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JUNE 2021 €18

Focus on forming

Plus:

Storage and stacking

Materials in focus

Laser welding

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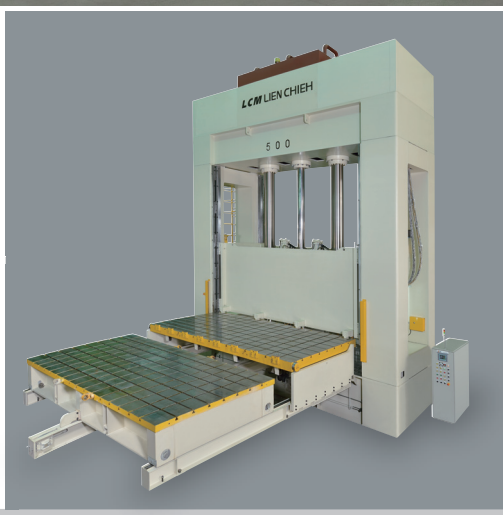
Servo Mechanical & Servo Hydraulic Tandem Line
Tonnage: 2,400 ton~1,000 ton | Bolster Area: 5,000 x 2,500 mm

Forging Presses
Tonnage: 12,000 ton
Bolster Area: 2,700 x 2,500 mm

Tryout Presses
Tonnage: 3,000 ton
Bolster Area: 4,600 x 2,750 mm



Die Spotting Presses
Tonnage: 500 ton
Bolster Area: 5,000 x 2,500 mm

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DIARY OF EVENTS

IDDRG 2021 – Virtual
21 June - 2 July 2021
Online event
www.iddrg2021.uni-stuttgart.de/registration/

MTA Vietnam
7-10 July 2021
Ho Chi Minh City, Vietnam
http://mtavietnam.com/en-us

Fastener Fair India
17-18 August 2021
Mumbai, India
www.fastenerfairindia.com

ITM Industry Europe
31 August-3 September 2021
Poznań, Poland/online
www.itm-europe.com

Global Industrie
6-9 September 2021
Lyon, France
www.global-industrie.com/en

FABTECH 2021
13-16 September 2021
Chicago, USA
www.fabtechexpo.com

Subcon/Engineer Expo/Manufacturing Management
14-16 September 2021
Birmingham, UK
www.subconshow.co.uk

Stainless 2021 - Green & Digital
28-30 September, 2021
Como, Italy
www.stainless-conference.com/stainless-special-steel-conference.html

EMO Milano 2021
4-9 October 2021
Milan, Italy
www.emo-milano.com

Made in Steel
5-8 October 2021
Milan, Italy
www.madeinsteel.it/en

Southern Manufacturing
6-7 October 2021
Farnborough, UK
www.industrysouth.co.uk

Blechexpo 2021
26-29 October 2021
Stuttgart, Germany
www.blechexpo-messe.de/en

Fastener Fair Stuttgart
9-11 November 2021
Stuttgart, Germany
www.fastenerfair.com/stuttgart/2021/english/

WIN Eurasia 2021
10-13 November 2021
Instanbul, Turkey/online
www.win-eurasia.com/en

Metalex 2021
17-20 November 2021
Bangkok, Thailand
www.metalex.co.th/en-gb.html

BLECH India
26-28 November 2021
Mumbai, India
www.blechindia.com/2021/english

SteelFab 2022
10-13 January 2022
Sharjah, UAE
www.steelfabme.com/show_info.html

MACH 2022
4-8 April 2022
Birmingham, UK
www.machexhibition.com/welcome

FABTECH Mexico
3-5 May 2022
Monterrey, Mexico
https://mexico.fabtechexpo.com

LAMIERA
25-28 May 2022
Milan, Italy
www.lamiera.net/en/homepage-en

BIEMH International Machine Tool Show
30 May-3 June 2022
Bilbao, Spain
https://biemh.bilbaoexhibitioncentre.com/en/

IMTS 2022
12-17 September 2022
Chicago, USA
www.imts.com/index-2022.html

EuroBLECH 2022
25-28 October 2022
Hanover, Germany
www.euroblech.com

If you would like your event to appear in the diary, with your logo, please email Bobby Bagha at: **bobby@in2publishing.co.uk**

WELCOME

Sara Waddington
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FROM THE EDITOR

The size of the global material handling equipment market is expected to reach US$ 44.5 billion by 2028, according to a recent report by Grand View Research Inc. The market is expected to expand at a CAGR of 7.4% from 2021 to 2028. Rapid industrialisation and the increased demand for automation in material handling equipment is expected to drive market growth over the forecast period.

In the June issue of *ISMR*, we report on the creation of a new ridging index (RI) by Outokumpu, an important development for the forming of ferritic stainless steel (on page 18). You can also uncover a selection of the latest global stamping innovations on page 38. We also chart the benefits of flow-forming for the chipless production of weight-optimised wheels (page 46) and highlight trends, growth drivers and challenges for manufacturers in global oil and gas markets (see page 22).

On page 26, we preview the hybrid ITM Industry Europe showcase, which will take place from **31 August - 3 September 2021**. We also unveil how Van Geenen B.V. Metaalfinishing is unlocking new business opportunities, with its heightened grinding capability, for polished sheet and tube products (page 28). We examine the impact, on page 30, of COVID-19 on the MENA region's economy and manufacturing activity. Laser welding (page 34) and storage and stacking (page 48) also come under the spotlight in this issue.

We encourage you to send us your machine process or technology video links for the *ISMR* website at **www.sheetmetalplus.com** and *ISMR*'s new YouTube channel at **www.youtube.com/channel/UCpGYqYNRjPKt85ND2iIP6Dw** . You can also follow *ISMR*'s new LinkedIn page under its new publisher name (In2Publishing Ltd) at **www.linkedin.com/in/international-sheet-metal-review-magazine** . Please also follow us on Twitter on **@ismrmagazine** or email me at **sara@in2publishing.co.uk**.

Please stay safe and healthy – the best wishes of the *ISMR* team go with you.

Sara Waddington

JUNE 2021

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Turnaround for German machine tool industry

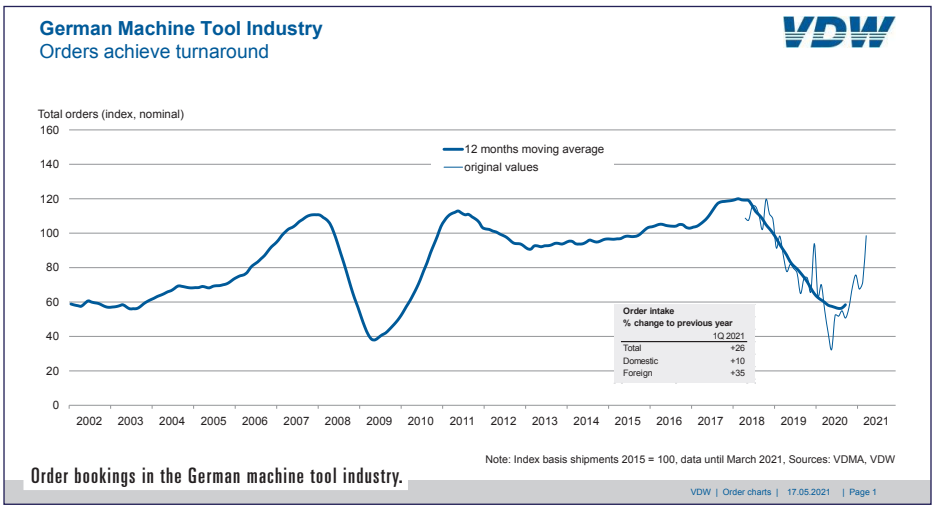
The German machine tool industry has registered positive quarterly results in orders for the first time since mid-2018. According to the VDW (German Machine Tool Builders' Association), orders received in the first quarter of 2021 were 26 per cent up on the same period last year. Orders from Germany rose by 10 per cent, it confirmed. Overseas orders, however, were 35 per cent higher than in the previous year.

"For several months now, the industry has been registering improving sentiment among customers. This is now finally being reflected in the figures," said Dr. Wilfried Schäfer, Executive Director of the VDW.

However, the low level of figures in the first quarter of 2020 was also part of the reason for the strong growth, as demand fell away sharply from March 2020 because of the pandemic. Comparison with the first quarter of 2019 therefore provides a more realistic picture. Here, total orders are still 14 per cent below the level at that time, while overseas orders are just one per cent higher.

"That means we still have a long way to go before we return to a reasonable level," Schäfer summed up.

"The upward trend in overseas orders in the current year is primarily attributable to the non-euro economies. China is driving the global economy forward and fuelling demand. It has been joined in this role by the new beacon of hope, the U.S. However, the recovery is relatively broad-based, as Europe is now also reviving. Many areas have a lot of catching up to do. The positive picture is completed by the capacity utilisation figure, which has risen from a low of 67 per cent last summer to its current rate of 79 per cent," added the VDW.



Order bookings in the German machine tool industry.

Employment represents a delayed indicator of economic development and is falling at present. In February 2021, the sector employed around seven per cent fewer people overall than in the previous year. This translated into 66,800 men and women.

"This is a very moderate figure compared to the decline in production and orders. It shows how important it is for companies to retain their well-qualified staff. Short time working was a great help here," said Wilfried Schäfer.

Nevertheless, companies are struggling elsewhere. Bottlenecks in supplies are hampering production. In a recent pandemic survey, almost half of the machine tool manufacturers surveyed said they were experiencing serious problems with the supply of electronic components, especially controls. Around 46 per cent were experiencing difficulties with steel and metal products.

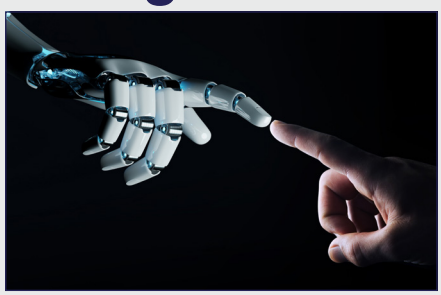
"Companies are already voicing fears of not being able to process orders on time because of the severe disruptions in the supply chain," Schäfer reported.

The VDW expects production levels to increase by six per cent in the current year. The resulting volume of 12.9 billion euros is above that of the 2009/2010 financial crisis, but still far below the record years of 2018 and 2019. ■

Q1 robot orders surge 20% over 2020

Robot orders in the first quarter of 2021 were up 20% over the same period in 2020, with substantial increases in purchases coming from companies in metals (up 86%); life sciences/pharmaceutical/biomed (up 72%); food & consumer goods (up 32%) and other non-automotive industries (12%). According to industry statistics announced by the Association for Advancing Automation (A3), North American companies purchased 9,098 units valued at US$ 466 million in Q1, with non-automotive companies purchasing 28% more robots over Q1 2020 and automotive OEMs and component suppliers combined seeing a 12% increase year-over-year.

"The strong Q1 for robot orders was the second-best start to any year on record (2017) and the second-best quarter on record for non-automotive orders, behind Q4 of 2020. Q4 2020 was also the second-best quarter ever for North America robot sales with a 64% increase over Q4 2019. In 2020 overall, for the first time, yearly orders of robots from non-automotive sectors surpassed automotive robot orders, as sales of robotic units in North America increased 4% in 2020 from 2019," explained A3.



"While advances in robot technology, ease of use and new applications remain key drivers in robot adoption, worker shortages in manufacturing, warehousing and other industries are a significant factor in the current expansion of robot use that we're now seeing. COVID didn't create the move toward automation, but certainly has accelerated trends that already were underway," it highlighted.

While robotic purchases from automotive manufacturers can be highly cyclical, the increase from non-automotive companies shows a promising outlook for the growth of robotics and the automation industry overall," said Jeff Burnstein, President, A3.

"We expect increasing demand for robotics and automation to continue in North America and throughout the world after the pandemic has ended," Burnstein added. "We also expect that the increased use of automation will help companies be better prepared to face any future pandemics." ■

www.automate.org

Press shop expansion for Volkswagen

Volkswagen has now officially inaugurated the press shop expansion at its electric car plant in Zwickau, Germany. As of now, the complete outer skin for the six electric models produced in Zwickau will be pressed on-site. The €74 million investment will enable further gains to be made in reducing the carbon footprint of the ID.31 and ID.42 vehicles.

"The effect is remarkable: more than 9,000 fewer direct truck journeys each year from now on for body manufacturing and annual savings of 5,800 tonnes of CO_2. This will create 60 new jobs in the factory," explained Volkswagen.

The official opening recently was attended by Minister President of Saxony, Michael Kretschmer, in the company of Christian Vollmer (member of the Board of Management with responsibility for production and logistics for the Volkswagen brand); Dr. Stefan Loth (Chairman of the Board of Management of Volkswagen Saxony) and Jens Rothe (Chairman of Volkswagen Saxony's Central Works Council).

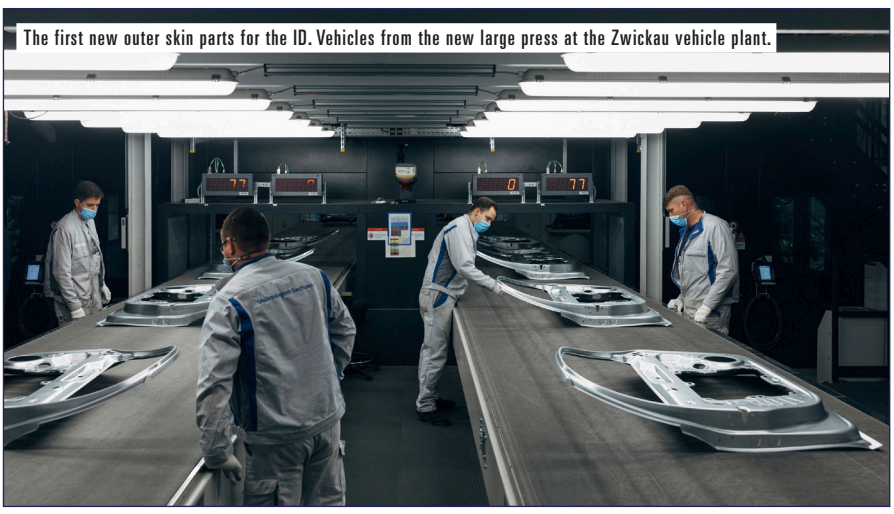
"The goal is to achieve carbon-neutral production at all MEB locations in Europe, as is already the case at the Zwickau plant. Zwickau is the pioneer and role model in this respect. The new press shop is an important milestone on our 'Way To Zero' journey, through which we are aiming to reduce the environmental impact of our production by 2025 - in areas such as energy usage, CO_2 emissions, waste and the use of water – by 45% per vehicle compared with the baseline year 2010. 90% of all Volkswagen Passenger Cars locations purchase electricity from renewable sources. With our 'Zero Impact Factory' environmental programme, production-related emissions are being reduced consistently at all factories, as well as in logistics," commented Christian Vollmer during the ceremony:

Volkswagen's production director, Dr. Christian Vollmer (right) explains the importance of the new press at the Zwickau vehicle plant to Saxony's Minister President, Michael Kretschmer (centre).

The €74 million invested in expanding the press shop represents one of the largest single investments in the course of transforming the site. In addition to a press in XL format, an automatic stacking line and a 30m high bay warehouse for logistics have been put into operation on the extra 8,400 square metres of space. The high bay warehouse alone cost €23 million.

From now on, all required outer skin body parts, such as doors and boot lids, can be pressed on-site for the electric models produced in Zwickau. Delivery from other locations, such as Emden and Wolfsburg, will cease. More than 9,000 truck journeys will be avoided each year and CO_2 emissions reduced by 5,800 tonnes – this corresponds to a share of 16% of the direct truck volume for body manufacturing at the Zwickau plant.

The new XL press from Schuler weighs more than 1,000 tonnes, with a press force of 6,900 tonnes across five stages. With 10,800 press strokes per day, the 92 metre long, 22 metre wide and 12 metre high press offers high speed and efficiency. It is the first time that a press with a mix of conventional and servo technology has been used in the Volkswagen Group. After its parent plant in Wolfsburg, the Zwickau facility now has the second-largest press shop within the Volkswagen brand. Around 20 million parts per year have been produced on average in West Saxony in the past ten years. With the new XL press, this figure is set to increase to up to 30 million parts per year by the beginning of 2022, some of which will continue to be supplied to other Group sites. Transformation of the site will be completed in 2021.



The first new outer skin parts for the ID. Vehicles from the new large press at the Zwickau vehicle plant.

Zwickau is playing a key role in the system change in the direction of electric mobility: the large car factory is being completely re-equipped for electric mobility with an investment of some €1.2 billion. All conversions will be completed on schedule this year. In addition, both production lines in assembly were converted. Zwickau has around 1,700 robots in body manufacturing and assembly, driverless transport systems and fully automated production processes.

The 'Way To Zero' is the brand's master plan for emission-free mobility for everyone. The journey began in 2020 with the market entry of the ID.3. Meanwhile, the global rollout of the world car on the MEB platform will focus this year on the ID.4. Over the coming years, Volkswagen will offer emission-free mobility in all segments with the ID. family. The brand plans to build at least 1.5 million e-cars annually by 2025 and reduce their carbon footprint by 30%. The goal is to be fully carbon neutral by 2050 – in terms of both products and the company. ■

Komaspec expands presence in China


Komaspec's latest manufacturing facility (Photo: Business Wire).

Due to continued growth from consumer durable goods spending, Komaspec, a Canadian-owned, China-based contract manufacturer, is officially launching its third manufacturing facility to bring its total manufacturing space to 93,000 square feet.

This is the latest step the company has taken to increase its manufacturing capacity for medium to high-volume full assemblies made of sheet metal, tube and plastic injected parts. This latest investment will increase the number of assembly lines to ten, while creating roughly 75 jobs and bringing its dedicated team headcount to over 250 personnel.

