fast visual asset identification. These metal tags are rigid and do not conform to curved surfaces very well.

With PermaFlex™, all of the durable properties and resistance of PermaLabel® exist, with the added benefit of a flexible tag that can conform to curved surfaces.

PermaFlex™ is attached to products with adhesive. Since the tags retain their shape once curved, they work with the adhesive to remain attached.

PermaFlex™ can be attached to curved surfaces as small as a 1" radius. Tag sizes are 3" (76mm) wide and range from 0.75" (19mm) to 6" (152mm) long. PermaFlex™ can be printed with one of InfoSight's mill duty LabeLase® Laser Metal Tag Printers.



InfoSight has always been committed to providing identification and traceability in the most difficult environments. PermaFlex™ continues this tradition in offering a tag for curved surfaces.

InfoSight
www.infosight.com

100 per cent analytical approach in the GRP market through the Effective Filament Winding® method

TOPFIBRA, a company that specialises in the design, manufacture and installation of high capacity GRP Production Plants, has introduced the first 100 per cent analytical approach in the filament winding composite market, known as EFW® (Effective Filament Winding® Method).

This highly successful method for reducing costs and waste, improving and increasing production flow and final technical specifications, began as a method to improve the GRP competitiveness and is becoming a revolutionary production mentality globally.

Mauricio Facchinetti, CEO and co-founder of Topfibra, said: "In the filament winding industry, where the raw material costs are high, you first need to be effective and only then can you work on the efficiency."

Indeed, in the GRP technology, a unique recipe, a unique raw material or mix of raw materials, or an optimal process that would ensure the optimal cost, does not exist. Also, thinking about a 'typical plant layout' or a 'perfect configuration' of the continuous filament winding line, which would work in any worldwide GRP production plant, is the easiest way to lose profit during the production.

The difference between investing in GRP pipe production and investing in the production of pipes composed of other materials, implies a significantly higher effort from an analysis point of view. To do it carefully and systematically, a complete analytical method from the beginning is needed, to avoid wrong decision making.

Additionally, in order to ensure that GRP pipes perform in the best possible way, they must be designed and produced with the final project design and the installation conditions being taken into consideration.

In short, the Effective Filament Winding® method is a 100 per cent analytical, continuous improvement, promoting system-wide effectiveness and efficiency. The Effective Filament Winding Method is more than just a better way to design a complete manufacturing plant, and

Mauricio Facchinetti (right): "Be effective first, then strive for efficiency."

design, produce and install GRP pipes. Essentially, it is a 'school of thought'. And while there are many notions that make up this school of thought, much of the power for this system is contained in just five primary concepts: be effective and only then you can be efficient; fight against the statement: "We've always done it this way"; develop a detailed understanding of the production process; clearly define the results you need to achieve; correct all the activities that do not allow you to achieve these results; and re-start the process optimisation loop once more.

While many assume that the Effective Filament Winding method only benefits the production plant, the fact is that the investors also benefit from it, avoiding the loss of time and money.

EFW® principles can impact on the average GRP pipe producer in a powerful way that extends beyond just financial gains.

Here are some of the many powerful benefits of adopting the EFW method:

- Identifies and implement the missing information for a correct GRP industry feasibility study, helping the investor with analyses of the critical elements and to define the most reasonable technology and production range for the production plant.
- Identifies the success of the company as the value of the product and the ability of execution as defined by the market demand, thus leading to more satisfied customers.
- Identifies and optimise each design and production phase, reducing operational costs and maximising profits.
- Reduces and removes wastes and scrap during production, seeing that in the GRP industry there are numerous areas of waste that go overlooked.
- Identifies and removes the hidden wastes in the GRP production (ie the overdesign of a pipe due the higher raw materials specifications). A reduction of waste and non-value-added activity increases total system efficiency;
- Increases the GRP pipe performance, reducing the cost per meter.
- Shortens cycle times and increases production, due to the analytical approach applied to production and logistics.

- Internally manage the GRP information exchange.
- Brings about greater employee morale and buy-in.
- Focuses on the optimisation loops for continuous improvement. Without increasing the number of employees or adding new equipment, meaningful output is increased as a ratio to busy work.
- Increases cash on hand.

Effective Filament Winding® Method Certification

The idea of waste in many industries is intended as the material which is discarded after primary use, or is worthless, defective and of no use after the production process.

The EFW® method focus on waste reduction using a wider approach. "Waste is anything other than the minimum amount of equipment, materials, parts and working time which is absolutely essential to add value to the product or service," said Ohno Taiicho.

It may seem obvious that waste hurts productivity and profitability in any industry but the importance of reducing waste is often underappreciated. In the GRP market, there are numerous areas of waste that go overlooked and that are solved through the EFW method:

- Overdesign: the GRP pipes are custom designed to satisfy the project needs. But the final design also depends on the raw materials characteristics and their compatibility, the GRP being a composite material. Only a 100 per cent EFW analytical approach avoids overdesigns during this process.
- Defects: a defective pipe, caused by poor quality inputs, process, user error or other problems, is costly and easily avoided. The EFW® covers all the phases from the raw material to the final installation, reducing or eliminating the threats before the defect occurs.
- Unexpected downtimes: the timespan that a GRP production line is unavailable or offline is usually a result of some system failing to function because of an unplanned event. In the GRP industry, due to the interconnected variables, the cause may not be easy to discover if the plant is not collecting data during the complete process. The EFW® method, being a data driven analytical system, prevents and corrects the potential source of such unplanned events.
- Bottlenecks: they occur due to oversupply or undersupply and they are handled by the EFW® through better supply chain and personnel management.
- Not utilising talent: waste may occur when the skills of the workforce are underutilised or misappropriated. In the EFW® method, human talent is a highly valuable and often overlooked commodity.
- Transportation: GRP pipes must be handled and transported in an appropriate way. Internal handling and movement to the site is an area for potential waste, reduced by better layout and better aligned process flow.
- Trial & error or excess processing: due to the composite characteristics of the GRP pipe, redundant steps are quite common, and they have to be reduced. The EFW® proceeds with such a process in steps, avoiding any disruption in the complete process.

In the GRP pipe industry, the same actions done in a different order does not lead to the same results. The EFW method involves the creation of a flow diagram, describing each and every step in the value process.

Such a map allows for evaluation of all steps, to identify all the waste (including the hidden waste) and inefficiency, in order to lower the cost, yet increasing the final product technical characteristics. This strategy is one of the most powerful and important tools of the Effective Filament Winding method.

Documenting and managing these procedures and taking input and feedback from all members of the company, for the continuous improvement, will produce powerful changes for the better.

Following these EFW principles and concepts, and reducing key waste, manufacturers who currently specialise in GRP turnkey project create highly desirable successes. The application of the method results in an improved agility in meeting the competitive demands of a highly evolving marketplace.

The clearer the information and data flow is through the entire organisation from start to finish, the faster that company can respond to market demands and satisfy the consumer, and the more efficient that process is, the more quality the company can afford for each dollar to boost profits.

Mauricio Facchinetti, CEO of Topfibra, together with his partner and Topfibra CFO Fabio Fracasso, lead a team responsible for implementing the Effective Filament Winding system from the start, towards the complete investment of high capacity GRP production plants.

Combining the supply of the EFW Production Lines, that includes smart data feedback and dynamic sensors together with the EFW method, the GRP plant can define and achieve the forecasted results and even accomplish results previously considered impossible.

Topfibra
www.topfibra.eu

GLOBAL MARKETPLACE

Materials and metals

A call to EV manufacturers to help secure and stabilise the lithium industry

Paul Graves, chief executive officer of lithium producer Livent Corporation, has called for the electric vehicle industry to pay more for lithium: "…to spur investment and prevent future supply crunches" of the essential metal. Consumer demand for EVs was expected to increase sharply this year, but the slowing of sales and production has caused an over-supply of lithium. Prices fell quickly, prompting some producers, including Livent and Albemarle Corporation, to suspend their planned expansion projects. The resulting lower price has encouraged EV manufacturers to renegotiate supply agreements while demanding higher production.

Paul Graves termed the behaviour, "voodoo economics" adding: "If you don't have a rational conversation with me about what the [lithium] price needs to be for me to invest, then I don't invest."

Livent halted a multi-year expansion project in Argentina, where restarting will be an expensive, and long-winded, process: "It [will] be several years before any new production [comes] online," Graves said. "If every EV company took its 2023 plans … to the lithium market today, they'd probably get only about 15 percent of their needed supply."

With both battery makers and auto manufacturers looking to strike deals with lithium producers while the prices are low, Graves believes it is in everyone's interests to commit to higher prices for long-term contracts: "Otherwise, when this does turn, and it will, this will flip the other way and lithium producers will demand higher prices," he warned.

Taking a closer look at copper, in the interests of better PPE

Research has shown that a face mask of two-ply tightly woven cotton material, sandwiching a layer of chiffon or silk to add an electrostatic barrier, can reduce the passage of 98 per cent of infectious droplets. Now, researchers at Indiana University-Purdue University Indianapolis (IUPUI) Integrated Nanosystems Development Institute are examining an additional defence in the form of metallic copper oxide nanoparticles.