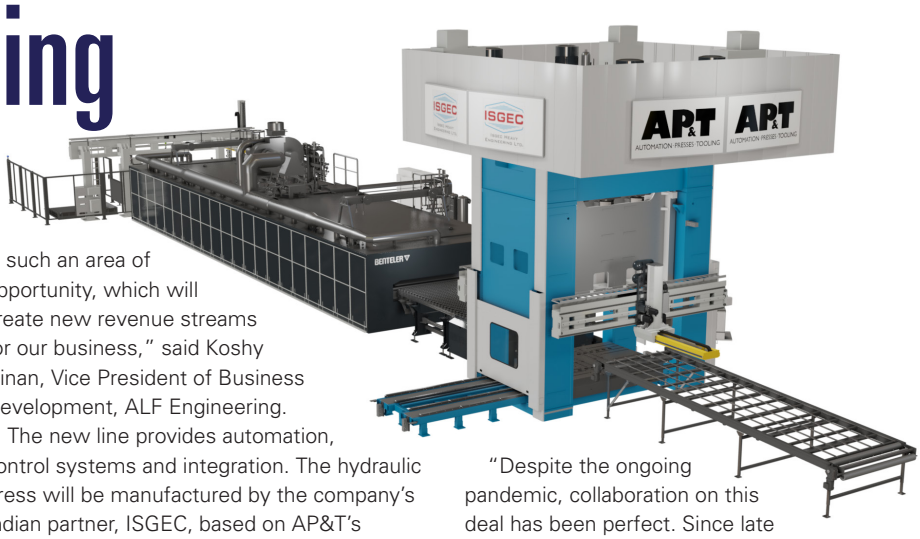
The new facility will be used solely for custom finished product assembly and warehousing, while the other two facilities will continue to manufacture components via multiple processes including: laser cutting; sheet bending; tube and pipe bending; robotic welding; plastic injection and other value-added processes.

"We are excited about the opportunity to continue our growth over the past decade with our loyal team, customer base and supply chain", said Maxime Berube, Chief Executive Officer of Komaspec. "This is a step forward for the company and we are delighted to continue the journey providing turnkey manufacturing for medium to high-volume for complex multi-component products for innovative brands, OEMs and ODMs."

In 2020, Komaspec delivered more than five million products, built from 26 million components, to customers in more than 20 countries. It will continue to undertake major investment in its 'proprietary online manufacturing platform', automation and towards increasing capacity of its vertically integrated operation. It strongly believes in the benefits of on-demand manufacturing to support customers in their new product introduction projects. ■

www.komaspec.com

Press hardening line for India



One of India's leading manufacturers of chassis and hydroformed components for vehicles – ALF Engineering – has placed an order for a fully automated press hardening line from AP&T. This is AP&T's first substantial order in India, the fourth largest new car market.

"With over 125 installed press hardening lines the world over, we are a well-established partner to many actors in the global automotive industry. The ALF Engineering order enables us to take our next step into the important and growing Indian market," explained Peter Karlsson, Area Sales Manager, AP&T.

Not only is the press hardening line AP&T's first in India, it is also the first for ALF Engineering.

"By investing in new technology, we aim to fulfill the emerging demands of our customers. ALF has proven itself in the past in our ability to identify, acquire, assimilate and productionise new technologies in a competitive environment. Press hardening is such an area of opportunity, which will create new revenue streams for our business," said Koshy Ninan, Vice President of Business Development, ALF Engineering.

The new line provides automation, control systems and integration. The hydraulic press will be manufactured by the company's Indian partner, ISGEC, based on AP&T's original drawings. The advanced roller hearth furnace concept, which is based on a modular design, will be provided by BENTELER Mechanical Engineering, a company that AP&T has collaborated with in several press hardening projects worldwide.

The new press hardening line will be installed in ALF Engineering's new facility in KhedCity, near Pune (southeast of Mumbai), its thirteenth plant in India for manufacturing automotive components and assemblies. Delivery is expected to take place in the first quarter of 2022.

"Despite the ongoing pandemic, collaboration on this deal has been perfect. Since late 2019, all contact between us has been from afar," Karlsson concluded. ■

aptgroup.com

www.isgec.com

www.alfengineering.com

www. benteler-mechanicalengineering.com

Machine tool growth indicators


Barbara Colombo, UCIMU President.

In the first quarter of 2021, machine tool orders collected by Italian manufacturers started to grow again. The UCIMU index showed a 48.6% upturn in the first three months of the year compared to the same period in 2020. The absolute value of the index was 169 (base 100 in 2015). Overseas orders rose by 30.5% versus the period January-March 2020.

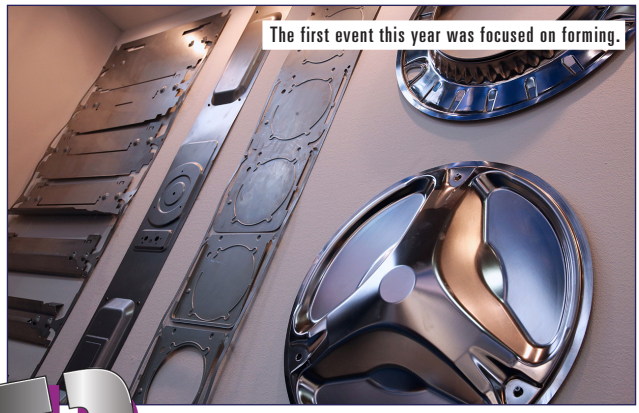
"The overall outcome was mainly due to the excellent performance of manufacturers in the domestic market. Indeed, in the internal market, Italian manufacturers registered a 157.9% increase in collected orders compared to the same period in the previous year. The absolute value of the index was 195.5," commented UCIMU, the Italian machine tool, robotics, automation and ancillary products association.

"Data recorded in the first quarter," stated Barbara Colombo, President of UCIMU-SISTEMI PER PRODURRE, "are positive and allow us to take a little breath after months of great difficulty. That said, the registered increases must be balanced against results obtained in the first part of 2020 which was a very difficult period because, from the end of February 2020, we were facing the first effects of the international pandemic.

"By the end of 2020, we realised that the domestic market had started to increasingly generate orders and is now performing well, also supported by the investment incentive measures in new production technologies from the Transition Plan 4.0. Business indicators in overseas markets are positive, but the recovery is happening at different rates. China and the United States are undergoing very dynamic business activity, whereas countries in the Euro area have just started to pick up," she continued.

Colombo pointed out that prolonged mobility restrictions have also affected market growth internationally, despite the fact that 'the world is starting to make investments again in new machine tools and new automation systems'. She also highlighted the importance of the international EMO Milano 2021 exhibition, which will be held in Milan from **4-9 October 2021**, when 'mass vaccinations will hopefully have enabled a return to normal'. ■

A focus on forming


The first event this year was focused on forming.

The first event in the EuroBLECH Digital Innovation Series on Forming Technology, which took place online from **27-28 April 2021**, was a key meeting platform this year for the international sheet metalworking community.

More than 2,000 visitors registered for the event, with 1,384 visitors from 70 countries worldwide active on the event platform. Participants used the opportunity to log onto the platform during the two virtual event days to network, watch webinar content live and on-demand, view product demonstrations and visit virtual showrooms of exhibitors. Visitors could virtually meet relevant exhibitors in pre-booked meetings and drop-in meetings, use a new online chat function, watch product presentations and follow webinars on current industry trends, followed by live Q&A Sessions.

"This new event format proved successful, as many participants from all over the world joined to discover innovations, trends and current solutions in the sheet metal working industry. The most important visitor countries were Germany; Turkey; Spain; Italy; India; the UK; the Netherlands; Brazil; Japan; Austria; Belgium; Sweden; Finland; the USA and Poland. The event registered a high percentage of participants from top management with decision-making and buying capability. More than 80% of participants indicated their involvement in decision-making in their company," commented Mack-Brooks Exhibitions Ltd, the show organiser.

A daily programme of webinars by industry experts provided an opportunity for participants to gain useful insights into the latest market developments, as well as technical expertise on new industry applications and solutions. Key players from the industry, as well as associations, provided exclusive insights into latest technologies and case studies on forming technology. A total of 13 speakers, five webinar sessions and three exhibitor product showcases were featured during the event, with participants watching the content for almost 500 streaming hours in total. On average, participants viewed two webinars on the platform during and after the event.

"We are pleased with the results of the first event of the EuroBLECH Digital Innovation Series and thank all our exhibitors and participants for joining us at this important digital event for the sheet metal working industry in 2021. We have seen a good level of engagement and received positive feedback. We will use the valuable feedback we receive, following this first event, to prepare for the next events in the EuroBLECH Digital Innovation Series in 2021," said Evelyn Warwick, Event Director of EuroBLECH, on behalf of the organisers Mack-Brooks Exhibitions.

"EuroBLECH is the world's leading platform for sheet metal working professionals from all over the world. In times like these, it is very important for us to regularly bring our industry together on a global scale to trade and network. In our view, this will also support the industry's recovery from the COVID-19 pandemic," she continued.

Companies interested in participating as an exhibitor or as a speaker for the webinar programme can contact the show organiser. EuroBLECH itself is the world's largest sheet metal working technology exhibition. It covers the entire sheet metal working technology chain and will be held in Hanover, Germany, from **25-28 October 2022**. ■

www.euroblech.com

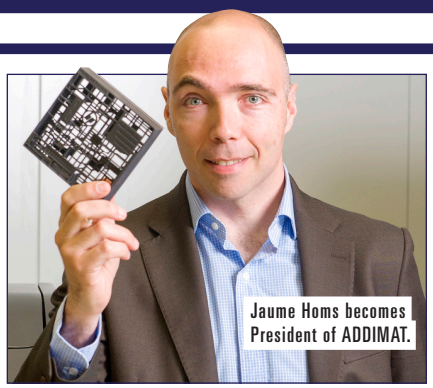
New President for ADDIMAT

On 13 May 2021, the General Assembly of the Spanish Association of Additive and 3D Manufacturing Technologies, ADDIMAT, elected Jaume Homs as its President for a period of two years. Homs is regional business manager for HP, in charge of markets in Spain, Benelux, Portugal, the UK and Ireland. He takes over from Alfonso Urzainki (Egile Corporation XXI), who has been at the helm of ADDIMAT for the last four years.

HP became a member of ADDIMAT in 2017 and then held a position in the Association's Board of Directors that same year. It now has a worldwide base of operations for 3D printing in Sant Cugat del Vallès (Barcelona), where it inaugurated 'the largest 3D printing centre in the world' in 2019.

At its General Assembly, ADDIMAT presented activities and results for 2020, a difficult year during which the Association maintained the number of its members (nearly one hundred). The Assembly also approved the Management Plan for 2021 with expectations this year to return to the previous growth trend in the sector, which has maintained its turnover in Spain (despite the pandemic).

ADDIMAT, along with the AFM, ESKUIN, AFMEC and UPTEK associations, is part of AFM Cluster, which represents the interests of advanced and digital manufacturing. AFM Cluster includes almost 600 companies, which employ 16,500 people and have a joint turnover of 2.8 billion euros. ■



Jaume Homs becomes President of ADDIMAT.

www.addimat.es

www.afmcluster.com

£100k press line investment

A UK specialist in precision pressed parts and machined components has invested more than £100,000 in the installation of a new high-speed press line to boost capacity, ahead of a raft of new opportunities. Source Engineering, which employs 32 people across its two divisions in Plympton, UK, has purchased a Bruderer press which can do the work of four conventional HME power presses.

The BSTA 200M 20 tonne stamping press is now up and running at its Langage Business Park facility, achieving 300 strokes per minute (a 200% increase in production output across a range of products for the automotive, electrical wholesale and oil and gas markets). Engineers at the firm have freed an additional 500 square feet of production space to use for the introduction of new projects and 'to help it cope with an increase in demand for its range of automation solutions'.

The Bruderer BSTA 200M stamping press was fitted with a high-speed servo feeder and pallet decoiler for precision control of material de-coiling and pinpoint pitch control through the progression press tool. Specified with a tool area of 510 x 400mm, the machine can deliver up to 1800 strokes per minute and can handle a maximum material thickness of up to 2mm and material width of 100mm. It has also been equipped with a press force monitor, to protect the press from overload, and limits damages to the tool if any stray material is pulled back up into the process - stopping the machine within one stroke, even at high speed.

Pablo Gutierrez, Technical Director, Source Engineering, commented: "Sales are now back to pre-pandemic levels and we are looking to grow, with our ability to provide design, tooling and manufacturing all in one place driving the need for more production space. There are lots of new opportunities domestically and overseas and we are hoping to turn some of the potential into contracts that will see turnover rise by 20% over the next twelve months."

Pablo Gutierrez, Technical Director, Source Engineering, with the new Bruderer press.

Source Engineering has developed new control boxes that help to monitor the part as it goes through production. It has already supplied several models to Bruderer UK for installation on its machines and is looking to expand its offer further over the next twelve months.

"Tolerances of manufactured process speed have improved significantly, whilst the ability to achieve fast changeover of press tools has been achieved due to the in-built Bruderer application of SMED (Single-Minute Exchange of Dies)," commented Adrian Haller, Managing Director, Bruderer UK. ■

www.s-eng.co.uk

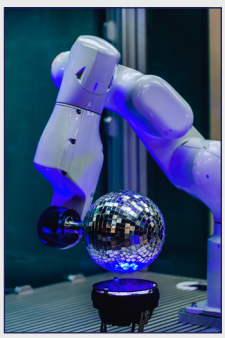
www.bruderer.co.uk

The world of metalworking

EMO MILANO 2021, a key trade show for global manufacturers which takes place at fieramilano Rho in Milan, Italy, will be held from **4- 9 October 2021**. The event is organised by UCIMU-SISTEMI PER PRODURRE (the Italian machine tool, robotics, automation and ancillary products association).

Luigi Galdabini, General Commissioner of EMO MILANO 2021, commented: "The availability of vaccines, international growth forecasts for machine tools and the important tax/investment incentive measures in new production technologies offered by the Italian Government are favourable backdrops to EMO MILANO 2021, and will benefit all those who exhibit at the event."

Various international players in the metalworking sector have already confirmed their participation. To date, 28 exhibitor countries will be at the event. Italy; Germany; Taiwan; Spain; Switzerland; Japan; Korea; China and the United States are the nations with the largest number of exhibiting companies. ■



https://emo-milano.com/en/homepage-4/

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A sad farewell

It is with great sadness that UCIMU has announced the death of Giancarlo Losma on Friday 30 April 2021. He was a past president of UCIMU-SISTEMI PER PRODURRE, the Italian machine tools, robots and automation systems manufacturers' association, which he led from 2008 to 2011.

A visionary entrepreneur, founder of the company of the same name, Losma SpA based in Curno (Bergamo), Giancarlo Losma was 74 years old. He had many ideas for the future of his company to which he devoted his whole life, assisted by his wife Letizia.

He joined UCIMU-SISTEMI PER PRODURRE in 1989 and, in 1996, became a member of the Steering Committee, a position he held until 2003. He was then vice-president of the association for several years, from 2003 to 2008, until he became President. From 2011 to 2015, he was president of FEDERMACCHINE, the Italian Federation of Associations of Manufacturers of Capital Goods that includes 12 associations, among which is UCIMU-SISTEMI PER PRODURRE.

"Giancarlo Losma was among the promoters of the ITC network (Italian Technology Centre in India) established in 2012, which to date involves about ten companies in capital goods. The network, which is based in Pune, therefore loses its historical president devoted to its development and growth," explained UCIMU.

Mr. Losma was also a member of the Italian delegation of CECIMO, the European Association of Machine Tool Industries, and was also President of Piccola Industria di Confindustria Bergamo (Committee of Small Industries of Confindustria Bergamo).

Barbara Colombo, President of UCIMU-SISTEMI PER PRODURRE, stated: "We are stunned and grieved by the loss of Giancarlo, our colleague and dear friend, with whom we shared important battles and achieved significant goals. His commitment and dedication to UCIMU prove that he considered our association as an integral part of his professional activity, devoting time and effort to it. In particular, the enthusiasm conveyed by President Losma regarding the experience of the Network in India has been a source of inspiration for new opportunities, starting from the network project in Vietnam on which we are working".

Alfredo Mariotti, General Manager of UCIMU-SISTEMI PER PRODURRE, added: "The passing of President Losma is a great loss for me and for all employees of UCIMU. We will remember him for his frank speaking and his great kindness. He was a man who was always friendly and helpful to everyone and open to every discussion." ■

Hopper becomes CEO for Brilex Group

The Brilex Group of Companies recently announced the hiring of former Nucor executive, Doyle Hopper, as Chief Executive Officer of Brilex Industries, Inc; Brilex Technical Solutions, LLC and Taylor-Winfield Technologies, Inc. As its CEO, Hopper will leverage nearly thirty years of steel industry and manufacturing expertise to drive strategic growth and commercial excellence across the Group's companies.

Doyle Hopper.

"We are thrilled to have Doyle take the reins as CEO," said Alex Benyo, co-founder of the Brilex Group. "Doyle's role will drive integration and synergies between our companies, maximizing the value delivered to our customers and will lead to additional opportunities in the marketplace."

"His values and proven leadership combined with his knowledge of the steelmaking and automated manufacturing processes align perfectly with our Group's values, growth strategies and industries served," added Brian Benyo, co-founder of the Brilex Group.

Before joining the Brilex Group, Hopper had spent his nearly 30-year, professional career with Nucor, the largest producer of steel in the United States. Starting with Nucor out of college as an entry level welder and fabricator, Hopper continually advanced into expanded roles, eventually reaching executive positions as the vice-president of VULCRAFT and Cold Finish in Norfolk, Nebraska, Nucor Connecticut and, most recently, Nucor South Carolina. ■

New CTO for CLOOS

Stephan Pittner became the new CTO at CLOOS on 1 May 2021.

Welding specialist, Carl Cloos Schweisstechnik GmbH, is expanding its management team and setting the course for the future. To ensure the sustainable further development of CLOOS, Stephan Pittner now co-directs the fortunes of the company as technical managing director (CTO) as of 1 May 2021. He is responsible for developing areas for the welding and robotics specialist as well as its Automation business unit.

Pittner has been at CLOOS for more than 20 years. He has expertise and extensive experience in product development and project management. After training as a technical draughtsman and toolmaker, Pittner worked in product development and equipment design. He also completed further training as a mechanical engineer. In 2000 he joined CLOOS, where he initially contributed his expertise in project management and technical sales. This was followed by positions as division manager for welding cells and robot systems as well as head of the engineering and production automation division. Most recently, as director of Automation, Pittner was responsible for development, project management, construction, documentation, assembly and commissioning. He also has technical responsibility for the largest CLOOS subsidiaries in the USA and China.