Copper has long been known for germicidal and antimicrobial properties, and any virus that lands on a copper surface will be instantly disabled, IUPUI's Mangilal Agarwal explained. He believes that many consumer-level masks, as opposed to clinical grade masks, have an insufficiently tight weave. However, a tighter weave, or the addition of further fabric layers, can make a mask uncomfortable to wear as well as making it harder for the wearer to breathe, and studies indicate that this has discouraged the wearing of masks when not a legal requirement. The IUPUI researchers suggest that embedded copper oxide nanoparticles add a kill layer; if droplets travel from one surface of the mask to another the copper will disable the virus en route.

Mr Agarwal said: "To make any fabric into a mask or filter we have to provide the nanostructure, and we can put that nanostructure on a roll-to-roll printing machine with the fibres at nanoscale. We are using electrospinning, using the electric field to spray the nanofibres on to the fabric." The team is now looking to use its findings to make lighter, stronger, and cheaper composites with the ultimate aim of offering a wearable and safer alternative face mask to the general public.

London Metal Exchange is making plans for a low carbon aluminium platform in 2021

The London Metal Exchange (LME) will give its support sustainable metal production with a spot trading platform for low carbon aluminium, and will provide a voluntary digital register, known as LMEpassport, where producers can record the carbon-related details of their metal.

"Interested producers or metal owners could input the environmental criteria of their brands, certification by an industry scheme, recycled content, use of carbon offsets, or water or tailings management schemes," the LME explained.

The LME is considering similar schemes for other metals, but has begun with aluminium because power is a major component – up to 40 per cent – of the smelting process. Energy intensive aluminium will be essential for the transition to a lower carbon economy, and is valued by the car industry for its lighter weight and recyclability. The LME proposals, detailed in a paper to LME members, include the launch in early 2021 of a cash-settled contract for aluminium scrap generated by the US drinks industry, and scrap steel contracts for Taiwan and India. A lithium contract will be launched at the same time.

There is, as yet, no industry agreement on how metals will transition to a low carbon economy, but the exchange is hoping to start the conversation: "We are going to provide routes where buyers and sellers of metal with particular sustainability characteristics can come together," said LME chief executive, Matthew Chamberlain. The spot platform will facilitate price discovery (the process through which an asset's price is set by settling a price that both buyers and sellers find acceptable - largely driven by supply and demand) and trading in sustainably sourced metal. "This online auction-style solution will deliver access...on a voluntary basis to those who would like to buy or sell low carbon aluminium," the exchange said.

An analysis of feedback from the paper will be published in late 2020, and the spot trading platform and LMEpassport are expected to launch in the first half of 2021.

Further studies of graphene show a new advance using rhombohedral graphite

Graphite, the carbon material consisting of stacked graphene layers, has two stable forms: hexagonal and rhombohedral. The hexagonal form is more stable, and has been extensively studied, while the rhombohedral form has been less under scrutiny.

However, an international research team led by Artem Mishchenko, Professor of Condensed Matter Physics at the UK's University of Manchester, has revealed a nanomaterial that mirrors the "magic angle" effect originally found in a complex man-made structure known as twisted bilayer graphene – a key area of study in physics in recent years. The research, published in the journal Nature in August 2020, shows that the special topology of rhombohedral graphite effectively provides an inbuilt "twist" and offers an alternative medium to study effects such as superconductivity.

"It is an interesting alternative to highly popular studies of magic-angle graphene," said Professor Sir Andre Geim, a co-author of the study. "Rhombohedral graphite can help to better understand materials in which strong electronic correlations are important – such as heavy-fermion compounds and high temperature superconductors," added Professor Mishchenko.

An earlier advance in two-dimensional materials research was the discovery that stacking two sheets of graphene and twisting it to a "magic angle" changed the bilayer's properties and created a superconductor.

Professor Mishchenko and his colleagues have now observed the emergence of strong electron-electron interactions in a weakly-stable rhombohedral form of graphite – the form in which graphene layers are stacked slightly differently from the stable hexagonal form. Hexagonal graphite (the form of carbon used in pencils) is composed of neatly stacked graphene layers, while the metastable rhombohedral form has a slightly different stacking order, and this slight difference leads to a drastic change in its electronic spectrum.

Interactions in twisted bilayer graphene are highly sensitive to the twist angle; tiny deviations of only around 0.1 degree from the exact magic angle will strongly suppress the interactions. It is extremely difficult to make devices with the required accuracy and, more particularly, find sufficiently uniform devices to study the emerging physics. These latest findings on rhombohedral graphite have opened an alternative route to making accurate superconductor devices.

Previous theoretical studies have indicated the existence of many types of many-body physics (the area of physics which provides the framework for understanding the collective behavior of large numbers of interacting particles) in the surface states of rhombohedral graphite – including high temperature magnetic ordering and superconductivity. The predictions could not be verified, however, since electron transport measurements on the material were unavailable.

The Manchester team has studied hexagonal graphite films for several years and has developed technologies to produce high quality samples. Among their techniques is encapsulation of the film using hexagonal boron nitride (hBN), an atomically-flat insulator that preserves the high electronic quality in the resulting hBN/hexagonal graphite/hBN heterostructures. In their latest experiments with rhombohedral graphite, the researchers modified their technology to preserve the fragile stacking order of this less stable form of graphite.

The researchers imaged their samples, which contained up to 50 layers of graphene, using Raman spectroscopy to confirm that the stacking order in the material remained intact. They measured the electronic transport properties of the samples by recording the resistance of the material as the temperature and strength of an applied magnetic field were changed and varied.

The energy gap can also be opened in the surface-states of rhombohedral graphite by applying an electric field, as Professor Mishchenko explained: "The surface-state gap opening, which was predicted theoretically, is also an independent confirmation of the rhombohedral nature of the samples, since such a phenomenon is "forbidden" in hexagonal graphite".

A band gap is present in rhombohedral graphite thinner than 4nm, even without the application of an external electric field. The researchers are, as yet, unsure of the exact nature of this spontaneous gap opening (which occurs at "charge neutrality" – the point at which densities of electrons and holes are balanced).

"From our experiments in the quantum Hall regime, we see that the gap is of a quantum spin Hall nature, but we do not know whether the spontaneous gap opening at the charge neutrality is of the same origin," said Professor Mishchenko. "In our case, this gap opening was accompanied by hysteretic behaviour of the material's resistance as a function of applied electric or magnetic fields. This hysteresis (in which the resistance change lags behind the applied fields) implies that there are different electronic gapped phases separated into domains – and these are typical of strongly correlated materials."

Further investigation of rhombohedral graphite could shed more light on the origin of many-body phenomena in strongly correlated materials such as heavy-fermion compounds and high temperature superconductors.

Are we getting nearer to room temperature superconductivity?

An extensive team of Penn State and Florida State physicists and materials scientists, funded by the US Department of Energy, have made a discovery that could bring room temperature superconductivity just a little nearer. Their discovery involved layering a two-dimensional material called molybdenum sulfide with another material, molybdenum carbide. Molybdenum carbide is a known superconductor, allowing electrons to flow through the material without resistance.

"Superconductivity occurs at very low temperatures, close to absolute zero or 0 Kelvin," explained Mauricio Terrones, one of the authors of the paper, "Superconductivity enhancement in phase-engineered molybdenum carbide/sulfide vertical heterostructures," published in Proceedings of the National Academy of Sciences. "The alpha phase of [molybdenum carbide] is superconducting at 4 Kelvin."

When layering metastable phases of molybdenum carbide with molybdenum sulfide, superconductivity occurs at 6 Kelvin, a 50 per cent increase. Though not unique – other materials have been shown to be superconductive at temperatures up to 150 Kelvin – it was still an unexpected phenomenon that suggests a new method to increase superconductivity at higher temperatures in other superconducting materials.

"Calculations using quantum mechanics, as implemented within density functional theory, assisted in the interpretation of experimental measurements to determine the structure of the buried molybdenum carbide/molybdenum sulfide interfaces," said Susan Sinnott, professor of materials science and engineering and head of the department. "This work is a nice example of the way in which materials synthesis, characterisation and modeling can come together to advance the discovery of new material systems with unique properties." Mauricio Terrones added: "It's a fundamental discovery, but not one anyone believed would work. We are observing a phenomenon that, to the best of our knowledge, has never been observed before."

The team will continue their experimentation with superconductive materials with the ultimate aim of finding materials combinations that will carry energy through the grid with zero resistance.

Robotics and AI

Robot perception enhanced with hearing

A team from Carnegie Mellon University (CMU) believes they can improve robot perception by adding hearing to the machine's sensing skills. Researchers at CMU's Robotics Institute have found that sound can help a robot differentiate between objects, and could not only help robots determine what type of action caused the sound but also allow them to use sound to assess the physical properties of a new object.

"A lot of preliminary work in other fields indicated that sound could be useful, but it wasn't clear how useful it would be in robotics," said Lerrel Pinto who, with colleagues, found that robots using sound had a 76 per cent success rate in classifying new objects. Mr Pinto added that the results were so encouraging: "That it might prove useful to equip future robots with instrumented canes, enabling them to tap objects they want to identify".

The researchers presented their findings during the virtual Robotics Science and Systems conference. Other team members included Abhinav Gupta, associate professor of robotics, and Dhiraj Gandhi, a former master's student who is now a research scientist at Facebook Artificial Intelligence Research's Pittsburgh facility. To perform their study the research team created a large dataset by simultaneously recording video and audio of 60 common objects as they were moved around a tray. The interactions were captured using an experimental apparatus they named Tilt-Bot – a square tray attached to the arm of a Sawyer robot that spent hours moving the tray in random directions with varying levels of tilt while cameras and microphones recorded the actions. They also collected data beyond the tray, using the robot to push objects on a surface.

The team found that a robot could use what it learned about the sound of one set of objects to make predictions about the physical properties of previously unseen objects. "I think what was really exciting," said Mr Pinto, "…was that when it failed, it would fail on things you expect it to fail on". For example, while a robot appeared unable to differentiate between colours, it could differentiate between different types of object, such as a cup and a building block. CMU's dataset, cataloguing around 15,000 interactions, has since been released for use by other researchers.

AI system that can recognise human hand gestures

Scientists from Australia and Singapore have developed an artificial intelligence system that recognises hand gestures by combining skin-like electronics with computer vision. The team from Singapore's Nanyang Technological University (NTU) and the University of Technology Sydney (UTS) published its findings in Nature Electronics.

According to NTU Singapore, gesture recognition precision is currently hampered by the low quality of data transmitted by wearable sensors, often due to their bulkiness and poor contact with the user, or to obstructions or poor lighting. Further challenges arise from the integration of visual and sensory data as they represent mismatched datasets that demand separate processing before merging, which is inefficient and leads to slower response times.

The NTU team's bio-inspired data fusion system uses skin-like stretchable strain sensors made from single-walled carbon nanotubes, and an AI approach that mirrors the way in which the combination of skin sensations and visual information are handled in the brain.

The AI combines three neural network approaches in one system: a "convolutional neural network", which is a machine learning method for early visual processing; a multilayer neural network for early somatosensory information processing; and a '"parse neural network" to fuse the visual and somatosensory information together. The result is a system that can recognise human gestures more accurately and efficiently than any existing method.

Lead author Professor Chen Xiaodong, from the School of Materials Science and Engineering at NTU, said: "Our data fusion architecture has its own unique bio-inspired features which include a man-made system resembling the somatosensory-visual fusion hierarchy in the brain. We believe such features make our architecture unique to existing approaches. "Compared to rigid wearable sensors that do not form an intimate enough contact with the user for accurate data collection, our innovation uses stretchable strain sensors [and] comfortably attaches onto the human skin. This allows for high quality signal acquisition, which is vital to high precision recognition tasks."

To capture reliable sensory data from hand gestures, the research team fabricated a transparent, stretchable strain sensor that adheres to the skin but cannot be seen in camera images. As a proof of its concept the team tested the AI system by guiding a hand gesture-controlled robot through a maze. Results showed that hand gesture recognition powered by the bio-inspired AI system guided the robot through the maze without error, compared to six recognition errors made by a visual-based recognition system. This high accuracy was also maintained when tested under poor conditions, including noise and low lighting. The AI system also worked effectively in the dark, with a recognition accuracy of over 96.7 per cent.

First author of the study, Dr Wang Ming from the School of Materials Science and Engineering at NTU Singapore, said: "The secret behind the high accuracy in our architecture lies in the fact that the visual and somatosensory information can interact and complement each other at an early stage, before carrying out [a] complex interpretation. As a result, the system can rationally collect coherent information with less redundant data and less perceptual ambiguity, resulting in better accuracy."

The NTU research team is now looking to build a VR and AR system based on the AI system for use in areas such as home-based rehabilitation and entertainment technologies.

Life imitating Art? Artificial skin offers a sense of touch

Also based at Singapore's NTU, researchers have developed an electronic "skin" that they hope will benefit people with prosthetic limbs, allowing them to detect objects, as well as feel texture, temperature, and even pain. The device, about 1cm^2 in size, has been named ACES, (asynchronous coded electronic skin), and consists of 100 tiny sensors. ACES can process information faster than the human nervous system, is able to differentiate between 20 and 30 different textures, and can read Braille with over 90 per cent accuracy.

"Humans need to slide to feel texture, but in this case the skin, with just a single touch, is able to detect textures of different roughness," said research team leader Benjamin Tee, adding that AI algorithms let the device learn quickly. "When you lose your sense of touch, you essentially become numb... and prosthetic users face that problem," said Tee. "By recreating an artificial version of the skin for their prosthetic devices, they can hold a hand and feel the warmth and feel that it is soft, [and judge] how hard are they holding the hand."

There has been "tremendous interest," in the experimental technology, said Tee: "Especially from the medical community". Other patents developed by Tee's team include a transparent skin that can repair itself when torn, and a light-emitting material for wearable electronic devices. Tee said the ACES concept was inspired by a scene from "Star Wars", when Luke Skywalker loses his right hand and apparently has it replaced with a robotic hand that transmits touch sensations.

Eagle eyed Peregrine spots the flaws in 3D printing

Researchers at Tennessee's Oak Ridge National Laboratory (ORNL) have developed Peregrine, an AI software package for powder bed 3D printers to assess the quality of printed parts in real time. The Peregrine system is said to support the advanced manufacturing "digital thread" being developed at ORNL that collects and analyses data through every step of the manufacturing process, from design to feedstock selection, to print build and material testing.

"Capturing that information creates a digital clone for each part, providing a trove of data from the raw material to the operational component," said Vincent Paquit, who is leading advanced manufacturing data analytics research as part of ORNL's Imaging, Signals and Machine Learning group. "We then use that data to qualify the part and to inform future builds across multiple part geometries and with multiple materials, achieving new levels of automation and manufacturing quality assurance."

The digital thread supports the anticipated factory of the future, where custom parts are conceived using CAD and then produced by self-correcting 3D printers via a communications network, all at lower cost in terms of time, energy and materials. According to ORNL, the concept requires a process control method that ensures every part produced by the printers is ready for immediate use and installation. Peregrine is being developed for powder bed printers because, while popular for the production of metal parts, they are vulnerable to problems such as uneven distribution of the powder or binding agent, spatters, insufficient heat, or porosities that result in defective finished articles.

"One of the fundamental challenges for additive manufacturing is that you're caring about things that occur on length-scales of tens of microns and happening in microseconds, and caring about that for days or even weeks of build time," said ORNL's Luke Scime, principal investigator for Peregrine. "Because a flaw can form at any one of those points, at any one of those times, it becomes a challenge to understand the process and to qualify a part."

Standard cameras were used in the research, ranging from 4 to 20 megapixels, and installed so they produce images of the print bed at each layer. Peregrine produces a common and transferable image database and will run on a single high-powered laptop or desktop computer. ORNL researchers stress that the Peregrine software will be machine-agnostic, and available to all printer manufacturers. Peregrine is being tested on multiple printers at ORNL and is part of the Transformational Challenge Reactor (TCR) demonstration program to design, build, and operate a nuclear microreactor using rapid advanced manufacturing.

Gill Watson
Features Editor (Europe)

Photo: Messe Düsseldorf, Constanze Tillmann

December go-ahead

Major companies and professional associations have backed the staging of Tube Düsseldorf in December.

Organisers Messe Düsseldorf have taken stringent steps so the exhibition – running concurrently with wire 2020 – can take place between 7 and 11 December.

In a meeting of the European associations acting as conceptual sponsors of the events in Düsseldorf, the decision was taken that a commitment to the leading trade fairs from their respective sectors of industry is indispensable, despite these challenging times.

Personal encounters, one-on-one conversations and the expert exchange at the trade fair stand have never been more important than in the current situation.

“All parties are making an effort to return to a normal course of affairs in spite of the existing COVID-19 measures and risks,” said Dr Uwe-Peter Weigmann, CEO of WAFIOS AG and president of VDKM.

“We are confident that personal conversations and live demonstrations of machinery offered by a trade fair cannot be replaced by video conferences.

“This is why WAFIOS will exhibit its latest innovations at the trade fair – albeit on a smaller scale than usual. We are aware that the trade fairs in December will not be comparable to a ‘normal’ wire and Tube. But we expect customers to come and want to be at their service.

“Since Messe Düsseldorf has shown at the Caravan Salon that it can and does implement the necessary hygiene measures to keep risks to a minimum for both exhibitors and visitors, WAFIOS also wants to send a signal with its participation: business must carry on and even in COVID-19 times personal conversations can be had to a limited extent and in a protected setting complying with hygiene rules.”

for Tube Düsseldorf

”Against the backdrop of industries ramping up again, we – like many other companies from the sector – continue focusing on sustainable partnerships with our customers,” added Ralf Kappertz, CEO of Maschinenfabrik Niehoff and president of IWCEA.