"The further development of young people and constantly new challenges in the automation environment spur me on," explained Pittner. "I look forward to pushing new technologies and innovations in welding and robotics together with our employees in Haiger and around the world."

Managing director, Sieghard Thomas, who has led the Haiger-headquartered company since 2016, remains responsible for all other areas as CEO. ■

(Left to right: Dr. Jochen Köckler, Chairman of the Managing Board, Deutsche Messe AG, and Arief Havas Oegroseno, Ambassador of the Republic of Indonesia, for the Federal Republic of Germany.

German Chancellor, Angela Merkel, opened the trade show.

A hybrid showcase

HANNOVER MESSE is a showcase for industry and a catalyst for future topics such as AI, sustainable production and 5G. As a purely digital event, this April's HANNOVER MESSE served two roles: it revealed not only the future of industry, but also demonstrated what trade shows will look like going forward.

"The HANNOVER MESSE Digital Edition demonstrated the innovative power of mechanical engineering, electrical engineering and IT companies. At the same time, it showed that the trade show of the future is hybrid," said Dr. Jochen Köckler, CEO of Deutsche Messe AG.

German Chancellor, Angela Merkel, opened the trade show for industry with Joko Widodo, President of the Republic of Indonesia. The 1,800 participating companies presented 10,500 products and innovations to 90,000 registered participants. The conference featured 1,500 experts discussing topics such as Industry 4.0, digitalisation of industrial processes, supply chain management, lightweight construction, hydrogen and electromobility.

"The positive response to the digital HANNOVER MESSE exceeded our expectations. At the same time, we saw that a digital trade show cannot replace the magic of a physical event," reported Köckler, citing trust-building face-to-face discussions, concrete leads at the booth and the hands-on product experience as well as chance encounters that can lead to new business partnerships. "The personal contact simply is not there."

"The digital HANNOVER MESSE confirmed that we are on the right path. Based on our experience this week, in the future we will bring together the best of the digital and analogue worlds to provide our customers with a holistic hybrid trade show experience," added Köckler.

During the five days of the live show, the 90,000 participants generated more than 3.5 million page views and submitted 700,000 search queries in the exhibitor and product search. In addition, the new conference and exhibitor live streams attracted approximately 140,000 views.

"Among other things, we now know that we are reaching completely new exhibitors and visitors. When we transfer this knowledge to our physical events, we maximize the bandwidth of our trade shows many times over. In this way, we increase the relevance of HANNOVER MESSE," concluded Köckler.

All content from the HANNOVER MESSE Digital Edition is now available at **www.hannovermesse.com**. Interested parties who missed the live week can register to learn more about the exhibitors and products and watch the keynotes and panel discussions on demand.

"HANNOVER MESSE is and remains the international showcase for industry, even in times of Corona. This year's digital edition brought companies, politics, media and many viewers from all over the world online to present fascinating technologies and discuss important topics," said Thilo Brodtmann, CEO of the Association of German Machinery and Plant Manufacturers (VDMA). "Mechanical and plant engineering play a key role in industrial transformation. This applies to climate-neutral production and the mobility of tomorrow as well as intelligent production and logistics technologies."

The next HANNOVER MESSE runs from **25-29 April 2022**. Portugal is the Partner Country. ■

www.hannovermesse.de/en

The Lightweighting Summit at Hannover Messe.

The panel on digitalisation at Hannover Messe.

Virtual development and physical endurance tests for Porsche

Michael Steiner, Member of the Executive Board, Research and Development, Porsche AG in front of two camouflaged prototypes of the all-electric Macan.

The all-electric Porsche Macan is ready to be tested on the road. After initial testing on the proving grounds of the Porsche Development Centre in Weissach, the well-camouflaged next-generation prototypes of the compact SUV are now heading outside Porsche premises for the first time.

"Testing in a real-life environment is now getting underway – one of the most important milestones in the development process," said Michael Steiner, Member of the Executive Board, Research and Development, at Porsche AG. By the time the all-electric Macan is launched onto the market in 2023, it will have covered some three million test kilometres worldwide in varying conditions. The prototypes incorporate the experience gained from countless previous test kilometres – driven in a virtual space.

Digital development and testing not only saves time and costs, it also preserves resources, so it enhances sustainability. Instead of real vehicles, the engineers use digital prototypes – computational models that replicate the properties, systems and power units of a vehicle to a high degree of accuracy. There are 20 digital prototypes for the purpose of simulation in several development categories such as aerodynamics, energy management, operation and acoustics.

"We regularly collate the data from the various departments and use it to build up a complete, virtual vehicle that is as detailed as possible," explained Andreas Huber, manager for digital prototypes at Porsche. This allows previously undiscovered design conflicts to be swiftly identified and resolved. The aerodynamics specialists are among the first engineers to work with a digital prototype.

"We started with a flow-around model when the project first started about four years ago," reported Thomas Wiegand, director of aerodynamics development. Low aerodynamic drag is fundamental to the all-electric Macan with a view to ensuring a long range. Even minor flow enhancements can make a huge difference. The engineers are currently using simulations to fine-tune details such as the cooling air ducts. The calculations not only take into account different arrangements of the components, they also reflect real-life temperature differences.

Virtual prototypes can be combined with real-world scenarios at an early stage. The best example is the development of a new display and operating concept for the next generation of Macan. Using a 'seat box' to recreate the driver's environment, the display and operating concept can be brought to life in an early development phase with the digital prototype.

The first physical prototypes of the all-electric Macan were built based on the data obtained from the simulations – in some cases elaborately by hand or using special tools. These are then regularly adapted based on the virtual refinement process. Road test findings are also fed directly into digital development.

The market launch of the all-electric Macan – the first Porsche to be built on the Premium Platform Electric (PPE) – is planned for 2023. Porsche is positioning itself flexibly for the transition to pure electromobility. ■

InspecVision wins Queen's Award for exports

Mallusk-based company, InspecVision, has been honoured with a Queen's Award for Enterprise for outstanding export performance. It is one of five Northern Ireland firms and 205 organisations in the UK to be recognised with the prestigious award.

The company develops and manufactures 2D and 3D measurement systems for the inspection of manufactured components. Its core market is the sheet metal industry with customers producing components for a wide range of applications, including the automotive and aerospace sectors.

"InspecVision has been recognised for its excellence in international trade, with overseas sales growth of 129% over the last three years. Its main export markets are the United States, China and Europe," it told *ISMR*.

The company was established in 2005 by Dr. Jan Antonis and his father, Mike Antonis. Jan Antonis had completed a PhD in computer vision at Queens University Belfast and his father had recently retired as managing director of FG Wilson Engineering. They both identified a gap in the market for 'high-speed, easy-to-use, lower cost inspection machines' and then developed and launched the Planar measurement system for 2D parts. Today, the product range is sold in over 30 countries and has expanded to include 3D inspection.


Dr. Jan Antonis, MD, InspecVision.

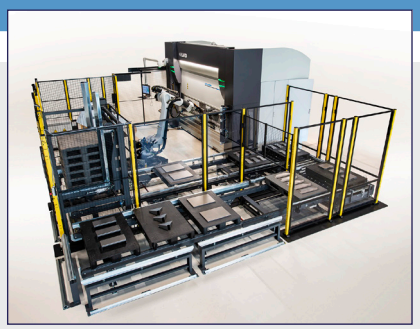
Dr. Jan Antonis, Managing Director, said: "I am very proud to see that InspecVision has achieved the prestigious Queens Awards for Enterprise. This celebrates the dedication and commitment of our team and the immense contribution and support of our distribution partners which has enabled us to deliver world-class quality control solutions to manufacturers across the globe."

Now in its 55th year, the Queen's Awards for Enterprise are the most prestigious business awards in the UK. Winning businesses may use the Queen's Awards emblem for the next five years.

Applications for Queen's Awards for Enterprise 2022 opened on **1 May 2021**. ■

www.gov.uk/queens-awards-for-enterprise

www.inspecvision.com



LVD's Ulti-Form robotised bending cell handles parts from 50 x 100mm up to 1200 x 800mm (*weighing up to 25kg).

Gold label for LVD

LVD Company nv has been named among Belgium's 'Best Managed Companies' for the fourth consecutive year, achieving the programme's Gold label. The 'Best Managed Companies' designation is granted annually by Deloitte Private, Econopolis and KU Leuven to private Belgian companies with top management processes, attention to sustainable management and strong financial results.

The Best Managed Companies programme evaluates and challenges organisations' strategy and operational management against a proven global framework based on four pillars: a clear long-term strategy, extensive capabilities, strong commitment and financial performance. Following the unique challenges of 2020, resilience, leadership and agility have been particularly acknowledged in the selection of this year's six 'Best Managed Companies'.

"We're proud of this designation and for achieving it for a fourth year," said Carl Dewulf, CEO, LVD Company. "As a family-owned business, our strategic planning process is dynamic, allowing us to move strategy and tactics quickly to suit business conditions. In a year of extraordinary circumstances, this agility served us well."

LVD Group is represented in 47 countries, has 19 subsidiaries and multiple manufacturing facilities across Europe and the U.S. In 2020, despite the challenges of a global pandemic, the company has introduced some of its most high-technology sheet metalworking machinery to date, including an auto tool-changing robotised bending cell.

LVD is a leading manufacturer of sheet metalworking equipment, including laser cutting systems, punch presses, press brakes, guillotine shears and automation systems, integrated to and supported by its CADMAN® software suite. ■

www.lvdgroup.com

75-year lift for Street

A key supplier to the steel stockholding and handling industry, Street Crane Company, is celebrating its 75th year of continuous innovation in crane technology. The company's association with steel stockholding and handling grew in the 1970s and 1980s, with installations for Walker Steel and British Steel Distribution (BSD) making them amongst the biggest UK customers for coil and section handling cranes. In recent times, Tata Steel has come to Street for both standard and highly specialised cranes.

Crane no 1248, Daniel Doncaster Sheffield 1957.

Coil handling cranes have become a Street speciality, with multiple applications in automotive plants and automotive supply chains. Recent orders include 30+ tonnes safe working load coil handling cranes for A V Dawson, steel supplier to Nissan in Sunderland, and to Associated British Ports at Newport. A family-owned business, Street Crane is the UK's largest producer of factory overhead, gantry and jib cranes and is a global supplier of advanced hoists and controls to a network of over 100 international independent crane-makers.

"Key features that give steel stockholding and handling users assurance in lifting include an additional hoist brake for increased safety during maintenance operations. Heavy duty open winch hoists ensure a stable and true vertical lift. Programmable speed control and load-dependent speeds give precise movements for accurate and safe load positioning. Tandem cranes and hoists with load summation give even more handling flexibility," explained the company.

Innovation has been at the core of Street Crane's success from its beginnings in 1946. The current Street ZX hoist range is the sixth generation of hoisting equipment the company has designed and serially manufactured. In late 2020, Street launched Eazycrane online crane configuration software. ■

www.streetcrane.co.uk

Aerospace - multiple Street cranes to rotate the load.

Aluminium (Street crane coil handling).

AutoForm appoints agent in South Africa

AutoForm Engineering GmbH, a leading supplier of software solutions for stamping and BiW assembly processes, has appointed an agent in South Africa. AutoForm Engineering will be represented there by Ultimate Partner and its team. This engineering solution partner will offer the full range of AutoForm products and services to long-standing and prospective customers.

In recent years, AutoForm has established a market presence in South Africa with its software technology. Several well-known automotive, tooling and stamping companies in the country have used AutoForm software for their key engineering and manufacturing operations.

Right: Marc Lambriks, AutoForm Engineering.

Marc Lambriks, Country Manager, AutoForm Engineering in The Netherlands and responsible for the territory of South Africa, stated: "I am delighted that Ultimate Partner has become our agent. The South African automotive industry is the largest in the region and future prospects are encouraging. With Ultimate Partner, we are able to foster our business relations with our existing customers as well as further grow our customer base. The collaboration with Ultimate Partner is in line with AutoForm's strategy to expand the market and support customers in achieving outstanding results. We look forward to a very successful partnership!". ■

www.autoform.com

Metalworking in Taiwan

According to statistics from the Taiwan Association of Machinery Industry (TAMI), the export value of Taiwan's machinery and equipment reached US$ 2.634 billion in April 2021, a 28.4% rise over the same period last year, with a 13.5% increase in machine tools over that period. Taiwan is one of the top five machine-tool exporting countries in the world.

Its "Taiwan Excellence - Navigating the Future of Metalworking" online event on **26 May 2021** was held by the Taiwan Bureau of Foreign Trade (BOFT), MOEA, Taiwan, R.O.C. and the Taiwan External Trade Development Council (TAITRA), in conjunction with TAMI. Five leading Taiwanese companies (Ching Hung; Chin-Fong; Equiptop; Speed Tiger and Sigma) also shared their advanced smart manufacturing solutions.

Patrick Chen, Chairman of the Machine Tool Committee, TAMI, stated during the event that the rebound of market demand in China, the United States and other markets, as well as 'the supply chain reshaping effect driven by the U.S.-China trade war', were major factors causing the demand for metal cutting tools to continue to grow. The output value of Taiwan's machinery and equipment was U$$ 37.3 billion in 2020. To meet increasing market demand, the output

Patrick Chen, Chairman of the Machine Tool Committee, TAMI.

value of Taiwan's machinery and equipment is expected to increase by US$ 3.6 billion to US$ 42.6 billion during 2021, with an annual growth rate of 10% to 15%.

Dr. Ta-Jen Peng, Deputy Director of the Intelligence Manufacturing Technology Division, Intelligent Machinery Technology Centre (ITRI), added that Taiwan's metalworking industry has changed from being strongly dependent on the experience of engineers to production mode, greatly assisted by smart software. Taiwan provides intelligent stand-alone equipment as well as entire intelligent factory solutions. ■

WATCH VIDEO

Brexit disruption for the UK

UK manufacturers are still struggling to cope with crippling delays moving goods in and out of the EU after Brexit. According to research by Make UK, the manufacturers' organisation in the UK, 74% of companies experienced delays from January to March 2021. One in three (28%) are experiencing delays of between one and two weeks, with goods stuck in transit and shipment delays - over half (51%) say this has led to increased costs. Over a third (35%) have lost revenue, with one in five losing potential business.

"Many container ships will not stop in the UK at present, due to delays at British ports. This is resulting in goods bound for the UK being offloaded in EU ports, impacting heavily on production schedules and lead times with companies forced to make alternative and costly arrangements to have their orders delivered," said Make UK.

"The UK Government should look to quickly get back around the table with our EU partners to find a way to mitigate against ongoing delays at the border and iron out different interpretations of the rules for movement of goods in separate member states," added Stephen Phipson, CEO of Make UK.

Manufactured goods accounted for over half of UK total exports at the end of 2019, bringing in £687 billion for UK Plc ■

Don't miss Blechexpo 2021

The latest technologies for sheet metal processing, metalworking and joining technology will be the focus of the 15th Blechexpo international trade fair for sheet metal processing. It will be held, together with the 8th Schweisstec international trade fair for joining technology, in Stuttgart, Germany, from **26-29 October 2021**. Exhibitors will present stand-alone and system solutions for the process chains associated with the fabrication of parts made from sheet metal, profiles and pipe at an international level.

The Blechexpo/Schweisstec trade fair showcases sheet metal processing and metalworking technologies, along with joining technology, once every two years. Attention will be focused on stand-alone and system solutions for the process chains involving the fabrication of parts made from sheet metal, profiles and pipe, as well as associated thermal and mechanical processing; cutting technologies; processing machines; equipment for punching, bending, automation and forming. It also includes system peripherals, such as controls and software, as well as solutions for handling and quality assurance.

"Sheet metal processing companies are faced with the challenge of networking their production departments to an ever greater extent in the future. Many suppliers from sheet metal processing, metalworking and joining technology view themselves as solution providers for the entire sheet metal fabrication process. They not only offer their own machines, software and services – by working together with their partners, they are also able to offer holistic system solutions from a single source," said show organiser, P.E. Schall GmbH & Co. KG.

"Digitalisation, sustainability, process efficiency and future-proof solutions in the face of a rapidly changing production

environment are high-priority driving issues for the sheet metal processing industry. Great focus is also still on energy efficiency, advanced mechanical joining and fastening technologies because production is working to an ever greater extent with new plain and hybrid materials. Modern cutting technologies, such as high-pressure waterjet cutting, will also be in the spotlight."

In 2019, exhibitors from 36 countries and visitors from 113 nations attended the event in Germany. ■

www.blechexpo-messe.de/en


Networked machines at TRUMPF's Smart Factory.


Tobias Reuther, Head of the TRUMPF Smart Factory and Customer Centre in Ditzingen.

The Smart Factory

TRUMPF opened its Smart Factory in Ditzingen (Germany) just over six months ago where thirty machines constantly communicate with each other, fifty employees show them to customers and they process about 100 tons of sheet metal into parts for machine tools every month.

Its fully networked machinery is therefore more than just a showroom for customers. Here, it cuts, punches, bends and welds sheet metal parts for its own machine tools: side panels, cable ducts or machine housings. In this way, it can show small and medium-sized companies what 'efficient and automated sheet metal processing looks like in practice'.

Tobias Reuther is head of the TRUMPF Smart Factory. Here, he talks about what has changed for customers and TRUMPF employees and reveals why smartphones play a central role in manufacturing.

Digitised sheet metal processing

"We are pushing the limits of what is technically feasible here. What we developed yesterday, we test today and show it to our customers tomorrow, if possible. With a total area of 5,000 square metres, this type of demonstration centre for digitised sheet metal processing is probably unique and international. The Smart Factory extends over four production halls: from high-performance stand-alone machines and semi-automated systems to fully automated autonomous processes. Automation can be seen in each of the four halls," explained Tobias Reuther, head of the TRUMPF Smart Factory and Customer Centre Manager.