“Therefore, we want to prove this partnership also in difficult times like these, and will walk our talk by making a convincing appearance at the trade fair in Düsseldorf in December – even if different from previous trade fair years.”

“Our industry is synonymous with innovation, sustainability and a long-term orientation. We will now be doing our utmost to also make this wire and Tube – despite being held under special circumstances – what they have always been: the communication and business platforms of the wire, cable and tube industries.”

“The industries need their most relevant sectoral platforms in order to present innovations and meet their business partners again,” confirmed Ferruccio Bellina, CEO of TKT Group SpA and president of the Italian industry association ACIMAF.

However, the international situation has to be re-assessed every day. “We are aware that in the current situation most visitors will come from Europe to see us and wire and Tube will have a primarily European character in 2020,” said Daniel Ryfisch, project director wire, Tube & Flow Technologies at Messe Düsseldorf.

“We are all the more delighted to send a positive signal to the industries by holding the two events,” added Friedrich-Georg Kehrer, global portfolio director wire, Tube & Flow Technologies.

Current information of the hygiene measures taken at Tube Düsseldorf is available at:

www.tube.de

TUBE BENDING, END FORMING & SWAGING

What may the customer of a state-of-the-art tube mill confidently expect of these specialities? At the very least: bending without kinking; end forming with minimal material loss; and no distortion of outside and inside diameters during swaging.

In many industries, that degree of finesse would be associated with customised craftsmanship – even hand-finishing. But it is regularly achieved by companies such as those whose names appear in this section of Tube & Pipe Technology. Without sacrificing in the smallest degree the benefits won by computerisation, they have effectively erased the distinction between high-volume output and product that suggests the presence of an artisan.

Photo: Shijiazhuang Forever Machinery Co Ltd

The K series from transfluid for bending tubes

Bending and processing tubes with the K series

TRANSFLUID, an engineering company from Germany, develops and produces machines to bend and process tubes. During a recent review of its product portfolio the company decided to make changes to its K series of machines. All the machines in this series can now be controlled easily with a touch panel and this opens up new possibilities, like displaying the comparison of target and actual values for all axes. Control of the tolerance of the length and the rotation means very little involvement by the operator during the manufacturing of tubes. The options have also been improved by the possibility of loading the bending data for individual products from a PC via a USB port.

The machines are extremely robust and easy to operate. A selection of setups is available, of course, to process tubes of different lengths, with an operational length from 1,500mm to 3,000, 4,500 and up to 6,000mm. “We have again improved the areas of excellence of our K series,” explained Stefanie Flaeper, managing director of sales. “As an example, I want to mention the DK 642K bending machine with mandrel. Its specific area of application is hydraulics.”

The machines have special equipment available, like an integrated saw, a burring device, a tool for cutting ring pre-assembly or one for flaring. The area of excellence covers all standard diameters (from 6 to 42mm) in hydraulics, as well as the processing of tubes with thin and thick walls. All compact bending machines with mandrel can bend up to 180°. Radii of 1.5 or 2 times the diameter of the tube are common in this application and easy to achieve with these machines.

For the processing of tubes up to 76mm transfluid offers its DB 2076K, capable of processing tubes with diameters of 6-76mm and all the standard wall thicknesses and materials. To be able to obtain radii of 1.5 x D (tube diameter) of ideal quality with a bending procedure, this machine has a follower pressure die. It is operated hydraulically and supports the tubes during the bending process. This makes many applications possible, like construction of railings, tubing for installations and the production of systems for exhaust gasses.

Transfluid’s K series is completed by the DB20101 bending machine with mandrel. An all-rounder that is particularly interesting for the constructions of pipelines, as the machine covers almost the whole range of tubes for installations. The different types of equipment available are the same as those for other types of machines. All materials can be processed and small radii can be manufactured without any problems.

In addition to this, all machines can be equipped with a programmable controlled mandrel withdrawal, mandrel lubrication device and wiper dies. These machines are extremely reliable for tube processing, thanks to their stable construction. For this reason and because of the many options, the transfluid K series offers solutions to different sectors with the most diverse applications. This optimisation helps a lot with the reliability and the durability of the machines.

transfluid
www.transfluid.net

Pipe welding tight bends and T piece joints

TYPICALLY for closure welds, tight bends, T piece joints and dome end connections where a conventional tandem weld purging system cannot be used, a range of low cost, single ended Inflatable weld purge dams is available for pipe diameters from 6 to 88" (150mm up to 2,235mm).

Weld Purge Dams from Huntingdon Fusion Techniques HFT® offer a great, lightweight solution where access is difficult, are easy to inflate and heat resistant up to 80°C (176°F).

Weld purge dams from HFT

Ron Sewell, chairman at Huntingdon Fusion Techniques HFT, said: "Even today, many companies are still allowing their technicians to spend many hours fabricating dams made of foam, cardboard, adhesive tape, wood and so on. Like paper, these materials contain a high percentage of water, which is very undesirable to have in the presence of a weld.

"As these old fashioned, poor quality dams and materials are warmed by the welding operation, they start to outgas their water vapour, which starts to circulate around the weld joint and combine with the weld pool to cause porosity and oxidation, leading to metallurgical defects."

Each of the HFT dams are made of low vapour pressure materials specially selected for optimum weld purging results to provide the lowest quality oxygen reading in the fastest possible time with the minimum use of expensive argon gas.

The dams are fitted with a dual inflation and purge hose, an additional purge gas hose and an exhaust which can be connected to one of our Weld Purge Monitors®. The additional purge gas hose is suitable for introducing extra purge gas into the weld zone at any time to cool welds to meet interpass specifications, or to provide more inert gas in the event of titanium, zirconium or special stainless applications needing a guaranteed zero colour weld.

Once the dam is inflated using the purge gas and seals all around the internal circumference of the pipe, the excess inert purge gas spills out and purges the space around the weld joint. The air (oxygen) is then released out and into the pipe length through a series of venting exhausts on the dam.

Four pull tags are located around the circumference of the weld purge dam, so rope, pull wires or slings can be attached for retrieval of the deflated system, if required.

Huntingdon Fusion Techniques
www.huntingdonfusion.com

Multiple-point bending technology for square and rectangular hollow sections

IN general, there are two types of technology for the forming of square hollow sections and rectangular hollow sections: 'direct forming technology' and 'traditional forming technology'.

In direct forming the steel strip is bent into the shape of the SHS and RHS before welding, while in the traditional forming method the steel strip is rolled into the shape of a circular tube and will then form to SHS or RHS with the assistance of rolls after welding.

In the traditional forming method, several sets of rolls will be required in the 'circular section forming' stage alone, which will result in high tooling cost and reduced production efficiency due to frequent roll changes. Each size of tube will require a set of rolls specifically designed for that size. A roll change is required whenever a different size of tube is produced, resulting in discontinuation in production and high labour cost. This forming technology is recommended for producing small-sized tube when the required variety of tube sizes is minimal.

The usage of SHS and RHS has been gaining popularity, and there has been increasing demand for heavy-wall tube with good cross-section quality.

Forever Machinery has developed and produced a tube mill that utilises direct forming technology to produce SHS and RHS. By adopting multiple-point bending technology, the machine is capable of producing tubes in a variety of sizes without changing the rolls, which translates to a claimed cost saving of 70 per cent of the tooling. The machine also incorporates a quick-change system for the rolls, saving the time required for roll change.

Based on past experience, the R&D department at Forever Machinery has also developed a new set of rolls designed specifically for direct forming technology. Over the years, the company has optimised its design for different tube sizes by in-depth research into forming technology, roll profile design, forming characteristics, forming contour design, welding technology, seam guide roll, squeezing roll, ironing roll and side rolls. The forming section uses the concept of straight edge flexible forming, enabling the sizing section to share one set of rolls for all different tube sizes. This design feature also increases the precision of the finished products.

The company's most advanced tube mill also incorporates servomotors for the adjustment of rolls, to further improve the efficiency of the machine.

Shijiazhuang Forever Machinery Co Ltd
www.pipemill.cn

Pipe mill bending rolls for complex needs

PIPELINE and energy infrastructure companies face huge operational challenges.

Pipe production is an area of such complexity that only companies with years of experience and highly technological backgrounds can be trusted to reliably design and provide pipe-manufacturing machines suitable for the most challenging projects.

Faccin SpA states that it has been a reference point throughout the years for its expertise in designing and manufacturing special machines, standard and customised, for the production of pipes.

In order to meet specific production requirements in the industry, the company offers the HAV-2P series of NC-controlled pipe mill bending rolls that are able to support the production of pipes, delivering productivity, repeatability and automation of the entire manufacturing process. The pipe production bending rolls are constructed with a sturdy electro-welded structure and are fitted with three rolls in thermally treated steel alloys.

HAV-2P long bending rolls are designed for rolling plates up to 45mm thick, suitable for producing pipes up to and over 18m long, complying with the customer's specific technical and roundness tolerances, and offering a finished product that meets API standards.

The rolls are moved independently – the top roll moves vertically, the lower rolls move horizontally – which allows the power of the machine to be fully exploited, depending on the various thicknesses to be rolled.

To offer high performance in the production of long pipes with relatively small diameters, the lower rolls of the HAV-2P are supported by backups for their entire length.

The top roll is preloaded to compensate for the flexion during plate bending, and may be replaced quickly to extend the range of diameters and thicknesses that can be obtained by rolling.

To further increase the production speed and automation the company proposes, along with the HAV-2P pipe mill bending roll, an accurate post-bending machine that prepares the pipe for welding, and a series of outboard motorised guide rollers that control the movement of the pipe from the HAV-2P to the post-bending machine and successive working stations, achieving a fully automated manufacturing process.

Faccin has more than 50 years' experience in the design, manufacture and commercialisation of plate bending rolls, profile bending machines and dished head lines, as well as special machines that include ship frame bending rolls and presses, and plate straightening machines.

Faccin SpA
www.faccin.com

OMNI-X introduces laser technology for tube bending and moulding tools

OMNI-X, a producer of bending tools for tube moulding, recently announced it has been using Laser technology in the field of heat treatment.

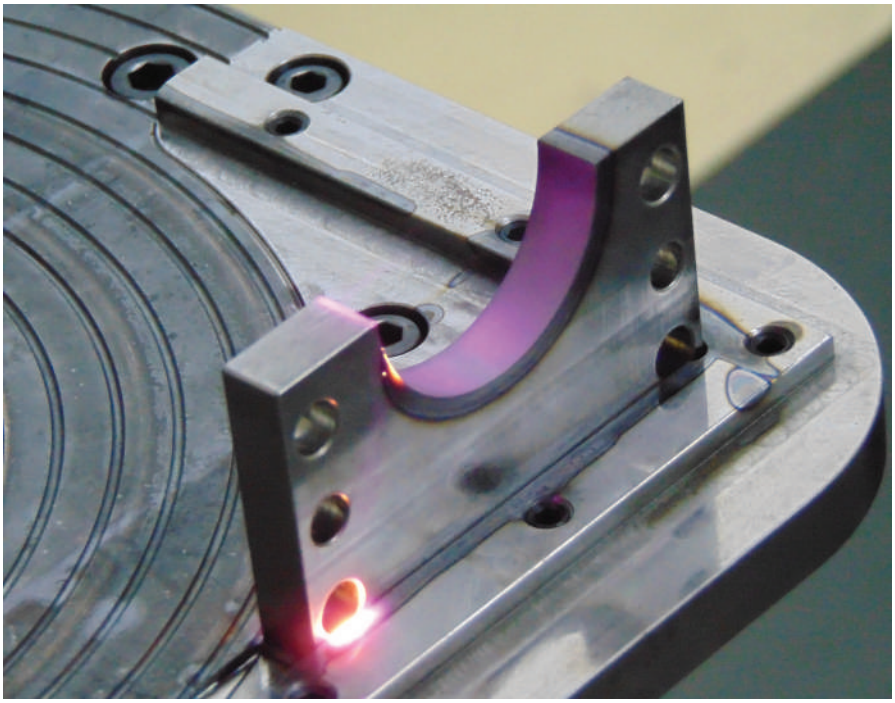
After performing technical analysis and tests in simulated environments and in real time operations the company purchased a robotic laser for surface hardening technology MLHW 4000 from LaserTherm and since last year the device has been fully involved in OMNI-X's production process.

According to the company the use of this technology, which is one of the dominant technologies today, has many indisputable advantages, which include, above all, local processing of the required areas.

Due to the ability to accurately control the energy distribution to the required locations, the temperature is minimally affected by the environment and thus the thermal load of the tool is reduced, eliminating cracks and temperature deformations. The process is also associated with low surface oxidation.

Thanks to the automation process it is possible to process any shape that is suitable for example for the hardening of compound jaws, with the possibility of accurate temperature measurement during this process. Speed, reliability and environmental friendliness are other benefits of this method.

Laser hardening can also be combined with other methods of chemical-thermal surface treatment, allowing it to achieve even better properties of the functional surfaces of the bending tools.



Currently, OMNI-X offers laser hardening for bend dies, clamp dies, pressure dies of all types and sizes as well as for the functional edges of punches. However, thanks to this new technology, the company is planning further applications in the future.

OMNI-X
www.omnibend.com

3D robotic pipe and tube technology increases bending specialist's capabilities

AS part of an overall investment in its production facilities, Sharpe Products, a specialist in tube and pipe fabrication, has recently added to its technology stack with a JENOPTIK-Votan BIM fibre optic, robotic cutting machine.

The new machine is used to reach, turn and cut complex 3D components and is built for multi-axis pipe and tube fabrication.

"This new technology adds strength to our laser cutting and bending capabilities, allowing us to increase efficiencies and reduce time-to-market for numerous job specifications," said Paul Krickeberg, president and CEO of Sharpe Products.

With this capability, features such as holes, slots or notches can be added after the bending process, eliminating costly tooling and secondary operations such as machining, coping and drilling, thereby helping to reduce lead times and manage costs. Adding to its existing line-up of fibre optic laser cutting machines, the JENOPTIK-Votan BIM is well-suited for automotive exhaust and heavy equipment and industrial applications.

Sharpe Products
www.sharpeproducts.com

UV coatings vs water-based coatings for mechanical and OCTG tube and pipe

By Michael Kelly of Allied PhotoChemical, USA

In today's competitive manufacturing environment the priorities are: driving process efficiencies; manufacturing a superior product; improving your sustainability footprint – being green; and delivering improved ROI (Return on Investment) to your stakeholders.

UV coatings deliver on all four points. So, it is a good time to review your current coating vendor and ask the question – are they looking out for my best interests?

Legacy coating suppliers are often happy to sell you older, more profitable coating technologies like conventional solvent-based or water-based coatings. There is minimal incentive for the legacy coatings supplier to be proactive in order to facilitate change. In fact, it possibly runs counter to their perceived best interests.

The UV alternative

Ultraviolet coatings technology offers a unique opportunity to dramatically improve your manufacturing process, improve your sustainability footprint and deliver a real return on investment – less coating cost per linear foot of pipe or tube.

Two customer case examples are provided in this article:
- Customer case example 1 – OCTG/line pipe
- Customer case example 2 – mechanical tube

Water-based vs UV equipment capital costs

In both customer case examples – OCTG/line pipe and mechanical tube – the customer had a choice to invest in an upgrade to their existing water-based coating system, or a new UV coating system. Upon review of quotations from several partner companies, the overall capital costs for each system were comparable. The main difference between them was that the water-based coating required an induction heating system, while the UV coating required UV microwave/Heraeus lights. While both have similar capital investment costs, they have very different operating costs and uptime costs.

Customer case example 1 – OCTG/line pipe

Industry: OCTG line pipe
Application: external protective coating

Top five specifications requirements:

Description	ASTM Std.	Specifics	Customer Comments
Salt Fog	ASTM B117	Greater than 500 hours / Less than 5% red rust	Needs significant improvement
Humidity	ASTM D2247	Greater than 1,000 hours / less than 5% red rust	This is the main cause with rust
Impact Resistance	ASTM D2794	Greater than 160 in-lbs	Improved handling / load & unload protection
Adhesion	ASTM B3359 - 17	5B	Improved adhesion
UV Resistance	ASTM G155-05	Greater than 1,000 hours / No blistering	Improved outdoor storage for end-customer

Table 1: Top five specification requirements – OCTG line pipe

Goals: Improve corrosion resistance
Increase line speed
Reduce end-user complaints
Eliminate wasted floor space caused by water-based drying tables

The customer case example is broken into the following sections:

1.0 Current WB coating and new UV coating
2.0 Specification and testing results – comparative testing results
3.0 Process improvements
4.0 Return on investment
5.0 Process solution/equipment

1.0 – Current WB coating and new UV coating

Current solution: Water-based coating
18.5 per cent solids by volume – 296.7 ft² coverage at 1 mil
$11.89 per gallon

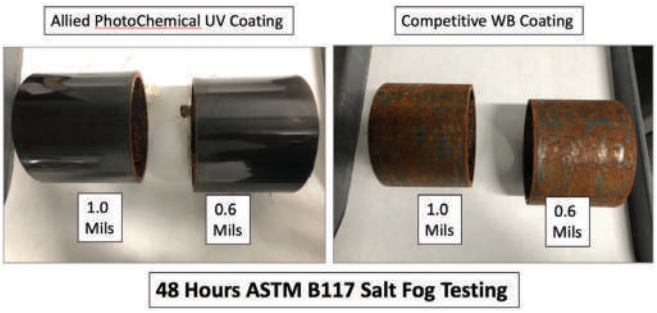
New solution: UV coating
100 per cent solids by volume – 1,604 ft² coverage at 1.0 mil
$39.70 per gallon