"We're not putting on a show here. Anyone who enters the Smart Factory immediately senses that humans and machines are working here in a real production facility. What visitors see is authentic. It makes sense and is understandable. We want to get even closer to the needs of our customers. As a solutions provider, the focus is not just on individual machines, but on the entire sheet metal working process," he added.

Impact on employees

Increased efficiency of up to 30 per cent means a change for the employees. At TRUMPF, even more so because the Smart Factory is a showroom, production unit and training centre all at the same time.

"The employees sometimes compare us to a patchwork family. While one of them is demonstrating a punching machine to a customer, the other is cutting sheet metal parts for our plant in Hettingen on the fully automatic laser machine. And in between, colleagues are holding a training session at a bending cell. So, we all have to coordinate closely. This togetherness also works well thanks to smartphones or smart watches. This guarantees full transparency and every employee has an overview of all machines and production processes," continued Reuther.

"We work even more closely together here than we did before, anyway. In the Smart Factory, the machine operator receives tips and tricks on programming and operation from the application expert; and the machine operator explains to the application expert how a machine can be further improved during regular operation. This win-win situation that also helps our customers in the end."

The coronavirus effects

Despite the restrictions imposed by the COVID-19 pandemic, Reuther believes it has also accelerated TRUMPF's path to digitisation.

"All our machines have cameras. Every employee has a smartphone cam. With the help of additional cameras, we can bring the Smart Factory to home screens at every angle. In the last few weeks alone, we've quadrupled our digital demonstrations. Every day there are up to seven group visits, going from one hour to a whole day seeing our Ditzingen Smart Factory on every continent!" ■

WATCH VIDEO

www.trumpf.com


The heart of the Smart Factory is the Control Centre.


Smart watches give overviews of machine and production processes.

ON THE SURFACE

The ridging index (RI) is a repeatable and easy-to-use method of measuring ridging for users and manufacturers of ferritic stainless steel.

ISMR SAYS: *"The creation of a new ridging index (RI) is an important development for the forming of ferritic stainless steel (FSS)."*

By | Suresh Kodukula,
Researcher, Outokumpu (R&D Centre)

Manufacturers seeking a material that provides their finished products with high corrosion resistance and an excellent surface finish often turn to ferritic stainless steel (FSS). It offers excellent forming properties in both deep drawing and stretch-forming processes.

However, forming FSS can sometimes result in a surface defect known as "ridging", the small parallel elevations and valleys which develop in the rolling direction (RD) when the sheet material is elongated (see Figure 1).

Ridging can mar the aesthetic appeal of the finished product, requiring polishing to remove it. Until now, the only way to assess the severity of ridging was the visual examination of test specimens, a method which is both subjective and lacks repeatability. This prompted Outokumpu to undertake a research programme to create a new ridging index (RI) based on surface measurements made by profilometers.

The main intention when introducing the RI methodology is to offer customers a practical way to assess the impact of their forming operations on the particular FSS that they are planning to use. The possibility of ridging is influenced not just by the composition of the FSS. Many other factors are also involved, such as the way the sheet has been processed. In fact, apparently identical samples of FSS produced by different manufacturers can exhibit significantly different levels of ridging.

Figure 1: Ridging appears in the rolling direction (RD) 180° apart (both inside and out) when ferritic stainless steel is formed.

The Ridging Index (RI) is also useful for researchers to determine how modifications made at the various processing stages - from liquid metal to sheet production - influence the occurrence of ridging.

How does ridging occur?

Ridging is the result of anisotropic plastic deformation caused by colonies of different crystal orientations in the rolled sheet. Its likelihood is largely pre-determined during the casting process, when the crystal structure is formed.

The maximum level of ridging occurs when FSS sheet is strained along its rolling direction (RD) and is minimal or absent when elongated along its transverse direction (TD).

The distance between two ridges is usually in the range of a few millimetres. The additional profile height that is introduced by the ridging may be up to ±50µm, depending upon the applied strain. See Figure 2.

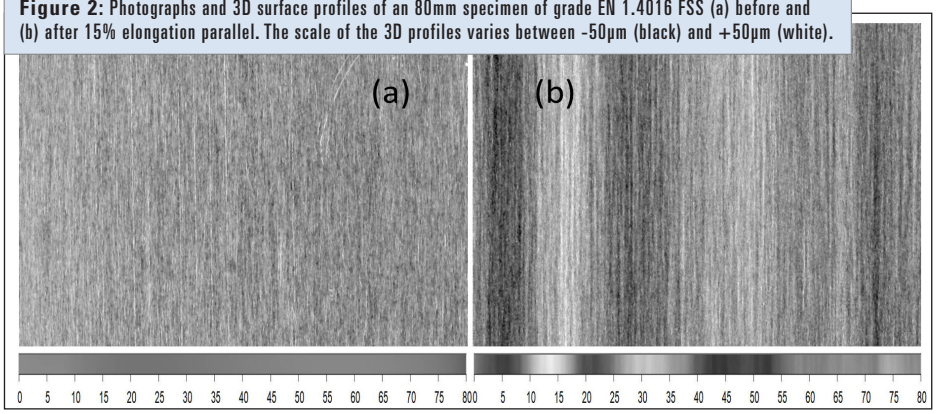


Figure 2: Photographs and 3D surface profiles of an 80mm specimen of grade EN 1.4016 FSS (a) before and (b) after 15% elongation parallel. The scale of the 3D profiles varies between -50µm (black) and +50µm (white).

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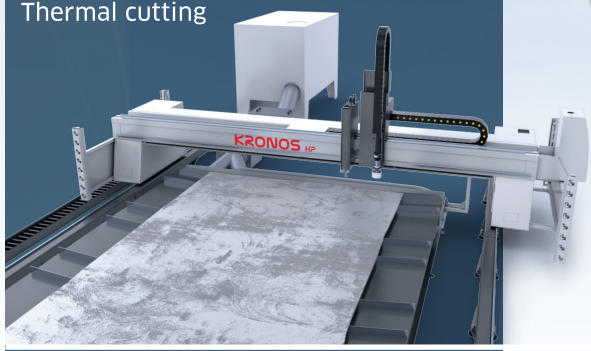

3 ENERGY
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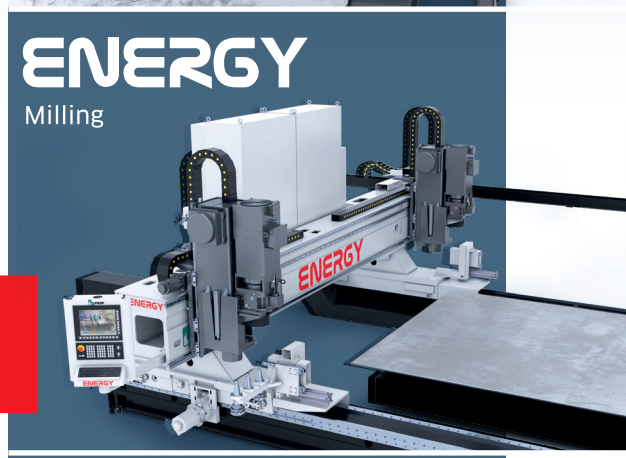

- Plates transfer from the external stocking area to shot blasting machines thanks to our automatic or semi-automatic handling systems, including rollerways and cross transfer tables
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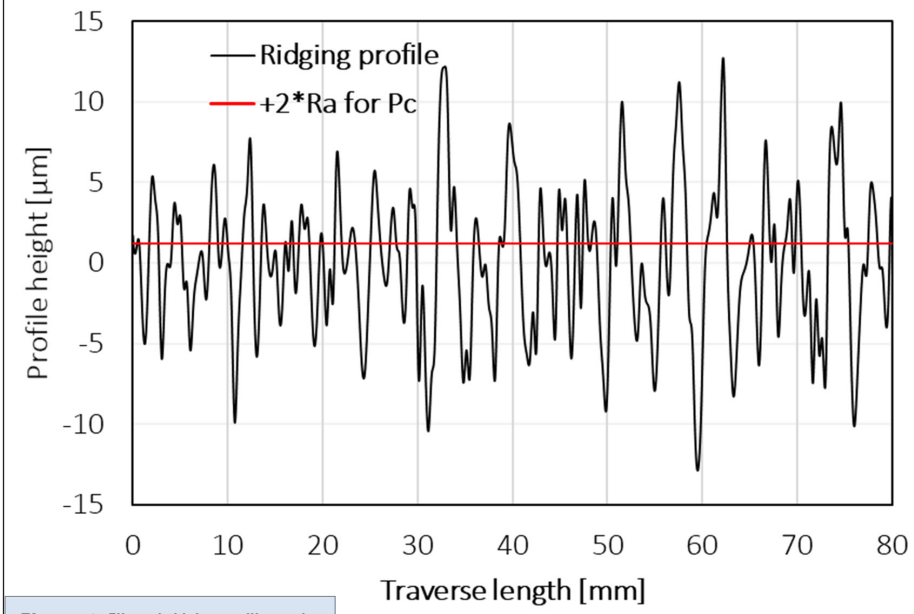

Figure 3: Filtered ridging profile used to calculate the ridging index (RI).

Additional mechanical polishing is usually required to achieve the desired high-quality surface finish. In the worst cases, the amount of polishing required will be so costly that the product has to be rejected.

Ridging assessments

Traditionally, ridging is assessed by straining 20mm-wide tensile test specimens of FSS sheet to a defined elongation, typically between 7% and 20%. The specimens are then given a visual inspection and rated against an arbitrary scale.

While visual assessment is usually carried out by specially trained personnel, the results are often very subjective.

A more rigorous approach is to use a profilometer to assess the ridging of the specimen. Various types of profilometer are available that use either a sensitive stylus in contact with the surface or non-contact optical techniques. Usually, the arithmetic average of the roughness profile - Ra and/or the maximum height of the profile - Rt are the measure for the intensity of ridging.

The raw profile recorded by the profilometer is often relatively short, covering only a few ridges. This profile is then filtered electronically. A drawback is that this filtering uses standards that were not developed for ridging, and usually do not consider the spacing of the ridges. This means the results may not be representative. It is therefore hard to evaluate the severity of the ridging in terms of both amplitude and spacing.

Finding an improved method

The driver for Outokumpu's research programme was to find a way to combine better sample geometry with a tailored filtering method. This would then provide the basis for a calculated ridging index (RI) that indicates both height of the ridges and their spacing. It was also desirable for the RI to correlate well with visual inspection results.

Straining a 20mm specimen by 15% reduces its width to about 17mm. That is sufficient for a standard surface roughness measurement. However, it is not suitable for use with ridging, because the distances between ridges are typically between 1- to 3mm, so only 4 to 12 complete surface features are included.

To achieve good statistical reliability, larger sheet specimens were used (300mm in length and 100mm in width). FSS sheets with thicknesses of between 0.5 and 1.5mm were strained to various elongations.

Creating the RI

Raw surface profiles are measured using two different types of profilometer: an optical 3D white light interferometer and a non-skidded bench-top 2D stylus. Filtering was applied to separate the ridging profile from the shape of the specimen, surface roughness and instrument noise. See Figure 3.

As ridging is more detrimental when the valleys between the ridges are deeper, this was measured by the term, Rz.

It is important to know the number of ridges and valleys since the more there are, the harder the ridging is to polish away. This is measured by the peak count, Pc. A threshold is set to determine Pc, as shown by the horizontal dotted line in Figure 3.

Rz in µm and Pc in mm-1 are multiplied to calculate RI, the dimensionless ridging index.

Putting RI to the test

The optical 3D profilometer was used to measure the surface profiles of the FSS sheet samples after elongations of 0%, 2%, 5%, 10% and 15%. Figures 4(a) and 4(b) indicate that both RI and Rz have a linear relationship with elongation, while Pc is nearly constant. The highest RI resulted from the highest elongation, so all subsequent tests were carried out with an elongation of 15%.

Profiles on the top and bottom surfaces of a sample were also measured to confirm that the choice of which side was sampled did not influence the measured RI. This is because the peaks on one side correspond to valleys on the other and vice versa.

Ensuring repeatability

To test the repeatability of the RI methodology, an FSS sheet was cut into different specimens as shown in Figure 5(a). Multiple tests at 10mm spacing were carried out on one sample (C0), producing an average RI of 4.4 as shown in Figure 5(b).

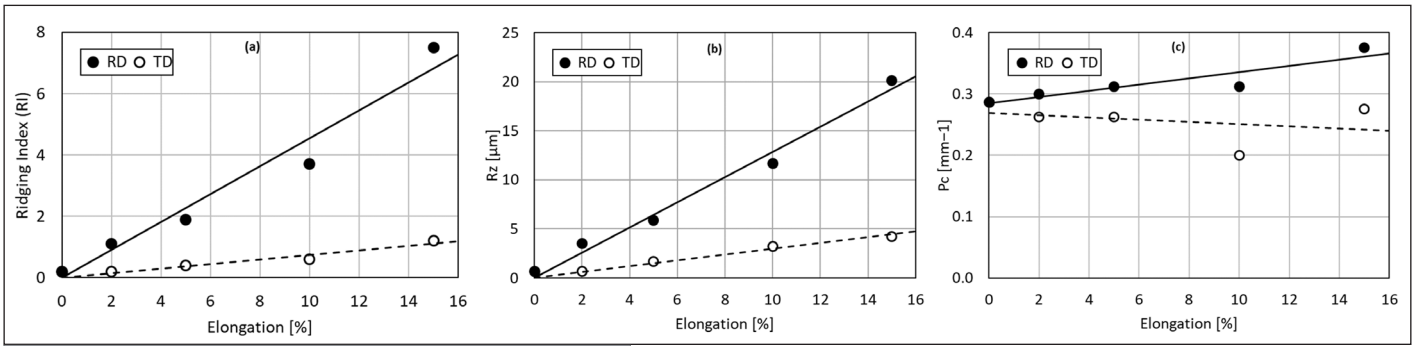

Figure 4: The influence of strain and straining direction on the ridging index (RI).

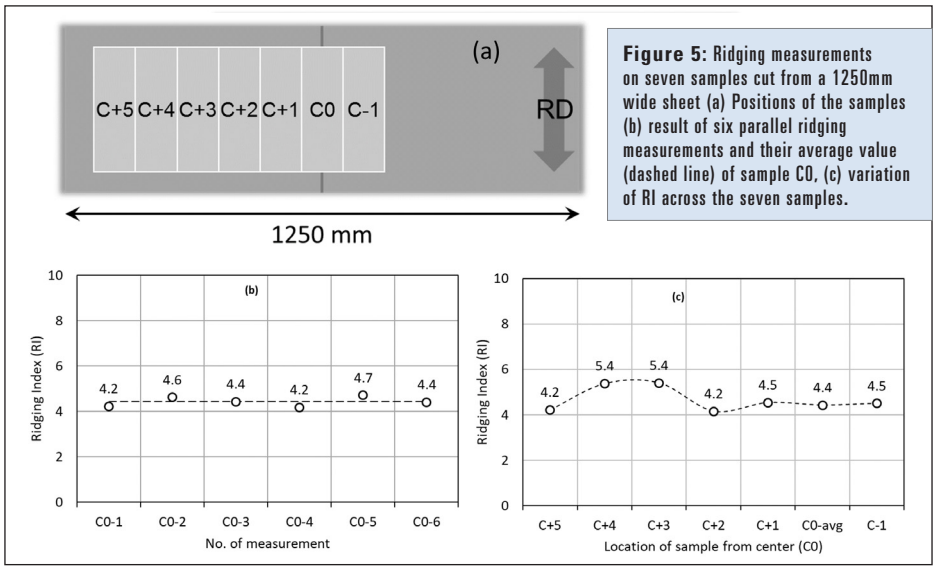

Figure 5: Ridging measurements on seven samples cut from a 1250mm wide sheet (a) Positions of the samples (b) result of six parallel ridging measurements and their average value (dashed line) of sample C0, (c) variation of RI across the seven samples.

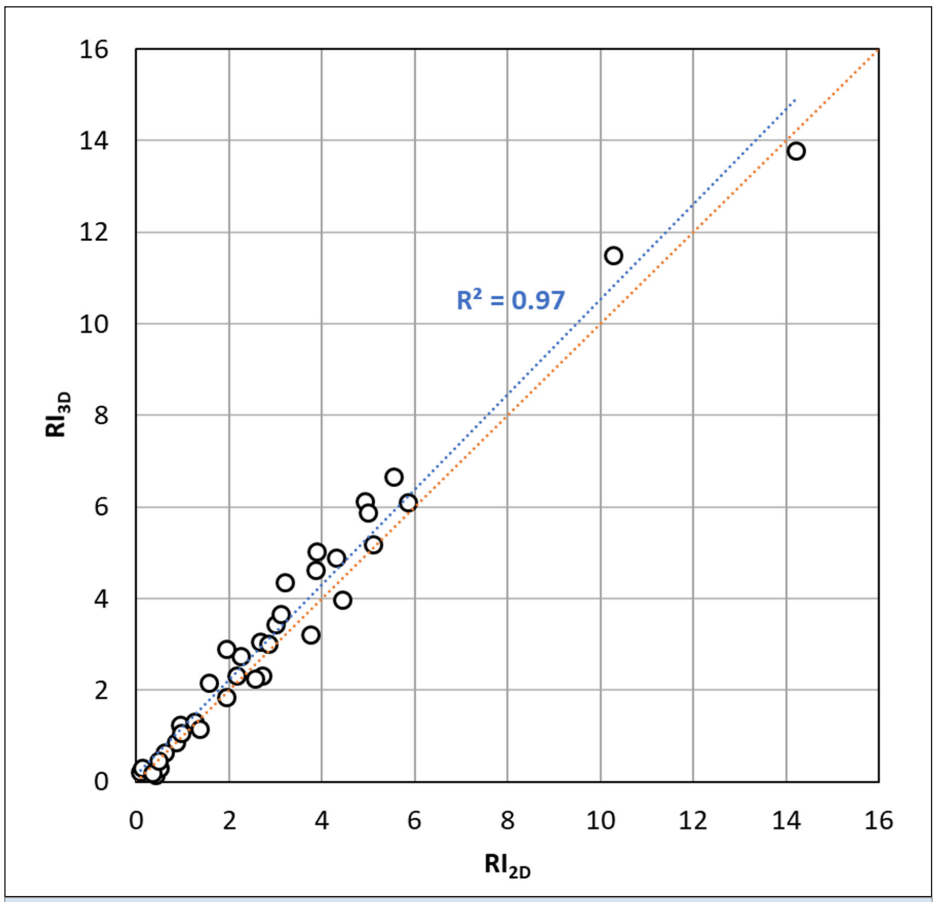

Figure 6: RIs of 36 FSS sheet samples measured with a 2D stylus profilometer (RI2D) and the optical 3D profilometer (RI3D). Plotted against each other they demonstrate good correlation.