2.0 – Specification and testing results – comparative testing results

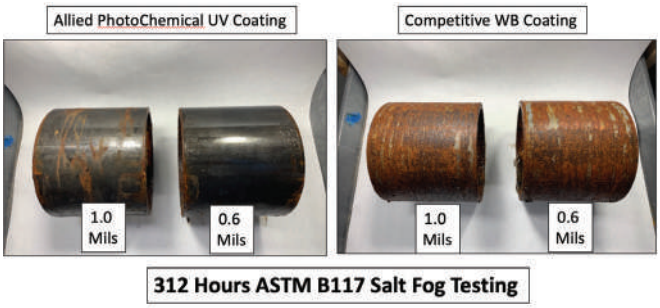
Description	ASTM Std.	Water-based	UV	Specifics
Salt Fog	ASTM B117	24 hours	>505 hours	Greater than 500 hours / less than 5% red rust
Humidity	ASTM D2247	240 hours	>1,073 hours	Greater than 1,000 hours / less than 5% red rust
Impact Resistance	ASTM D2794	Pass	Pass	Greater than 160 in-lbs
Adhesion	ASTM B3359 - 17	4B	5B	5B
UV Resistance	ASTM G155-05	650 hours	>1,000 hours	Greater than 1,000 hours / no blistering

Table 2: Top five specification results – OCTG line pipe

The proof is in the pictures:



Picture 1: ASTM B117 Salt Fog – 48 hours UV vs water-based at 1.0 and 0.6 mils dry film thickness



Picture 2: ASTM B117 Salt Fog – 312 hours UV vs water-based at 1.0 and 0.6 mils dry film thickness

3.0 – Process improvements

UV process advantages:

⇒ **Faster**
- Increased line speed – typical range of 20 to 40%
- Instant cure – minimal humidity and temperature issues
- No uncured or wet coating post-process

FUNCTIONAL PIPE COATING MODEL			
Linear Foot Comparison	9.625	Inches diameter	
Target Coating Thickness	**1.0**	Mils thick	
Description	**Water-based**	**UV**	
Coating cost per gallon	$11.89	$39.70	
Per cent solids	18.5%	100.0%	
Per cent water	81.5%	0.0%	
Coverage at 1 mil – square feet	297	1,604	
Coverage at 1 mil – square inches	42,731	230,976	
Diameter of pipe (inches)	30.24	30.24	
Linear inches per gallon	1,413	7,639	
Linear feet per gallon @ 1 mils thick	118	637	
Linear feet per gallon @ **1.0** mils thick	118	637	
Cost per linear foot coated specificed inch diameter pipe	$0.101	$0.062	
Linear Feet Run	**Water-based Cost**	**UV Cost**	**UV Cost Savings**
2,000,000 million linear foot run	$201,931.82	$124,734.08	$77,197.74
10,000,000 million linear foot run	$1,009,659.09	$623,670.41	$385,988.68
20,000,000 million linear foot run	$2,019,318.18	$1,247,340.82	$771,977.36

Table 3: ROI for water-based vs UV coatings – OCTG per linear foot
Source: https://www.alliedphotochemical.com/roi-calculators/

⇒ **Smaller**
- ~ 80% less coating shipped into plant/less overall handling
- Less overall floor space consumed
- No work-in-process – coat, then immediately cure
- Lower energy costs (UV lamps vs induction heating)
- Lower cost of quality

⇒ **Cleaner**
- UV has no VOC's or HAP's – sustainable
- Less permitting required for UV coatings
- No uncured or wet coating post-process

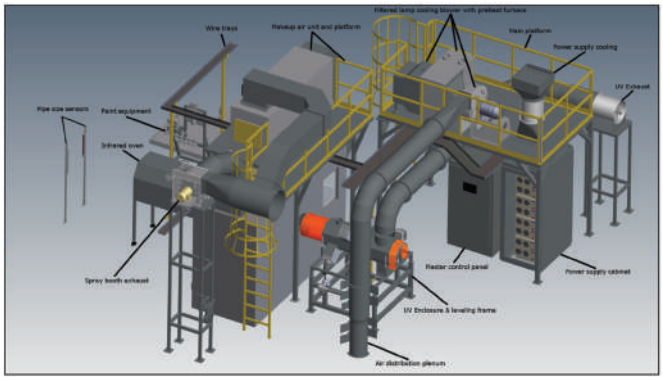
4.0 – Return on investment

Cost per linear foot comparison – water-based vs UV coating *(see table 3)*

5.0 – Process solution/equipment

Based on the results of the testing and cost analysis, the customer made the decision to implement a new UV coating system (pictured below), which was being installed at the time this paper was written.

Note that the pipe flow is from left-to-right and that the infrared oven is only utilised at temperatures below 55°F. Total system width is around 21ft.



Picture 3: OCTG UV System –
Courtesy of Terrell Manufacturing Systems
(www.terrellmanufacturing.com)

Picture 4: Black UV coated OCTG pipe
Courtesy of Allied PhotoChemical, Inc

Customer case example 2 – mechanical tube

Industry: mechanical tube
Application: external protective coating

Top five specifications requirements:

Description	ASTM Std.	Specifics	Customer Comments
Salt Fog	ASTM B117	Greater than 500 hours / less than 5% red rust	Needs significant improvement
Humidity	ASTM D2247	Greater than 1,000 hours / less than 5% red rust	This is the main cause with rust
Impact Resistance	ASTM D2794	Greater than 160 in-lbs	Improved handling / load & unload protection
Adhesion	ASTM B3359 - 17	5B	Improved adhesion
UV Resistance	ASTM G155-05	Greater than 1,000 hours / no blistering	Improved outdoor storage for end-customer

Table 4: Top five specification requirements – mechanical tube

Goals: Reduce end-user complaints
Improve aesthetic appearance
Improve corrosion resistance –
Less than 5 per cent red rust
Increase line speed
Eliminate VOC's and HAP's
Minimise humidity and temperature impacts on coating process

The customer case example is broken into the following sections:

1.0 Current WB coating and new UV coating
2.0 Specification and testing results – comparative testing results
3.0 Process improvements
4.0 Return on investment
5.0 Process solution/equipment

1.0 – Current WB coating and new UV coating

Current solution: Water-based coating / ~11% co-solvent (flammable)
30.5% solids by volume – 489.2 ft² at 1 mil
$19.79 per gallon

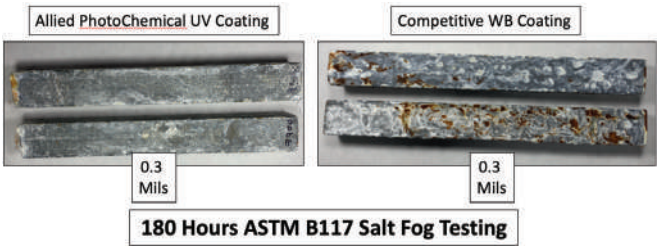
New Solution: UV coating (no solvent, no water, no VOC's)
100% solids by volume – 1,604 ft² at 1 mil
$59.25 per gallon

2.0 – Specification and testing results

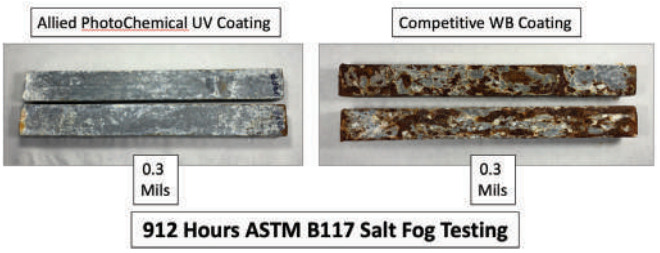
Description	ASTM Std.	Water-based	UV	Specifics
Salt Fog	ASTM B117	180 hours	> 912 hours	Greater than 500 hours / less than 5% red rust
Humidity	ASTM D2247	200 hours	> 1,000 hours	Greater than 1,000 hours / less than 5% red rust
Impact Resistance	ASTM D2794	Pass	Pass	Greater than 160 in-lbs
Adhesion	ASTM B3359 - 17	4B	5B	5B
UV Resistance	ASTM G155-05	Fail	Pass	Greater than 1,000 hours / no blistering

Table 5: Top five specification results – mechanical tube

Again, the real proof is in the pictures:



Picture 5: ASTM B117 Salt Fog – 180 hours UV vs water-based at 0.3 mils dry film thickness



Picture 6: ASTM B117 Salt Fog – 912 hours UV vs water-based at 0.3 mils dry film thickness

3.0 – Process improvements

UV process advantages:

⇒ **Faster**
– Ability to increase lines speed from 175fpm to over 275fpm
– Instant cure – minimal humidity and temperature issues
– Elimination of wet coating downstream (safety and quality issue)