The RIs of all seven specimens are shown in Figure 5(c). Four of them are similar to C0, the centre sample. The two samples furthest from the centre of the sheet showed RI values of about one unit higher. This could possibly indicate a locally different texture in the FSS sheet.

To examine the influence of the profilometry technique used, samples were measured with both the 2D stylus and the optical 3D profilometer. The resulting RIs are plotted against each other in Figure 6. The good correlation shows that the RI method is sufficiently independent of the technique used.

RI compared to traditional visual assessment

The final check on the RI was to compare it to the commonly applied visual inspection and rating. A set of five samples from different batches was rated by five people familiar with the visual inspection of stainless steel surfaces against an arbitrary scale of 0 to 10, as shown in Table 1.

The variation in ratings given by different people was huge, in some cases. However, the average result produced by the reference group and the RI measurements gave the same ranking between the specimens. The average rating numbers correlated well with the RIs.

Establishing the ridging index (RI) as a repeatable and easy-to-use method of measuring ridging is a critical step for users and manufacturers of ferritic stainless steel. Because of its importance, Outokumpu is making the RI methodology freely available to all interested parties. ■

EDITOR'S NOTE

In ferritic stainless steel (FSS), the undesirable surface defects of ridging can appear during deep drawing. A stripe pattern, parallel to the rolling direction, can manifest as narrow banded areas where the steel strip or sheet is severely etched.

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Sample	Person 1	Person 2	Person 3	Person 4	Person 5	Average	Ra (µm)	Rz (µm)	Pc	RI
A	4	3	3	2	2	2.8	0.46	9.6	0.22	2.1
B	9	7	5	9	5	7.0	0.35	25.5	0.30	7.5
C	1	0	1	1	1	0.8	0.11	4.2	0.28	1.2
D	8	5	3	7	4	5.4	0.48	13.7	0.27	3.7
E	7	5	8	3	8	6.2	0.35	11.1	0.40	4.4

Table 1: Results of the visual inspection and rating of five sheets from different batches strained to 15% along RD, (scale between 0 and 10) with different intensity of the surface defect. The measured RI is given for comparison.

ISMR SAYS: *"The energy landscape is changing as the world moves towards a more sustainable model…"*

INDUSTRY REPORT

The Power Principle

We highlight new initiatives, challenges and changes in global oil and gas markets for manufacturers

Oil and gas will meet 46 per cent of global energy demand in 2040, according to the International Energy Agency's (IEA) Sustainable Development Scenario, published in its 2020 World Energy Outlook. However, the COVID-19 pandemic has hit revenues for the global oil and gas exploration and production industry, causing various supply chain disruptions.

"Oil and gas remains the backbone of global energy supply," said Gordon Ballard, Executive Director of the International Association of Oil & Gas Producers (IAOGP). With a world facing a global crisis and tremendous uncertainties, access to reliable and affordable energy is one of the key enablers for economies to recover and for improving living standards of billions of people. Despite the temporary drop in demand, the IAOGP believes that oil and gas will maintain a significant role in meeting global energy demand.

"But the energy landscape is changing and so is the oil and gas industry," added Ballard. "Whilst helping satisfy the global hunger for energy, we are also taking responsibility for a more sustainable energy future. We are supporting the international communities' commitment to address the global challenges of climate change by mitigating methane emissions and developing low-carbon technologies such as Carbon Capture Utilisation and Storage (CCUS) or blue hydrogen."

> "The COVID-19 pandemic has hit revenues for the global oil and gas exploration and production industry, causing various supply chain disruptions"

> Players in the oil and gas sectors are struggling with declining demand, ensuring employee safety and business stability, and the need to build a flexible business model

Market challenges

"The ongoing COVID-19 pandemic has hit every industry hard, but perhaps the one industry which has taken the biggest hit is the global oil and gas industry. The spread of this virus forced many oil and gas companies to either stop or slow down their physical operations, which impacted production in both upstream and downstream operations," commented market analyst, ResearchandMarkets.com

"Perhaps the greatest and most significant impact of the coronavirus pandemic on the downstream oil market was the price crash of crude oil within a short time. On 1 January 2020, the price of a barrel of crude oil was being sold for US$ 67.05 on the NASDAQ exchange in New York. By 15 March 2020, this price had crashed to US$ 30.00 a barrel. Oil majors took a major hit," it added.

The oil price has now recovered on the hopes of a quicker economic turnaround but players in the oil and gas sectors are struggling with declining demand, ensuring employee safety and business stability, and the need to build a flexible business model that can lead to long-term resilience as the world comes out of the coronavirus crisis.

The oil and gas sector is also constantly changing. Increasingly uncertain energy policies, geopolitical complexities, cost management and climate change all present significant challenges. The demand-supply imbalance in the oil and gas industry over the past few years has had far-reaching economic and geopolitical implications for the global market.

The industry has been steadily increasing its efficiency with automation, digitisation and the Industrial Internet of Things (IIoT). The declining capital cost of solar and wind; the rise in battery energy storage adoption; disruptive start-ups contributing to competition and increases in mergers and acquisitions is expected to drive growth opportunities.

Climate neutrality goals

The International Association of Oil & Gas Producers (IOGP) supports the EU's objective to reach climate neutrality by 2050. It has called on policymakers to follow up on the Climate Law with an inclusive approach that promotes all available technologies and solutions equally and encourage the EU to step up its engagement with its global partners to combine decarbonisation efforts.

"With the Climate Law, the EU sets a clear objective on the horizon. Reaching climate neutrality by 2050 will be an immense challenge for the EU, as a whole. We simply cannot afford to try and take shortcuts or to cherry pick solutions anymore. We need policymakers to help deploy all large-scale alternatives: Carbon Capture Use & Storage and clean hydrogen from natural gas will be key," said François-Régis Mouton, IOGP Regional Director Europe.

To help the EU reach climate neutrality by 2050, Europe's Oil & Gas Industry has a clear way forward, said the IAOGP:

- Reduce our carbon footprint by minimising emissions linked to the production, processing and transport of products. This includes continued efforts to reduce methane leakage and flaring, as well as the electrification of platforms.
- Supply cleaner energy, in particular natural gas as a cost-effective alternative to coal and enabler of renewable energy integration. Also investing a growing share of capital expenditure in low-carbon and renewable energies and services including wind, solar, batteries and biofuels.
- Develop long-term carbon management solutions, in particular Carbon Capture Use & Storage which can also mitigate emissions in strategic energy-intensive industrial sectors and enable the large-scale supply of clean hydrogen by decarbonising natural gas. The pursuit of nature-based solutions are essential to tackle emissions which are too difficult or technically impossible to avoid.

> Oil and gas will still provide 47% of the world's energy needs in 2040

"If this is to be Europe's 'Man on the Moon' moment, we must once again have all industrial actors working together towards the same objective. Oil and gas accounts for nearly 60% of EU energy demand today, therefore the involvement of our sector will be instrumental to making Europe's transition to a cleaner energy system a success," François-Régis concluded.

However, while the industry is committed to reducing emissions from its own operations, ongoing investment in existing and new oil and gas fields is necessary to meet global energy demand. Even in a

> Renewable sources of electricity, such as wind and solar, grew at their fastest rate in two decades in 2020

world consistent with the Paris goals, the IEA projects that oil and gas will still provide 47% of the world's energy needs in 2040. In other IEA scenarios, the role of oil and gas in the energy mix is even greater.

In its "Oil & gas Industry in Energy Transitions" report, the IEA again emphasized that investment in existing fields – and some new ones – remains part of the picture and that a wide range of approaches and technologies are required to achieve the necessary emissions reductions. The IEA warns not to exclude the oil and gas industry by stressing the important role it plays in bringing new technologies, such as carbon capture, utilisation and storage (CCUS) and hydrogen, up to speed.

IOGP and its members strongly agree – a 'well-below 2 degrees scenario' is impossible to pursue without more renewables and energy efficiency but, in particular, without adopting technologies such as CCUS and blue hydrogen.

Net Zero roadmap

In May 2021, the International Energy Agency (IEA) published its Net Zero roadmap. It calls for the joining of efforts to achieve the goals of the Paris Agreement and identifies technology, innovation, policy and behaviour change as key enablers to reach the goal of decarbonisation.

"Meeting global energy demand while achieving decarbonisation is a priority for industry and society and requires everyone's commitment" said Iman Hill, IOGP Executive Director. "To get there, oil and gas will continue to play a key role in the energy mix. Without further investments in new oil and gas fields, the world would require massive deployment of other energy sources and efficiencies as well as huge investments in research and in new technologies, ramped up at a pace we haven't seen yet, as acknowledged in the IEA's Net zero roadmap.

"We all share the same goal and are committed to innovating in areas such as electrification, flaring and venting, carbon capture and storage, energy efficiency and methane emissions detection, quantification and reporting. The oil and gas industry has the experience, skills and resources necessary to help find a balanced way forward, one which benefits society as a whole."

Renewable sources of electricity, such as wind and solar, grew at their fastest rate in two decades in 2020 and are set to expand in coming years at a much faster pace than before the pandemic, according to a new report by the International Energy Agency. The growth in Europe and the United States will be even brisker than previously forecast, compensating for China's transitional slowdown after exceptional 2020 growth.

According to the IEA's latest market update, the amount of renewable electricity capacity added in 2020 rose by 45% in 2020 to 280 gigawatts (GW), the largest year-on-year increase since 1999. That extra power is equal to the total installed capacity of ASEAN, a grouping of ten dynamic South-East Asian economies.

Shifting power generation to renewable sources is a key pillar of global efforts to reach carbon neutrality, but CO_2 emissions are set to rise this year because of a parallel rise in coal use, underscoring the major policy changes and investments in clean energy needed to meet climate goals.

"Wind and solar power are giving us more reasons to be optimistic about our climate goals as they break record after record. Last year, the increase in renewable capacity accounted for 90% of the entire global power sector's expansion," said Fatih Birol, the Executive Director of the IEA.

"Governments need to build on this promising momentum through policies that encourage greater investment in solar and wind, in the additional grid infrastructure they will require, and in other key renewable technologies such as hydropower, bioenergy and geothermal. A massive expansion of clean electricity is essential to give the world a chance of achieving its net zero goals.'' ■

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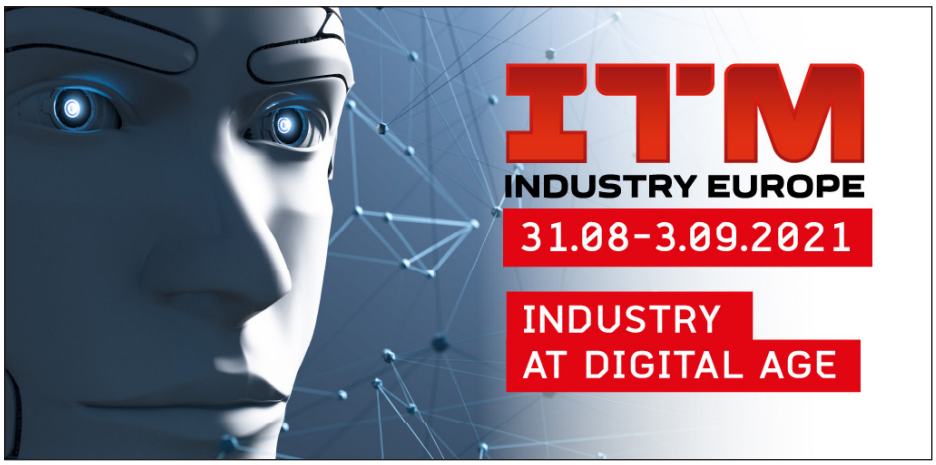


ITM INDUSTRY EUROPE will take place from 31 August - 3 September 2021 as a hybrid physical/virtual event.

ISMR SAYS: *"The online platform will be an additional element to add value to the ITM INDUSTRY EUROPE offer."*

ITM INDUSTRY EUROPE

The forthcoming edition of ITM INDUSTRY EUROPE will be different from previous ones. The COVID-19 pandemic over the past year has changed the face of trade shows as well as the format of this event in Poland for the industrial sector.

"This year's ITM INDUSTRY EUROPE exhibition will feature an interesting programme of events and a new format which combines the traditional trade fair with the concept of virtual meetings. In recent months, the global epidemic has had a strong impact. Face-to-face meetings have been largely replaced by online communication. ITM INDUSTRY EUROPE has adapted its format and activities to align with these changes," the show organiser told *ISMR*.

"There are many new products in the pipeline for this event, which is boldly entering the digital age. At the same time, we expect to offer a range of solutions which have awaited by exhibitors and visitors for months," it added. "This year, we offer exhibitors and participants a hybrid model. We will meet in Poznań (Poland), at the physical exhibition, as well as virtually at the online event."

ITM INDUSTRY EUROPE will take place from **31 August - 3 September 2021**. MODERNLOG Logistics, Warehousing and Transport Fair, 3D SOLUTIONS – 3D Printing and Scanning Fair, SUBCONTRACTING Industrial Cooperation Fair and FOCAST Foundry Forum will be held simultaneously.

A year of virtual activities

"As we were unable to organise the physical trade fair, and knowing the expectations of our exhibitors and visitors, we focused on online events that matched current industry needs. We have already brought the industry together now several times online as part of the ITMtalks series and created INDUSTRYonline – a platform for virtual events for the industry," explained Anna Lemańska-Kramer, director of ITM INDUSTRY EUROPE.

> "The ITM INDUSTRY EUROPE trade fair has traditionally combined industry, business and science"

"ITMtalks have already been broadcast live four times from the MTP Group studio. Industry, business and science leaders were invited to participate, and the hottest topics in the industry were discussed. In the space of almost a year, we managed to gather a community of several hundred people who are impatiently waiting for the next episodes in the series," she continued.

This entrepreneurial attitude spurred the exhibition organiser to go further and stream online machine tool demonstrations and discussions around the Fourth Industrial Revolution and the practical implications of Industry 4.0.

"Our online activities were very well received. They also inspired us and the exhibitors to take up another challenge i.e. live online demonstrations of machines and robots. This is how the idea of the ITM_showroom project, 'Automation and digitisation for everyone', evolved. Together with our exhibitors and partners (DMG Mori, Kuka, Polaris Engineering and Sandvik Cormorant), we organised an online meeting to popularise the idea of industry 4.0 among medium and small manufacturing companies in Poland. It was not another classic webinar, but an event offering expert knowledge and practical tips based on the example of working machines. The success of these projects gave us additional impetus to organise the exhibition," said Anna Lemańska-Kramer.

ITM Poland in focus

The ITM INDUSTRY EUROPE trade

A welding demonstration at ITM Industry Europe in Poland.

fair has traditionally combined industry, business and science. It is attended by nearly 1000 exhibitors who present innovative machines and solutions for such industries as metalworking; metallurgy; welding; surface treatment; varnishing; automotive; transport and railways.

Overseas companies traditionally account for nearly 50% of the exhibitors at the ITM INDUSTRY EUROPE trade fair. Exhibitors are from countries which include Austria; Belgium; China; Czech Republic; Denmark; France; Netherlands; India; Germany; Switzerland; Sweden; Taiwan; Turkey; Ukraine; Hungary; UK and Italy.

The physical trade fair includes five thematic showrooms: Mach-Tool (machines and tools); Surfex (surface treatment); Metalforum (metallurgy, foundry, metal industry); Welding and also Research for Industry (scientific achievements of research institutes). Along with the ITM INDUSTRY EUROPE trade fair, there are also the Logistics, Transport and Storage exhibition, the Industrial Subcontracting exhibition and Subcontracting ITM meetings.

"What matters at the ITM INDUSTRY EUROPE trade fair are innovations that support the development of companies, technologies that are the future of the industry and machines that are an implementation example of the latest solutions in the industry," said the show organiser.

> We will meet in Poznań (Poland), at the physical exhibition, as well as virtually at the online event

A hybrid model

"The latest expert analysis is very promising. The Polish industry has shown more than once that it is strong, but the latest reports have surprised even economists. According to data from the Central Statistical Office, production in March this year was almost 19 per cent higher than the year before. This is an all-time record. Although it should be remembered that the reference point is the month when the crisis caused by the epidemic began, the result is still optimistic. Economists expect more 'surges' in the coming months. According to preliminary data, compared to March last year, an increase in sold production (in constant prices) was recorded in 27 (out of 34) industrial sectors," commented the show organiser.

"We are in constant contact with our exhibitors and we are all missing face-to-face meetings and the opportunity to present our solutions live. I hope that companies from the industrial sector will have this chance during the next edition of ITM INDUSTRY EUROPE," it added.

Grupa MTP has implemented a new tool dedicated to both exhibitors and visitors. It is a special platform for online meetings that will allow exhibitors to reach potential customers with their offers, regardless of exhibitor location. In turn, buyers interested in these offers will be able to meet in a virtual space to talk directly with manufacturers about products, technology and services.

"We are convinced that no solution can replace the atmosphere of direct meetings during the exhibition. However, the online platform will be an additional element to enrich the ITM INDUSTRY EUROPE offer. We tested this tool at other events and can confidently recommend it. Online meetings unlock the opportunity to meet contractors from all over the world and make new sales in markets," added Anna Lemańska-Kramer.

"The platform will not only allow exhibitors to create a varied showpiece but will also enable precise searches for potential business partners and facilitate contact. It is a very intuitive and easy-to-use tool, synchronised with Outlook and Google calendars. Each user will be able to follow the conference events taking place during the fair on an ongoing basis. We will handle the LIVE broadcast and subsequent access to all video materials. The event programme will be very rich this year," she concluded. ■

www.itm-europe.com

A cutting demonstration at ITM Europe in Poland.

THE RIGHT FINISH

Van Geenen B.V. Metaalfinishing is unlocking new business opportunities, with its heightened grinding capability for polished sheet and tube products.

Nico van Geenen (right) and Bart van Geenen with their Timesavers 81 series machine.

ISMR SAYS: *"Van Geenen has made a significant new investment in the Timesavers 81 series grinding machine."*

The recent arrival of an 81 series wide belt precision grinding machine at metal polishing and finishing specialist, Van Geenen B.V. Metaalfinishing, has had an immediate impact. Through improved capacity, productivity and overall capability, the Rijssen-based company in The Netherlands is unlocking new business opportunities.

The business began in 1977 when Arnold van Geenen and his sons Nico and Gerrit joined forces to provide a hand polishing service - the founders had to sell their cars to buy the vital tools required to get started. Under the guidance of Nico's son, Bart van Geenen, the company now operates from 5000m^2 premises, housing the latest polishing and grinding technology. The most recent arrival is its new investment in the Timesavers 81 series grinding machine.

From those early days, the company began to specialise (particularly in stainless steel and other exotic materials). The emphasis is firmly on producing sheet and tube material to the highest quality in terms of surface finish (right up to Mirror 8 grade) with greater efficiency and consistent technical product quality. Today, it grinds, brushes and high-gloss polishes a variety of materials (sheet, strip and tube) with any surface finish required. Its machinery can process sheet – cold-rolled as well as hot-rolled – to any specified finish. It can also grind to a particular thickness or to an Ra-value as well as polish to a high gloss of Mirror 8 standard.

> "We are always looking to improve efficiency and our investment in automation has boosted productivity"

New opportunities

"Hand polishing remains a critical part of our business, but automation has been central to our development since our first investment in a Timesavers machine back in 1984. We are always looking to improve efficiency and our investment in automation has boosted productivity," said Van Geenen managing director, Bart van Geenen. "As such, our partnership with Timesavers continues with this major investment in the 81 series machine, an investment driven both by the heart (with my father's desire for manufacturing technology) and head (I am focused on the commercial potential)."

Van Geenen prides itself on the quality of its work and the strength of its relationships with customers. This combination has unlocked new business opportunities for its polished sheet and tube products across markets including architectural, tanks and food processing.

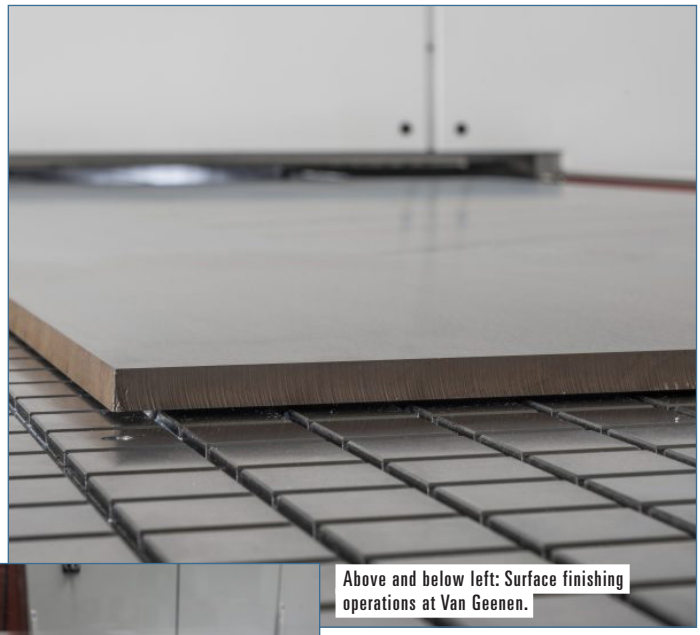
"We have always had the ability to do things that our competitors cannot do and, to continue that, we recognized that it was time to move into precision grinding," it told *ISMR*.

The scale of the 81 series will also future-proof production at Van Geenen. At an overall length of 24 metres, the machine has a capacity to grind sheet or plate from 0.15mm up to 100mm; with stock removal rates of up to 0.2mm/pass achievable with a table size of 2.1m x 8.5m to an accuracy of +/- 0.02mm and 0.3Ra.

The 81 series is already delivering significant time savings for van Geenen,

The Timesavers 81 series grinding machine can reduce process times by eliminating other machining processes.


The shop floor at Van Geenen.




Above and below left: Surface finishing operations at Van Geenen.

> "The scale of the 81 series will also future-proof production at Van Geenen"

compared to existing processes. For example, producing a 4m long x 2m wide x 20mm thick sheet for a customer in the food processing industry, which required a 0.8Ra surface finish, used to take between 4-5 hours to complete. This is now achieved in one hour on the 81 series machine.

"With the level of investment in the Timesavers 81 series, our hourly rate has increased but this is justified as our throughput is much greater and lead times are much shorter. That level of efficiency is vital when putting forward proposals to customers. We are also aware that none of our competitors in Europe have this capability," said Bart van Geenen.

Positive customer response

Also encouraging for van Geenen has been the enthusiasm from customers on the use of this wide belt grinding technology with the Timesavers 81 series. The efficiency of the system allows it to replace milling as an operation, reducing the number of processes and improving efficiency. Milling requires at least two set-ups for roughing and finishing, whereas (with the 81 series) just one operation takes the part to the finished state. This is particularly important on stainless steel parts where clamping of the material for milling can induce stress in the part. Using the vacuum table of the 81 series eliminates this completely, while achieving improved results in terms of flatness and surface finish, confirmed Timesavers.

"The 81 series is a genuine alternative to conventional processes and it is my role to convince customers that the process is viable and meets their requirements. Thankfully, customers are open to innovation and are willing to listen and try new processes," explained Bart van Geenen. "I recently quoted a customer for some polished titanium plate; within five minutes of delivering the quote, I received the order!"

A distinguishing feature of the new machine, for Van Geenen, is that it can also grind non-magnetic materials because it is equipped with a vacuum system that 'sucks' the product onto the table.

"It is a wet grinding process which ensures that highly flammable materials, such as titanium, can be processed. Other materials include stainless steel, Aluminium, Molybdenum etc.," added Van Geenen.

Partnership and collaboration

The development of the Timesavers 81 series came about after conversations with suppliers of sheet material, particularly Titanium and other exotic materials such as Zirconium and Molybdenum. These suppliers were facing challenges accurately and efficiently processing these materials.

"The result is a wide-belt reciprocating table abrasive machine that eliminates problems when milling or grinding using stones or abrasive wheel technology. In collaboration with abrasive belt manufacturers Hermes and 3M, the 81 series can process materials much more efficiently. In some cases, such as grinding Molybdenum, a conventional cycle time of ten hours was cut to 25 minutes," explained Timesavers.

A typical Timesavers 81 series cycle consists of a fast rough grinding cycle followed by up to three spark-out passes, with the sheet, which is positioned on the powerful vacuum table, then rotated and the cycle is repeated on the opposite face. The result is a thickness accuracy across the entire sheet of 0.25µm, with the major benefit of the process creating a 'short-scratch' finish.

Timesavers and Van Geenen are also collaborating on this new investment. Timesavers is introducing potential customers, who may not be ready to justify the purchase of an 81 series just yet, to Van Geenen and the machine is made available to Timesavers as a real-world example for customers to see the potential of this grinding technology.

"This investment is backed by our experience of the service provided by Timesavers over many years to our company and both our companies will continue to grow alongside each other as a result of that relationship," concluded Bart van Geenen. ■

EDITOR'S NOTE

Timesavers has produced a video with more insight into the 81 Series machine at van Geenen on the link below.

WATCH VIDEO

www.timesaversint.com

https://vangeenen-polishing.com/

REGIONAL REPORT

TAKING THE PULSE

We chronicle the impact of COVID-19 on the Middle East North Africa (MENA) region.

Dubai from above (Shutterstock.com).

ISMR SAYS:

"The IMF expects real GDP growth for the Middle East North Africa (MENA) region to reach four per cent in 2021."

The World Bank MENA Economic Update for Spring 2021 estimates that the Middle East and North Africa (MENA) region's economies contracted by 3.8% in 2020, which is 1.3 percentage points above the World Bank forecasts in October 2020. However, the regional growth estimate is 6.4 percentage points lower than the pre-pandemic growth forecast published in October 2019.

"The estimated accumulated cost of the pandemic, in terms of gross domestic product (GDP) losses by the end of 2021, will amount to US$ 227 billion. The MENA region is expected to recover only partially in 2021 but that recovery is, in part, dependent upon an equitable rollout of vaccines," explained the World Bank.

"The substantial borrowing that MENA governments incurred to finance health and social protection measures increased government debt. Countries must continue spending on health and income transfers, which will add to already high debt burdens and lead to complicated policy decisions after the pandemic recedes," it continued.

Business pulse surveys in MENA

To gather timely information about how firms are affected and navigating through the pandemic, the World Bank, often in partnership with national statistical offices, has been implementing the COVID-19 Business Pulse Surveys (BPS). Since May 2020, the BPSs have covered more than 50 countries — including Algeria, Djibouti, Morroco, Tunisia, Jordan and the West Bank and Gaza from the MENA region — with more than 100,000 businesses from different regions and countries of different sizes and income levels.

"The MENA BPSs findings highlight that the key channels through which the COVID-19 pandemic affected the firms include revenue loss, financial distress and job loss. However, despite a drastic fall in business activities and sales, most MENA firms have been holding onto their workers and are slow in adopting technology, possibly resulting from the underlying social contract in MENA. The surveys also show that MENA firms remain highly uncertain about the recovery and view a sharp decline in demand, production and work hours, while many also fear future pandemic waves and lockdown. While most of the firms seem to re-open at some capacity, a non-trivial share of firms (10-20%) across MENA's surveyed countries remains closed," commented Nadir Mohammed, Djibrilla Issa and Aminur Rahman in an article on 23 March 2021 in The National Newspaper.

"A significant share of MENA firms (e.g. 14% in the West Bank and Gaza and 17% in Algeria) have reduced their permanent employees. Nonetheless, the share of MENA firms that laid off workers seems to be less than that in some other regions. Most MENA firms have been trying to hold onto their permanent workforce and attempting to make adjustments by providing leave (often without pay), reduced work hours, salary reductions and reduced temporary workers. Nonetheless,

the persistent decline in sales and a prolonged pandemic episode risk permanent job loss for MENA firms. For example, while during the early stage of the pandemic (i.e., during July-August 2020), 26% of firms in Jordan reduced their permanent workers, 39% did so during November 2020-January 2021.

"The pandemic has negatively impacted 92% of the firms in the West Bank and Gaza (WBG) and 89% of the firms in Djibouti, Tunisia and Jordan. For most of these impacted firms, the sales have declined by more than 50% from the pre-COVID-19 situation. This magnitude of firm-revenue loss in MENA is in line with what has been experienced on average by firms in developing countries."

The declining revenue, they also reported, has left most firms in financial distress.

"Nearly 90% of firms in the West Bank and Gaza, 93% in Jordan, 78% in Tunisia and 72% in Morocco reported a decline in cash flow. Financial distress seems to be most acute for smaller firms. Delaying payments to suppliers, landlords or tax authorities and being overdue on obligations to financial institutions have been adopted by most firms to cope with the declining cash-flow. Besides the financial distress, disruptions in transport and logistics and supply of inputs appear to be some of the key impediments that MENA firms face," they said.

The Burj Khalifa.

Digital adoption rates

However, the COVID-19 pandemic has motivated firms across the developing world to leapfrog and take advantage of digital technologies. The digital presence also seems to be an essential coping mechanism for a significant share of firms (20-30%) across MENA's surveyed countries. Increased use of the internet, online social media, specialised apps or digital platforms seems to be some of the firms' essential tools to continue business operations, sales or supplies (according to Nadir Mohammed, Djibrilla Issa and Aminur Rahman).

The authors point out the gap between micro and small firms and the large firms in digital technology adoption, which 'is the highest in MENA'.

"Several structural impediments in many MENA countries are likely to inhibit firms' digital technology adoption and innovation. These include a high degree of informality, particularly among the micro and small firms, lack of digital payment solutions and services, underdeveloped and costly digital infrastructure (contributed by lack of competition in the network industries) and the lack of domestic competition and export competitiveness that reduces the incentive to innovate," they said.

Policy support in different MENA countries enabled firms to avoid falling into arrears and cope with uncertainty. Well-targeted, time-bound and effective policy support will be needed to keep smaller MENA firms afloat and able to navigate the turbulent waters of COVID-19 shocks.

> "The digital presence also seems to be an essential coping mechanism for a significant share of firms (20-30%) across MENA's surveyed countries"

MENA growth projections

"Progress of the vaccine rollout varies widely across the region, with some countries (like the GCC) in advanced stages, while others are lagging behind as widespread inoculation is not expected until '22 or '23. Fragile and conflict-affected states, especially those with low incomes, face a particularly difficult path ahead, given their limited vaccine access and ongoing instability. Economies that are heavily reliant on contact-intensive sectors, especially tourism, will recover more slowly. Countries that did not implement strong policy support in the wake of the pandemic are now further behind on the road to recovery," commented Jihad Azour, Director of the World Bank's Middle East and Central Asia Department, at a briefing in April this year.

"Meanwhile, the rise of oil prices is helping the fiscal and external balances of oil exporters and supporting the recovery of the non-oil sector, although OPEC plus cuts are limiting their impact on growth," he continued.

Overall, Azour added, real GDP growth for the Middle East North Africa Region is expected to pick up to four per cent in 2021. In the Caucasus and Central Asia, output is projected to rise by 3.7 per cent in 2021, returning to its pre-crisis level. However, the outlook remains highly uncertain with the pandemic, vaccinations and available policy space all having a significant impact on individual country forecasts.

"The pandemic has exacerbated many economic challenges in the region and further exposed how much work remains to be done to protect the most vulnerable, create jobs, provide equal opportunities for women and young people, and reduce poverty. One particular concern, going forward, is rising government debt and growing financing pressures that have worsened in the last year. And this will constrain further policy actions. This is particularly important, considering the risk of a rapid rise in U.S. bond yields, which could lead to tighter financial conditions, renewed capital outflow and higher sovereign spreads," continued Azour.

"Addressing these and other challenges will help shape the region's future, which is why countries must consider 2021 the year of policymaking to help exit the crisis, accelerate the recovery while preserving debt sustainability and build forward better towards more inclusive, resilient and green economies," he added.


Oran, Algeria (Shutterstock.com).


Doha, Qatar.

Emerging from the pandemic

Which policies are needed for the MENA region to emerge from the crisis towards a better future? Azour highlighted, firstly, the need to exit the crisis, securing access to vaccines and supporting health systems as the most urgent tasks. Accelerating vaccinations could boost GDP growth, he said, by one per cent by 2022. Regional and international cooperation will be critical to ensuring that low-income countries are not left behind. Secondly, to help accelerate the recovery, it will be important to take policy support flexibly, where targeted, and in place until recovery is well-entrenched.

"For the many countries without policy space, further support should be calibrated to safeguard debt sustainability. Developing medium-term fiscal frameworks and debt management strategy will help to reduce elevated debt burdens, while providing maximum support to growth. Support should target viable firms, especially small ones. Preparing workers for the post-pandemic world will also be vital, especially for the region's large youth population," he explained.

"Finally, to build forward better, countries will need to start addressing deep-seated transformation challenges such as persistent unemployment, inequality and climate change. Capitalising on lessons learned during the pandemic and leveraging digitalisation will help prepare the economies for the future and improve the efficiency of social safety nets, health and education which are so critical to reducing poverty and inequality. Improving governance and reforming the large public sector enterprises should also be prioritised, as well as policies that adapt and invest in climate resilient infrastructure," added Azour.

Morocco and Egypt

Morocco was one of the countries that was the most affected last year. It had to face two shocks: the COVID-19 crisis as well as a drought, which affected the Moroccan economy and produced a contraction. This year, thanks to health and fiscal/monetary measures, Morocco was able to find the path to recovery.

Growth prospects of 4.7 per cent for this year and 4.9 per cent for next year were addressed with Azour during the IMF's MENA Economic Update in April this year.

"Morocco is one of the most advanced countries in the region for vaccination, if you exclude oil-producing countries from the Gulf," said Azour. "Morocco also took heed of two lessons from this crisis. The first lesson is the significance of the social aspect of the crisis. That is why its government launched a significant programme to increase social protection and developed several mechanisms to protect the most vulnerable. At the same time, management of monetary policy and change policy by its central bank made it possible to strengthen stability. Morocco was therefore able to reinforce its reserves."

> "Preparing workers for the post-pandemic world will also be vital, especially for the region's large youth population"

Egypt, he told the audience, has 'done well in terms of containing the economic fallout of the COVID-19 virus. It is one of the few countries which has not seen a negative contraction in its GDP last year'.

"This year, our projection for growth in Egypt is 2.5 per cent. Our revisions reflect downside risks to domestic demand because we have seen some softness recently. Tourism has also been recovering. But the receipts are still lower than before, and this is an important factor for growth. That said, we see that the economy will rebound next year. This will be supported by the vaccination rollout and public investment by the government," he continued.

He also stressed the importance of accelerating the structural reform agenda in Egypt and the drive to help the private sector become the gateway to growth and job creation in the country.

"I think it is very important to improve governance and the business environment, as well as remove trade barriers and continue to enhance the transparency of state-owned enterprises whilst gradually reducing the state footprint and providing equal opportunities to all agents," he concluded.

United Arab Emirates

The IMF has revised the UAE's GDP growth projection for 2021 from 1.3 per cent in October 2020 to 3.1 per cent.

"The main reason for this big shift is the improvement in the oil sector. In addition to that, UAE was one of the most advanced regions for [COVID-19] vaccinations, and part of the league of early inoculators worldwide, which allowed the UAE economy to adjust to the second wave. This will, of course, help the economy in its recovery. That is expected to be progressive, and we expect that exports will provide an additional boost to the non-oil sector," said Azour.

He added that the move towards developing sectors that rely on technology, and benefiting from experience in this field, would contribute to growth in the medium term. Firstly, he explained, in diversifying the economy and, secondly, by gradually accelerating the pace of recovery and growth in the United Arab Emirates.