FUNCTIONAL PIPE COATING MODEL			
Linear Foot Comparison	2.0	Inches diameter	
Target Coating Thickness	**0.3**	Mils thick	
Description	**Water-based**	**UV**	
Coating cost per gallon	$19.79	$59.25	
Per cent solids	30.5%	100.0%	
Per cent water	69.5%	0.0%	
Coverage at 1 mil – square feet	489	1,604	
Coverage at 1 mil – square inches	70,448	230,976	
Diameter of pipe (inches)	6.28	6.28	
Linear inches per gallon	11,212	36,761	
Linear feet per gallon @ 1 mils thick	934	3,063	
Linear feet per gallon @ **0.3** mils thick	3,114	10,211	
Cost per linear foot coated specificed inch diameter pipe	$0.0064	$0.0058	
Linear Feet Run	**Water-based Cost**	**UV Cost**	**UV Cost Savings**
2,000,000 million linear foot run	$31,771.02	$29,011.72	$2,759.29
10,000,000 million linear foot run	$127,084.06	$116,046.89	$11,037.18
20,000,000 million linear foot run	$317,710.16	$290,117.22	$27,592.94

Table 6: ROI for water-based vs UV coatings – mechanical tube per linear foot
Source: https://www.alliedphotochemical.com/roi-calculators/

⇒ **Smaller**
– ~ 70% less coating shipped into plant/less overall handling
– No work-in-process – Coat, then immediately cure
– Lower energy costs (UV lamps vs induction heating)
– Lower cost of quality

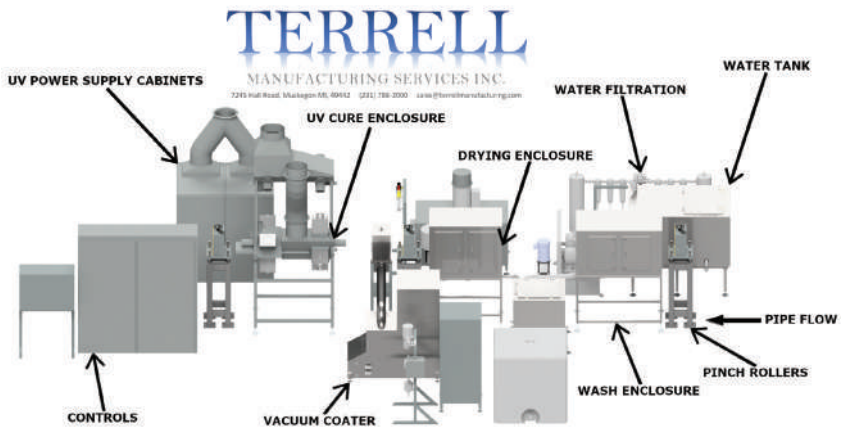
⇒ **Cleaner**
– No clean-up costs due to wet coating downstream
– UV has no VOC's or HAP's (water-based has over 2.0 lbs/gallon)
– Eliminating the handling/exposure of flammable water-based coatings
– Less permitting required for UV coatings

4.0 – Return on Investment

Cost per linear foot comparison – water-based vs UV coatings *(see table 6)*

5.0 – Process solution/equipment

Based on the results of the testing and cost analysis, the customer made the decision to implement a new UV coating system *(see picture 7)*, which was being installed at the time this paper was written.



Picture 7: Mechanical tube UV system

Courtesy of Terrell Manufacturing Sy

Picture 8: UV coated galvanised mechanical pipe

Courtesy of Allied PhotoChemical

Conclusion

In both examples, UV Coatings allowed the Customer to run much faster, with a smaller physical footprint, lower WIP, quality and energy costs, resulting in a much cleaner, green, sustainable process while delivering an improved ROI to the bottom line.

Allied PhotoChemical – USA
info@alliedphotochemical.com
www. alliedphotochemical.com

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Special high production layer saws for cutting multiple tubes or bars

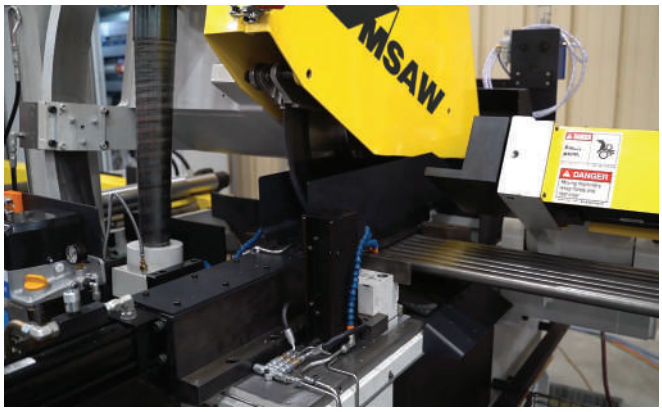
By Willy Goellner of Advanced Machine & Engineering, USA

Layer saws are designed to improve the saw productivity a significant amount by cutting several bars with one cut.

Because of the width of the cut and the blade having to pass through several bars, a high torque on the spindle is required and the machine must be very rigid for driving large diameter circular blades.

Most tube or bar sizes are between 25mm and 350mm. The wall thickness is between 2mm to 50mm. Layer saws are mostly used for cutting continuous cast tubing or bars in steel mills, since the length of the cut tubing can be between 5m to 100m.

Such layer saw systems often have two saws in line. One is travelling with the same speed of the continuous cast material and cuts while travelling. In these cases, the tubes are usually well above room temperature and with contactless temperature sensors the thermal expansion is compensated to achieve the proper length in a cooled state.



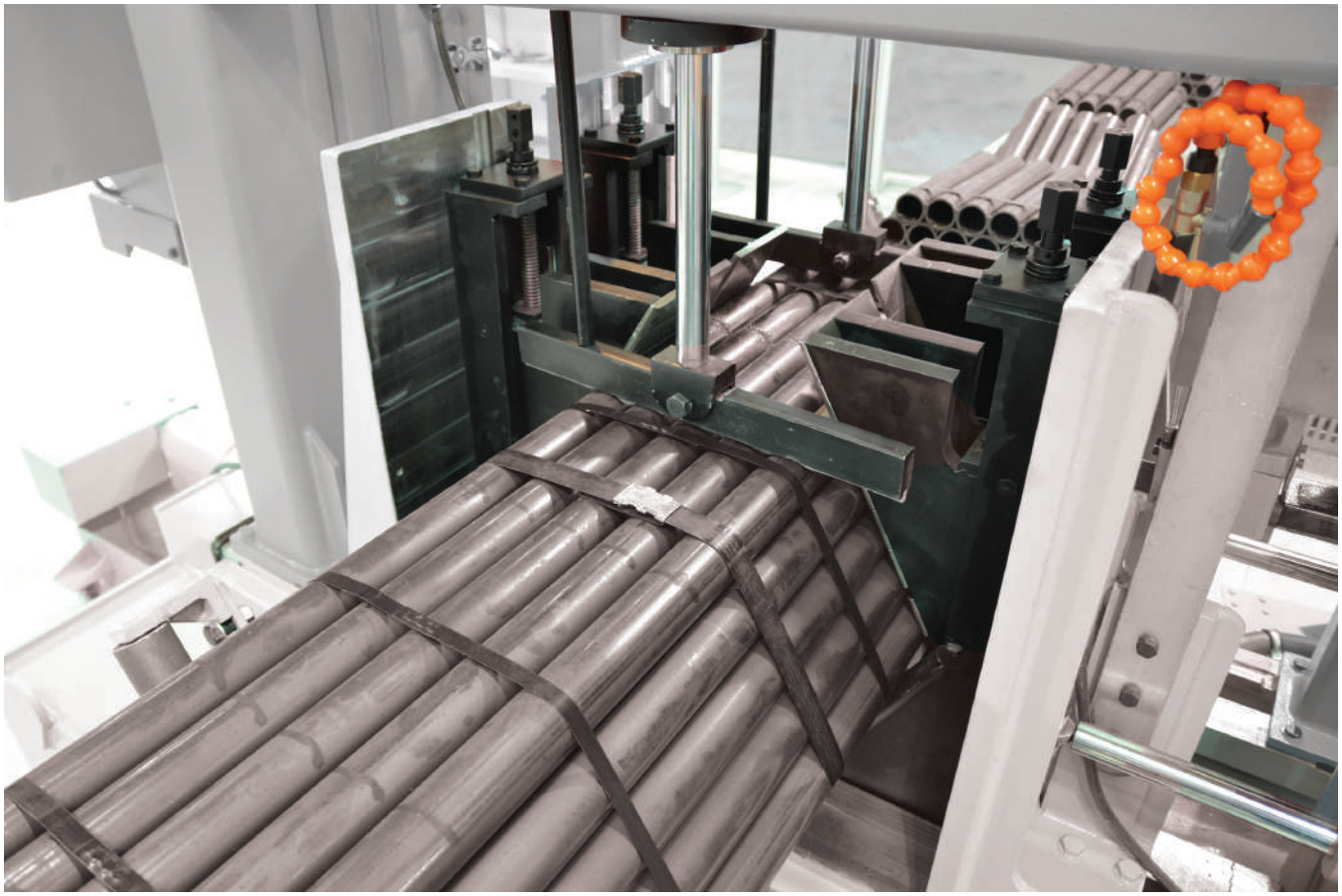
The most powerful layer saws are vertical slide saws. These machines are essentially horizontal, box way or heavy linear way machines in a vertical orientation. Since vertical saws are tall, the base must have an especially stiff design to reduce vibrations for an acceptable tool life.

Naturally, such bases are heavier and more expensive. The bars are normally spread out in layers on large tables after the cooling beds and travels in layers to the saw blade. Due to the weight of the gearbox a hydraulic cylinder, in addition to the ball screw, is usually used to counter-balance the gearbox.

Optionally, a mechanical rack and pinion centering fixture, as shown in the image above, are used instead of direct hydraulic cylinders that make the fixture stiffer. This can be especially important when the tubes deviate from the ideal shape. In these cases, chances are high that not all parts are clamped securely, which can easily cause damage to the blade.

For layer cutting in smaller bar diameters, AMSAW offers a very compact and rugged pivot saw, which is much less expensive because box ways and gibs are replaced with a pivot mechanism. The heavy constructed head swivels on heavy taper roller bearings and is driven by a preloaded ball screw.

For lower production sawing at a more economical price point – special band saws can also cut layers or bundles. Because of the layer width, the band guides are further apart, which are less accurate and less resistant to vibrations. To guarantee that the layers are laying parallel on the table, there is usually an additional clamping unit at the far end of the saw blade.



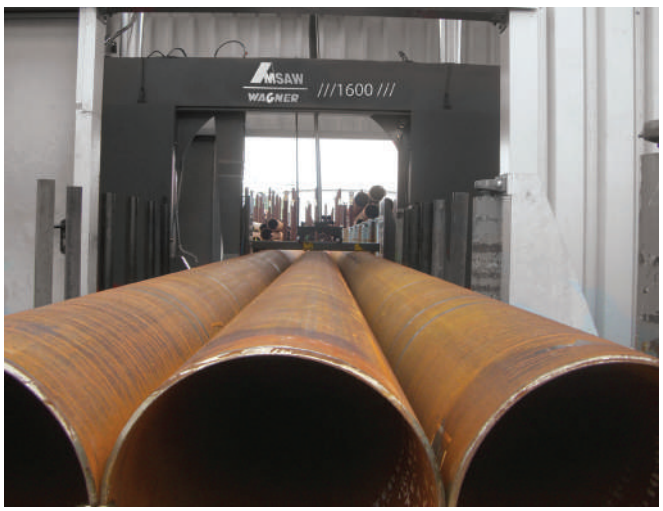
The automatic load table, the exit bar separation, and the unloading units can be very sophisticated and, therefore, expensive. But because of the high production rate and the benefits of automation, the higher cost can easily be justified.

Layer saws are especially popular in the oil industry where large quantities of tubing must be cut to then be welded together for oil pipelines. Forging shops are also cutting large quantities of solid bar stock, but are usually shorter cuts, less than 1m long.

The saw usually has a horizontal and vertical clamp unit on both sides of the blade to allow the bars to separate before the blade is retracted. Another common features of layer saws are dual hydraulically actuated scrap tipping tables (arranged on both sides of the saw blade) used for trim cut and crop cuts.

Another way to increase tool life is a retracting spindle mechanism, which backs off the blade from the cut surface after the cut, before the blade is retracted, to avoid damage to the teeth.

In conclusion, because of the intricacies in advanced sawing systems, projects are most successful when the machine designer, the machine builder, the blade manufacturer, and the machine operator work closely together.



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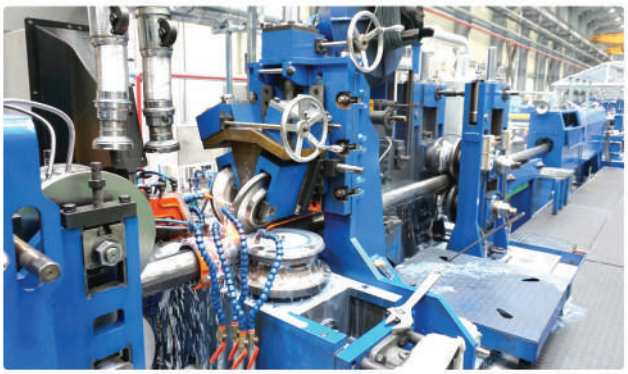


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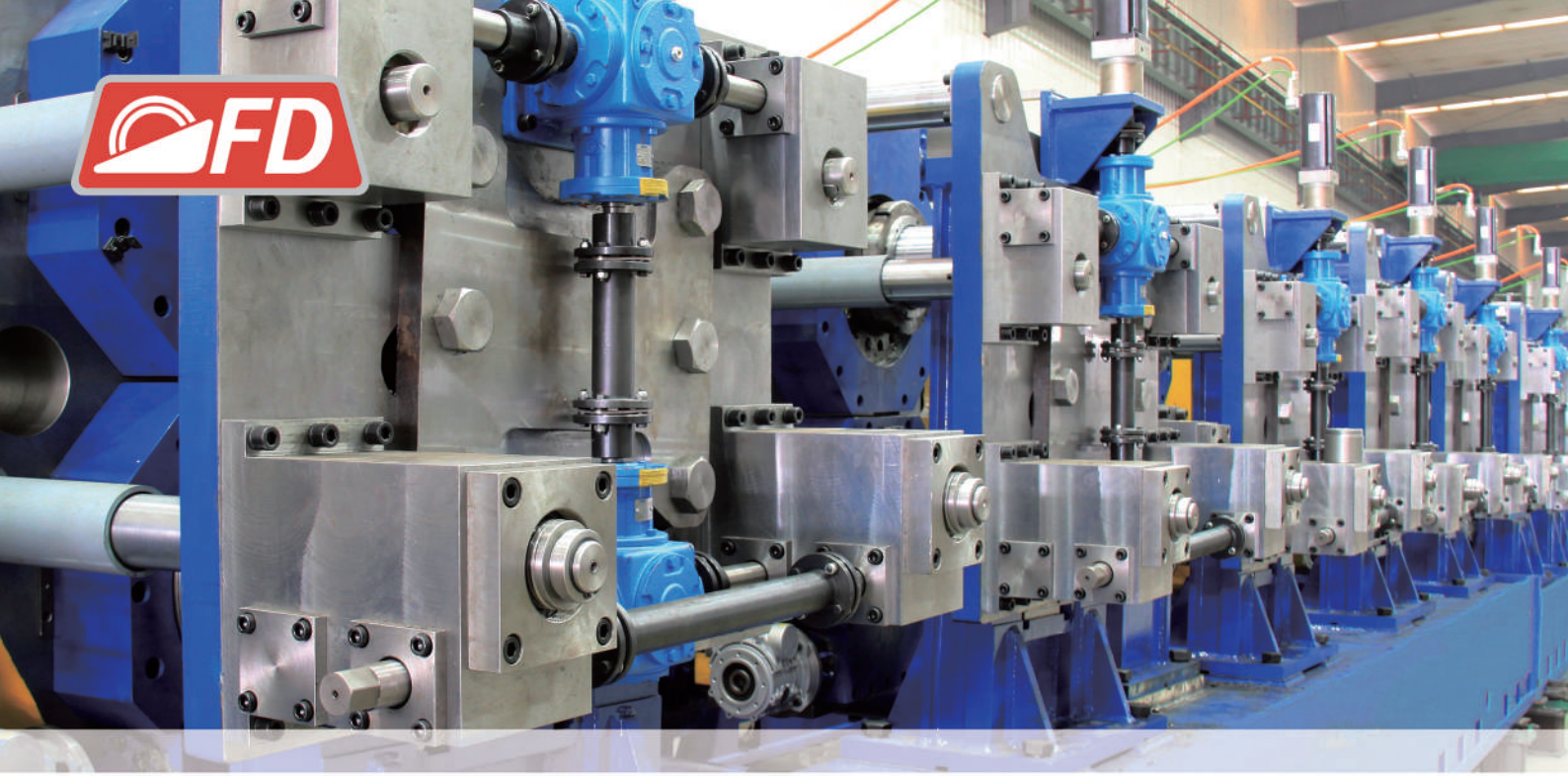

The Main Features of Fourth Generation CNC-CFS Direct Square Mill

- Size can be changed in 10 minutes of shutdown without tooling change;
- Changing size can be finished in one step, no test or waste;
- Dimension accuracy is greater than±0.1mm under automatic adjustment, higher dimension accuracy will be given by second auto adjustment;
- Second auto adjustment can be done for one roll or a group of rolls;
- Second auto adjustment can be done during production without cutting off steel plate.
- Automatic entry section: from loading coil to accumulator-- one operator.
- Automatic collecting section: from run-out table to tube bundle chain bed -- one operator;
- The whole production line can be run by three operators
- Heavy duty CFS takes X-Y track profile milling saw machine to realize cutting optimization and saving blade.
- Standard product range: 20x20mm-500x500mm, thickness 0.5-20mm; out of standards are available by special orders;
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