The UAE launched several initiatives to combat COVID-19 such as surveillance/contact tracing; containment; mental health support; mass testing/treatment; economic support and a vaccination programme. ■

CVE, with help from TRUMPF, went from a blank canvas to a successfully commissioned laser-welding system in a matter of months……

ISMR SAYS:
"Laser welding is a technique known for its versatility and high productivity, especially when joining thin-section materials and welding at high speeds."

PARTNERS IN PROGRESS

Cambridge Vacuum Engineering (CVE), a specialist in the design and manufacture of electron beam welding (EBW) machines, has built its very first laser-welding system. Now installed at the site of an important customer in the automotive sector, the machine features a TRUMPF TruDisk 1000, a 1kW solid-state laser with optimised beam quality for welding metals (in this case, steel and Inconel).

The origins of CVE can be traced back to the late 1950s when two Cambridge graduates founded the company. Through a process of subsequent breakaway groups and acquisitions, the CVE name emerged in the late 1980s. Despite the change of identity, the focus remained the same: EBW and vacuum furnaces, largely in support of aero-engine manufacturing.

Today, the ISO9001-accredited company has circa 70 employees and is supported by facilities in the U.S. and China.

Automotive sector in focus

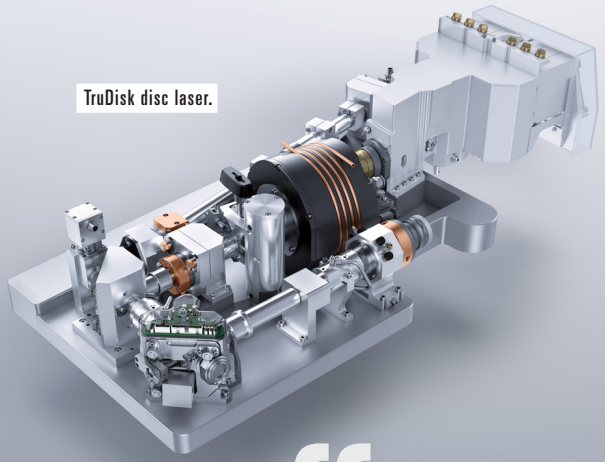
"In recent years, we've been supplying a lot more machines to automotive customers, some of whom are beginning to make enquiries about EBW alternatives," reported Steve Horrex, Sales Director, CVE. "Traditionally, EBW works in a vacuum, which is great from a process quality perspective, but vacuum generation and maintenance is sometimes seen as burdensome. For this reason, laser welding is gaining attention in certain applications as it can operate using nothing more than a shield gas."

Indeed, the company recently received an enquiry for a fully automated, bespoke laser-welding system from an existing automotive customer. It would prove to be CVE's first laser-welding machine, marking the beginning of its association with TRUMPF. The machine is being used by a Tier-One automotive supplier to weld small (approximately 50mm long) steel and Inconel parts together in reasonably high volumes.

"In this particular application, the join quality produced by laser welding with a shield gas was perfectly adequate," explained Mr Horrex. "TRUMPF was chosen for its track record in the automotive sector and its reputation for quality engineering. The customer's R&D centre also had a TRUMPF system, which definitely helped steer the purchase decision."

Laser welding is a technique known for its versatility and high productivity, especially when joining thin-section materials and welding at high speeds. Compared to other welding techniques, laser welding has relatively low heat input resulting in low distortion, excellent mechanical properties and minimal post-weld machining.

Shield gases protect the weld area from oxygen and water vapour. In addition, unlike EBW, no X-rays are produced so the process



TruDisk disc laser.

CVE uses a TRUMPF TruDisk solid state laser with 1kW power.

> laser welding is gaining attention in certain applications as it can operate using nothing more than a shield gas

CVE's laser welding system.

The new TruDisk generation.

does not require an expensive vacuum chamber. This also means that higher productivity levels can be reached.

Traceability is key

"TRUMPF turned out to be a good choice for the laser – we were particularly impressed with the expertise of its engineering team, which made the integration of the TruDisk 1000 with our system very smooth. As we were fairly new to the laser business, it was good to find a partner with whom we could build trust. Following the successful installation and commissioning of the laser-welding machine, we're now quoting additional systems for the same customer, as well as machines for other clients. The TRUMPF laser has been a really good stepping-stone to a new revenue stream," commented Steve Horrex.

Alongside machine reliability, traceability is vital to CVE's customer. The laser-welding system is required to provide full traceability of all weld parameters and process details. This data is then shared with the end user's MES (manufacturing execution system). With the TruDisk 1000, the extensive data captured by the laser's intelligent sensors mean that all important parameters can be monitored in line with Industry 4.0 practices.

> Alongside machine reliability, traceability is vital to CVE's customer

The latest-generation TruDisk 1000 works economically in all laser states using a new pulse function with greater energy efficiency and intelligent energy management, TRUMPF told *ISMR*.

"Moving forward, the end-user is looking to further introduce new parts to the laser-welding machine," confirmed Horrex. "The tooling, work-holding and automation that we devised facilitates rapid component changeover, thereby future-proofing the system."

There is little doubting the size of the challenge that CVE has overcome with its new laser-welding machine. Going from a blank canvas to a successfully commissioned system in a matter of months is impressive, notwithstanding the effects of the COVID-19 pandemic.

"CVE customers always get the full package, and this now extends to laser-welding machines," concluded Steve Horrex. ■

https://camvaceng.com

www.trumpf.com

Cesare Zeppieri, FCA Cassino press shop operational manager. (Photo: FCA).

ISMR SAYS:
"AP&T and FCA have continuously optimised manufacturing processes, shortened cycle times and increased productivity."

STAMP OF APPROVAL

Fiat Chrysler Automobiles (FCA) relies on strong maintenance and support for the press hardening lines at its Cassino production facility in Italy.

Fiat Chrysler Automobiles (FCA) in Cassino, Italy, invested in five complete press hardening lines from Swedish press specialist, AP&T, more than ten years ago. It was not just AP&T's largest ever deal with a customer in the automotive industry at the time, it was also the start of an innovative, open-minded collaboration that paved the way for continuous optimisation of manufacturing processes, shorter cycle times and increased productivity at the FCA plant.

FCA's production facility in Cassino manufactures press hardened parts for several car models from the Group's Alfa Romeo, Jeep and Fiat brands. AP&T delivered the press hardening lines between 2007 and 2008. Today, the lines have even better production capacity than when they were installed. A main contributor to this is the preventive maintenance agreement that FCA and AP&T signed at the beginning of 2019.

Needs-based availability agreement

"Technology is constantly developing and by upgrading and optimising our customers' existing equipment, we can improve performance while ensuring a long-term high level of operational reliability and availability. That is why we initiated a discussion with Fiat, to learn how we could best accommodate their needs. Starting from the agreement levels that are included in our standard offer, we collaborated to create a customised maintenance and optimisation solution for the Cassino factory press hardening lines," Magnus Svenningsson, Director of Aftermarket Services, AP&T, told *ISMR*.

"Machinery must be highly efficient for full saturation of hot stamping lines to be possible. This is done by correctly using World Class Management (WCM) methodology and by involving the manufacturer of the equipment. Thanks to its deep technical expertise, the manufacturer can detect weaknesses and propose technological improvements," explained Antonio Colucci, Head of the Press Shop and Dies Department, FCA EMEA.

In addition to regular and security maintenance, technical feedback to the customer and optimisation of machinery and systems, the agreement also includes advising the customer and giving suggestions on how productivity can be improved through new, innovative technology.

The parties meet once each year to thoroughly review needs and opportunities.

New cooling system for shorter cycle times

"It is extremely beneficial that the same company that designed and manufactured the lines are also taking care of maintenance,

Above: The press hardening lines at FCA Cassino, Italy.
Below: Press hardened parts for the Group's Alfa Romeo, Jeep and Fiat brands.

A new cooling system for press tools, developed by AP&T, has reduced cycle times substantially.

optimising functionality and keeping us informed of interesting technological innovations that can contribute to short- and long-term improvement. It is a fruitful collaboration," said Cesare Zeppieri, Cassino press shop operational manager.

One example of an innovative solution that was implemented for the Cassino factory press hardening lines is the new cooling system for press tools, developed by AP&T. By optimising cooling system capacity, the cooling process is now much faster than before.

"It has meant substantially reduced cycle times, making it possible to form more parts in a shorter amount of time. All new tools brought into use, and many existing tools, utilise this type of cooling. Another solution we find highly interesting and are examining is AP&T's in-line process monitoring. We're also keeping an eye on how it develops its TemperBox® technology," said Zeppieri.

AP&T's in-line process monitoring provides full control over heating and cooling by using infrared camera technology and a pyrometer, making it easier to ensure that each part maintains quality requirements. TemperBox® makes it possible to manufacture press hardened parts with both hard and soft zones in the same process.

Service and maintenance

"Although we are already having interesting discussions about what we will be able to accomplish in the future with new technology, we must highlight the importance of the continuous support we provide through qualified support, professional maintenance and our well-oiled spare parts supply. That is what underpins the foundations for the high availability of the lines," says Magnus Svenningsson.

"Naturally, we strive to have the shortest, best planned downtime possible. AP&T's service technicians know what we need, are always well-prepared and do their jobs in a timely manner. A gold star also goes to spare parts supply. It is quick; the parts we need are always in stock and are delivered within 24 hours," concluded Cesare Zeppieri. ■

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FORM AND FUNCTION

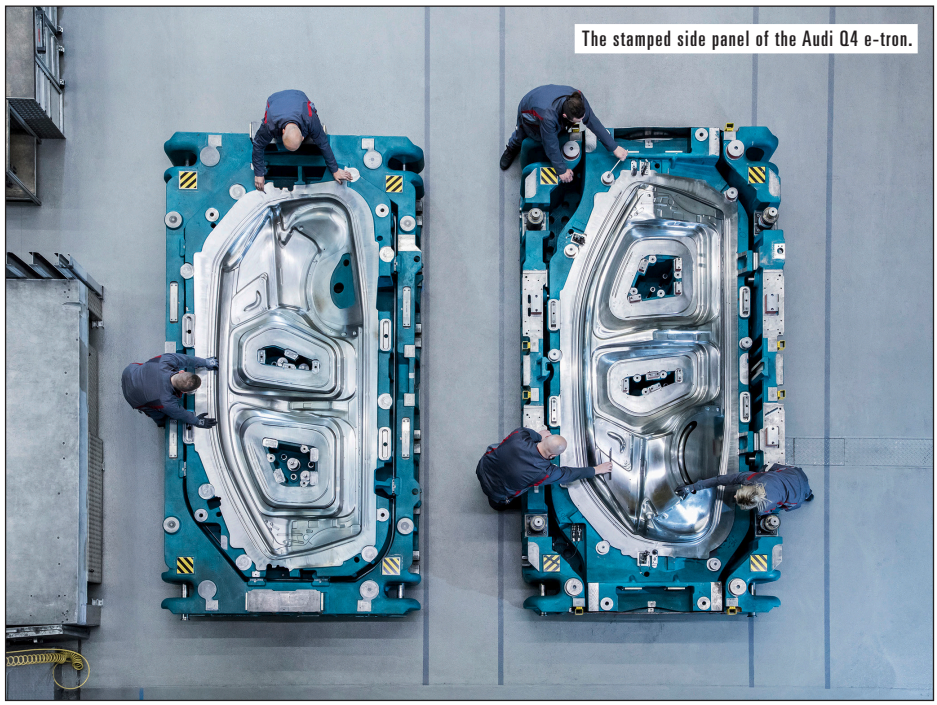
We unveil a selection of the latest new global press technologies, products and innovations.

ISMR SAYS: *"Greater speed, precision and flexibility, with shorter cycle times and a focus on energy efficiency, are just some of the hallmarks of the latest technologies."*

The global metal stamping market size was valued at US$ 220 billion in 2019. Metal stamping, or pressing, is a manufacturing process used to convert flat metal sheets, or blanks, into specific shapes. It is a complex process that includes several metalforming techniques such as blanking; punching; flanging; bending; embossing; coining; deep drawing and piercing.

Embossing (passing a metal sheet or strip between rolls of the desired pattern) reduces friction, increases stiffness and rigidity, and enhances traction. Blanking involves the use of a die to obtain the desired shape. Deep drawing is another process, whereby software (in the form of CAD/CAM computer-generated drawing) is used to manufacture three-dimensional objects. Hot forming, also known as hot stamping or press hardening, is particularly suitable for components that must withstand high loads (e.g. cylinders, crankshafts, gears etc.).

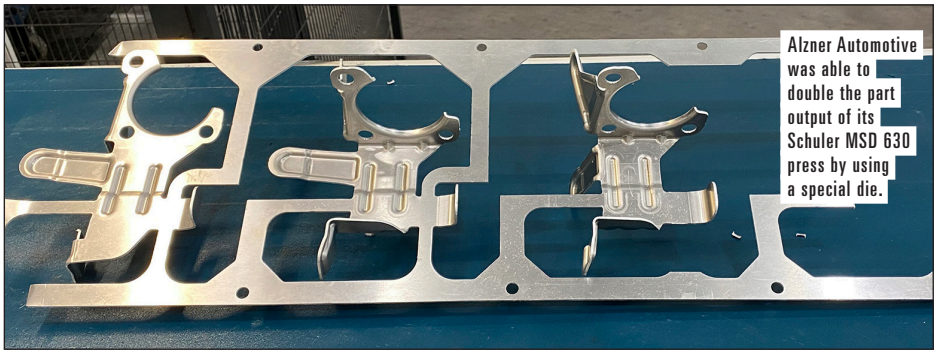
Some of the most common types of metal stamping machines include mechanical, hydraulic and mechanical servo machines that are fitted with multiple dies to cut and shape the sheets of stainless steel and metals, such as aluminium, zinc and copper. There are three major types of metal stamping techniques: progressive, fourslide (multi-slide) and deep draw. Servo presses can be used to shape difficult-to-form materials, such as high-strength steel sheets and aluminium.



The stamped side panel of the Audi Q4 e-tron.

Greater accuracy and flexibility with shorter cycle times and a focus on energy conservation are just some of the hallmarks of the latest technologies. In this article, we highlight a selection of the latest new global stamping and pressing innovations.

> "Embossing (passing a metal sheet or strip between rolls of the desired pattern) reduces friction, increases stiffness and rigidity, and enhances traction"



Alzner Automotive was able to double the part output of its Schuler MSD 630 press by using a special die.

An eye on innovation

AIDA is a global specialist in the design, manufacture, sale, service and support, refurbishment and modernisation of metal stamping presses and metal forming automation equipment. Its servo and mechanical stamping presses range in capacity from 30 to 4,000 tons, from 1 to 1,500 strokes per minute, from gap frame to straight-side, high-speed to cold forging, transfer and progressive die, material handling and coil-feeding equipment.

Its MSP high-speed stamping presses are suitable for the production of motors such as EV motors, HEV motors and energy-efficient home appliances motors. Its UL series of precision forming presses achieve net shape forming without downstream machining

processes. AIDA-America's next-generation DSF-C1-A Series direct drive gap frame servo presses are available in a range of tonnages.

Its AiCARE (AIDA Information Care System) enables the collection, analysis and management of press information by gathering data in real-time. It can be integrated with all types of AIDA presses as well as on installed presses (also from other manufacturers).

AP&T specialises in sustainable solutions for efficient sheet metal forming and press hardening of steel. Renovating, maintaining and rebuilding press tools is also a growing business area at AP&T. Its servo hydraulic press technology is for transfer solutions, tandem lines and conventional pressing. It also has an automation programme for large destackers, current customer installations and tool design. A new mobile app, AP&T Aftermarket Services, makes it easier for customers to contact technical support quickly.

Over the past few years, the company has presented several innovations such as a new production solution for complex parts made from high-strength aluminium. It also helped to deliver 'the world's first production line for hot forming of aluminium' with a new method, patented by Impression Technologies, dubbed HFQ®. It introduced a new generation of its Multi-Layer Furnace for press hardened vehicles and has also developed a method, with Sandvik and Cell Impact, for the cost-efficient manufacturing of fuel cell plates. AP&T's process monitoring system for press hardening – in-line process monitoring – has also been introduced to the market.

Machine in a Box, AP&T's customer-oriented concept for automation, is aimed at local internal and external integrators. It is also introducing a patented solution for partial press hardening of structural parts for passenger cars. TemperBox® enables hard and soft zones to be combined in a single part, paving the way for innovative body designs and cost-efficient production. AP&T has also produced a new-generation control system that simplifies utilisation of presses, automation equipment and production lines.

BALCONI press technology.

BALCONI Presseccentriche S.p.A. offers its BALCONI press model 4DMRF-LD-2000 with 2,000 kN cushion and three-axis electronic transfer. The press can produce up to 27 strokes per minute.

Bruderer UK, which employs 14 people at its headquarters in Luton and at a satellite facility in the Black Country, enjoyed a robust 2019, shaking off economic volatility thanks to a surge in major rebuilds on existing presses. It celebrated its 50th anniversary in 2018 and offers high-speed stamping presses and pre-owned presses. The company also offers a range of other presses, ranging from six to over 4,000 tons. It also offers a range of servo feeders, decoilers, rewinders, welders, conveyors and lubrication equipment.

It has been investing in die laser welding, vision system technology and, along with its portfolio partners, enhancements to servo roll feeders, decoiling systems and tool components for plastic and metal tools.

The Chin Fong ST-1 series straight-side single-crank precision press.

Taiwanese manufacturer **Chin Fong's** stamping presses range from 20-ton single crank presses and up to 3200 metric tons of capacity to three-point eccentric gear-driven, large panel and multi-stage transfer presses. Forging presses are further diversified by cold, warm and hot forging processes. It has also developed an intelligent single-crank press with a crank mechanism used for blanking, drawing, bending and partial forming.

Chin Fong now has offices in Taiwan, China, Indonesia, Malaysia, Thailand and the USA as well as representatives in numerous countries around the world. Its A0 tandem press line for the automotive industry includes stages such as deep drawing, following by trimming, piercing etc.

Its ST1 series straight-side single crank precision press provides a wide range of stamping capabilities and can be combined with automation and an intelligent stamping system. Chin Fong's "Intelligent Forming Productivity Management System (iForming PMS)" integrates technologies such as AI, IoT and big data analysis to help customers successfully carry out digital transformation.

> The global metal stamping market size was valued at US$ 220 billion in 2019

Above: An HD-2500 press tandem line, with robotic arm feeder, from DEES Hydraulic.

DEES Hydraulic Industrial Co., Ltd. is a hydraulic press manufacturer with factories in Taiwan and China. Its main products include presses such as custom triple-action; die spotting; die tryout; deep- drawing; transfer; servo controlled; tandem line; hot forming four-post; hemming; C-frame etc. Its focus is on three main stamping areas - servo motors, higher speed of the hydraulic press and higher productivity for presses, using accumulators for shorter strokes. DEES Hydraulic has also successfully developed a closed loop, hydraulic, servo-controlled die spotting press.

Formed in 1976 in Taiwan, it has been present in China since 2000 and, in 2014, moved to a newly built factory in China, which is almost double the size of its previous factory there. It is also building a new factory in Taiwan. The automotive market is a key industry sector for the Taiwanese manufacturer, which supplies customers such as Audi; Volkswagen; Mercedes-Benz; Volvo; HONDA; TOYOTA; BMW and more. Its hydraulic press capacity ranges from 30 to 6,000 tons, with over 4500 machines supplied to 85 countries.

Fagor Arrasate designs and manufactures presses and stamping systems from 630KN up to 150,000KN, using mechanical, hydraulic or servo-driven technology, depending upon customer requirements.

Fagor Arrasate servo transfer press technology.

HYDRAULIC PRESS MAKER

ODM & OEM
In-House Design and Manufacture

SPC DEES Hydraulic, a hydraulic press manufacturer with factories in Taiwan and China since 1976, is focusing on increasing our manufacturing flexibility, constructing global distribution networks, improving quality standards and reducing manufacturing costs for clients. DEES supplies customers such as Boeing, Honda, Toyota, Audi, Volkswagon, Mercedes-Benz, Volvo, Bosch Group home appliances, Electrolux, GE home appliances, Haier, Foxconn, and more. From 30 to 6,000 ton, DEES provides more than 4,500 custom-made hydraulic presses in the world.

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www.deesgroup.com.tw

ISO 9001:2015


A Rhodes Interform 2000-ton super plastic forming press.

Fresan Makina san. ve Tic. Ltd. Sti manufactures C-frame eccentric presses from 10 tons to 250 tons (100kN - 2500kN), special machinery and hydraulic punching presses.

Group Rhodes is one of Europe's largest original equipment manufacturers in its field. The Group actively manufactures and markets over fifty basic ranges of presses/machines and designs, develops and manufactures bespoke machinery and complete turnkey solutions. It is also a specialist in super plastic forming and diffusion bonding for aerospace and automotive industries and offers a full range of aftermarket services across a wide range of industrial sectors.

Through its Rhodes Interform business, it has also developed a new stamping process that enables large monocoque components, particularly those produced by super plastic forming (SPF) from very thin material, to accurately retain their shape on cooling. The company designs, manufactures and installs titanium and aluminium forming cells for aerospace and automotive manufacturers.

Haulick + Roos manufactures precision stamping and forming machines for stamping, punching, cutting, bending and drawing. It can also handle complex forming work with progressive and complete cutting tools in the press force range from 250 to 5,000kN. Its ROP 4000-3500 press (with a press force of 4000kN, installation length 3500mm) features a KFS guide system, rotating stroke/pendulum stroke and switchable servo drive.

Danish manufacturer **Hydraulico A/S** has installed over 4000 hydraulic presses in 60 countries since 1946. Its product range includes tailor-made presses (up to 8000 tons and five forming axes) and customised press solutions integrating different types of peripheral equipment, automation, heating technologies and tooling. It designs and delivers advanced press technology and complete production lines, with all presses designed and produced to customer requirements. The design, construction and production of advanced hydraulic presses are still Hydraulico's core competences. Its presses start from 100 tons up to 8000 tons.

It showcased its HydraulicoLink™ at EuroBLECH 2018 for press monitoring. Based on a secured cloud platform, it is designed to eliminate documentation dependency, provide machine history traceability and instant video sharing for troubleshooting, as well as increased and instant remote assistance. Users can check the overall status of presses, maintenance operations, spare parts availability and production data.

The HydraulicoLink™ for press monitoring.

INGYU is a Taiwanese precision stamping press manufacturer which provides high-speed presses for automotive, can-making, motor lamination and complex forming applications. INGYU's Apex straightside, two-plunger, high-speed press features two-piece casting frames. Its Saga multi-slide motion mechanical press features three slide motion modes, including forming, bending and drawing, in one press to maximise productivity.

Interlaken Technology Company (ITC), a manufacturer of production press equipment for hydroforming, elevated temperature forming and hot stamping systems, has introduced a four-column hydroforming press system for running high-volume production while reducing cycle time. Interlaken offers this hydroforming press system in clamp forces ranging from 250 to 5000 tons. Hydroformed parts are stronger and weigh less due to structural integrity and fewer welds or add-on pieces.

ITC has taken its knowledge of hydroform press design and combined it with the forming techniques developed by HEATform™. HEATform™ is Hot Metal Gas Forming (HMGF). Instead of hydraulic pressure, gas pressure is used to form alloys in a heat-softened state. ITC's Hydroform and HEATform™ systems help manufacturers to create hollow bodied parts on machines with cycle times as fast as five to seven seconds.

Italian manufacturer **Invernizzi Presse** was established in 1958, offering customised press solutions for high-speed mechanical transfer presses. Press types include Open End Down and Open End Up (deep drawing).

Established in 1937, **JIER Machine Tool**, Ltd. is a large manufacturer of metalforming equipment and heavy metal cutting machine tools in China. Other JIER products include press automation equipment; sheet metal processing machines; foundry machinery; CNC cutting machines; environmental protection equipment and building materials equipment.

It has supplied hundreds of automated high-speed tandem lines globally. It also produces a variety of mechanical presses, from C-Frame to straight-sided press (110T to 5,000T), including transfer presses, progressive presses, blanking lines etc. It has also supplied servo stamping solutions to carmakers.

Komatsu designs large presses for forming automobile roofs and doors. Its large presses are represented by a tandem press for a variety of wide applications and a transfer press for high productivity. Its hybrid AC

INGYU's Apex 60 high-speed press.

servo press, H1F, achieves high performance by combining advanced CNC controls and a hybrid drive mechanism (pat.p). Its large high-speed transfer blanking press for processing car body panels improves productivity by 75%, it told *ISMR*. Komatsu also provides blanking presses and coil lines.

Since its foundation in 1863, **LASCO Umformtechnik GmbH** has harnessed fluid power for forming applications. It supplies machine tools and production lines for forming tasks and develops, designs and manufactures individual solutions for industrial users in more than 60 countries. This includes hydraulic presses for sheet metal forming and press automation. LASCO has developed a new machine concept that allows industrial forges to react flexibly to new automotive drive systems in the changeover phase. The Multiplex press MXP is a servo-hydraulic press and forging hammer at the same time. It also supplies screw presses.

The Franconian machine tool manufacturer has a staff of about 500 in Germany, the USA, China and Russia. It has automated over 500 production lines.

Lien Chieh Machinery Co., Ltd (LCM) custom-builds its hydraulic presses according to the press application and the technical requirements of its customers (presses ranging from 50 up to 15,000 tons). For more than seventy years, it has designed and developed a comprehensive range of technically advanced presses. It provides its customers with in-house manufacturing from start to finish: cutting, welding, annealing, CNC machining, assembly, quality assurance and factory acceptance.

With tonnages ranging from 2400 to 1000 tons and a bolster area of 5,000 x 2,500mm, its servo-mechanical tandem press line is used in the automotive sheet metal industry. Designed to overcome the limits of traditional hydraulic presses (in terms of speed etc.), the manufacturer launched its first servo-mechanical tandem line in 2016. Its product portfolio also includes die spotting presses, die tryout presses, drawing presses, forging presses, hemming presses, hydraulic presses and others.

LOIRE GESTAMP is a specialist in press hardening and hot stamping. From the first line supplied with this technology in 1998, it has specialised in the manufacture of complete installation "turnkey" lines. Its manufacturing portfolio also includes press production lines for manufacturing (mainly automotive parts), hydraulic try-out presses, hydroforming installations, servo presses and other types of presses. Recently, it developed and manufactured a mechanical servo press. Industry 4.0 functionality has also been adopted in its hydraulic press lines.

LCM press technology.

The Nidec Arisa GS2 press

Nidec Press & Automation has established a single source solution for machinery, services and technology. The Nidec Press & Automation brand brings together Minster, Arisa, Kyori, SYS-DPA and Vamco, as well as CHS Automation and Pneumatic Feed Service, stamping press products/services to the market. This includes equipment around the press, such as material handling and high-speed roll feeding solutions.

The newly configured Nidec Arisa GS2 "Global" Press series features integrated automation and manufacturing support. It boasts a capacity ranging from 3150 to 8000kN, and has been configured for manufacturing in North America, Europe and China. It is backed by a global customer service team with 13 technical service centre locations around the world.

"FieldHawk is a cloud-based communications mobile application designed to communicate with Nidec Minster stamping presses from iOS or Android mobile devices. Cloud-based, secured communications allows all authorised users to check machinery status from anywhere they can get phone service and/or an internet connection," it explained.

Omera specialises in automatic lines and integrated production projects. The company provides automatic or semi-automatic lines for the production of pots, lids, gas bottles, water heaters, domestic appliances, car parts etc. It has long experience in the construction of strain-hardening machines.

Quintus Technologies specialises in the design, manufacture, installation and support of high-pressure systems for sheet metal forming and densification of advanced materials and critical industrial components. Its new hot isostatic press, QIH 60 M URC®, enables mass production of additively manufactured parts.

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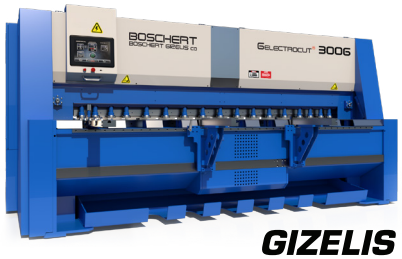

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CLOOS

Weld your way.

Over the past 40 years, it has grown to become a leading producer of fluid cell presses for sheet hydroforming and similar sheet metal forming applications. Its Flexform press process requires only one rigid tool half; the other tool half is a flexible rubber diaphragm under uniform hydrostatic pressure.

It has also developed a new process, High Pressure Warm Forming (HPWF) that combines high pressure with a moderately elevated temperature for more rapid and cost-effective, fabrication of titanium parts. Headquartered in Västerås, Sweden, it is now a wholly-owned subsidiary of Kobe Steel.

Founded in 1839 with headquarters in Göppingen, Germany, **Schuler AG** has about 6,000 employees at production sites in Europe, China and America, as well as service companies in more than 40 countries. As part of its future concept, the press specialist invested heavily in 2019 in the restructuring of its manufacturing sites; on its focus on core competencies in press construction, automation and service and in the strengthening of the Group's innovation capabilities.

An important part of the transformation process was the extensive digitalisation of the control and automation technology on the presses. These include "Schuler Connect", a virtual service system for troubleshooting without the need for on-site technicians and "Visual Die Protection", which uses artificial intelligence to detect and remedy the cause of potential damage at an early stage when using dies.

The press specialist recently received an order for the 1,000th minting press from the Bavarian State Mint in Munich, Germany. The 150-ton type MRH line will be delivered in November 2021. Schuler expects to recoup its pandemic-related losses in new orders and earnings suffered in 2020 over the coming one to two years.

Schuler's MSD 630 servo press.

SEYI introduces its SIMS intelligent manufacturing solution.

Founded in 1962, Taiwanese press specialist, **Shieh Yih Machinery Co., Ltd. (SEYI)** manufactures mechanical presses, ranging in size from 25 to 2400 tons, and servo presses, from 80 to 2000 tons. SEYI products have been sold to customers in over 40 countries and received numerous quality awards from around the world. By controlling press movement and accuracy in its servo presses, SEYI Europe has positioned itself for the fine blanking parts market. The supply chain for its press manufacturing is supported by the "Cooperation Club" consisting of 28 Taiwanese enterprises - some of these companies are also parts suppliers for machinery plants in Japan.

Designed to meet Industry 4.0 intelligent machinery requirements, SEYI introduced its "SEYI Intelligent Manufacturing Solution (SIMS) at TIMTOS 2019 (the Taipei International Machine Tool Show). SIMS integrates the press, production lines and factory management systems to achieve different layers of smart manufacturing, smart production and smart management applications.

South Korean press specialist, **Simpac**, launched a new servo press generation at EuroBLECH 2018 in Hanover. The MX series (3,000 – 10,000kN) and the SX series (8,000 – 30,000kN) are the initial results of the new, German-Korean cooperative venture, Simpac Europe GmbH.

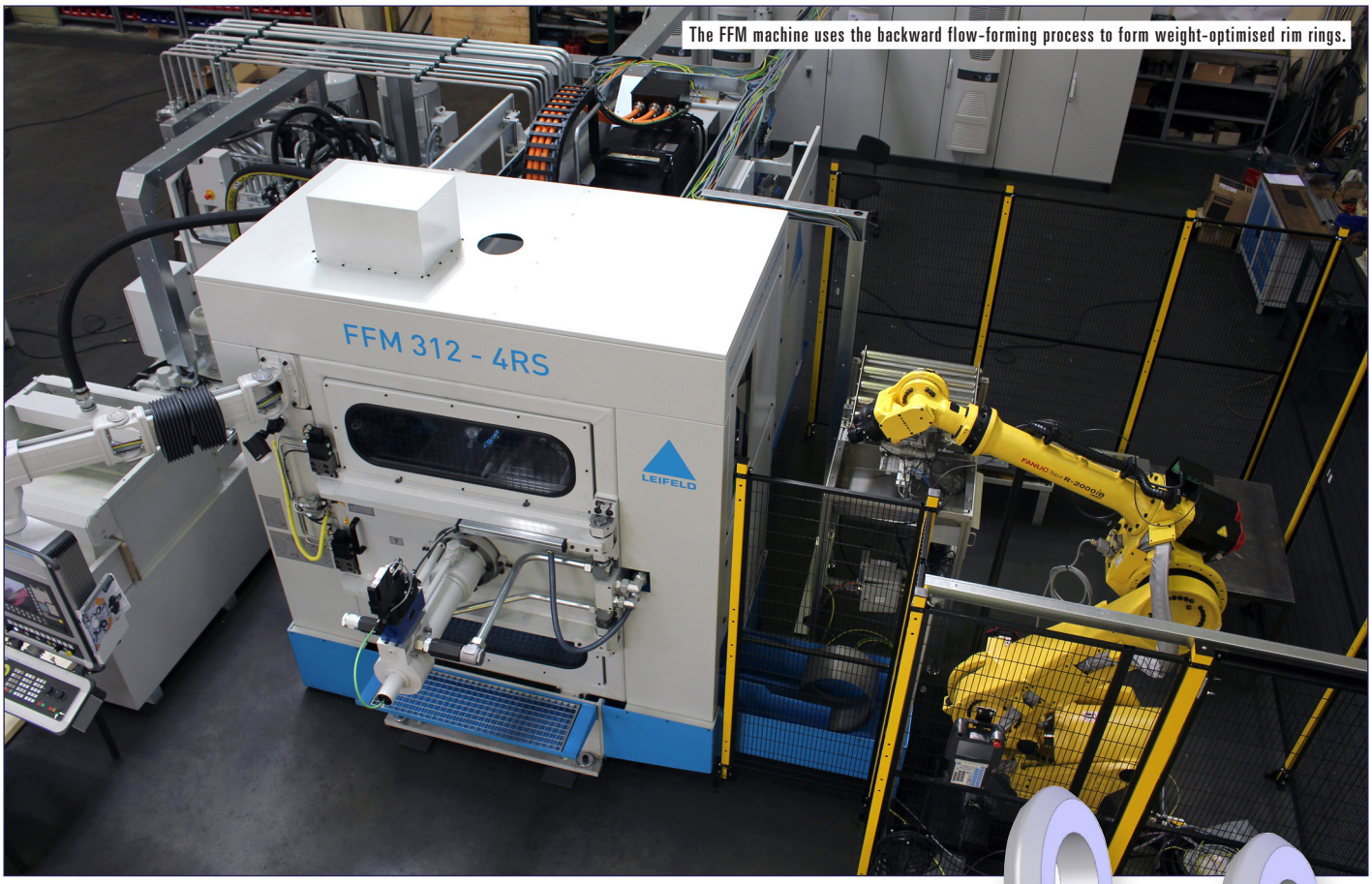
"Conventionally-driven presses still remain part of our product range – from automatic blanking presses and eccentric presses to link presses with modified slide kinematics – so that we can offer customers the best possible individual solution," the company told *ISMR*.

Italian press specialist, **ZANI SpA**, has spent over fifty years delivering over 5000 presses for cold metal forming to five continents. It generally works on around fifteen planned projects over the course of the year, with three press types in its arsenal – the Power Master eccentric press, the Motion Master (double knucklejoint press) and the Servo Master (eccentric or knuckle joint servo-driven press). Zani provides a wide range of presses with rated power starting from 1000kN to 32000kN and bolsters of up to seven metres. With over 700 working presses currently in operation, around 90% of its production is sent to customers outside Italy.

"Our machines are designed and built according to customer requirements, with a range of products including double and straight-side mechanical and servo presses, eccentric presses and ones with slowed-down movement (from 100 to 3200 tons)," it told *ISMR*.

YÖRÜK HIDROLIK MAKINA İNS. SAN. TIC. LTD. ŞTI. was founded in 1980 to manufacture hydraulic presses for the industry. **YÖRÜK HYDRAULIC** has since produced several customised hydraulic presses. Its products and services include hydraulic presses for all kinds of production with press forces of between 80 - 10,000 tons; precision machining; special purpose hydraulic machines and OEM pressing as well as deep drawn dished ends. ■

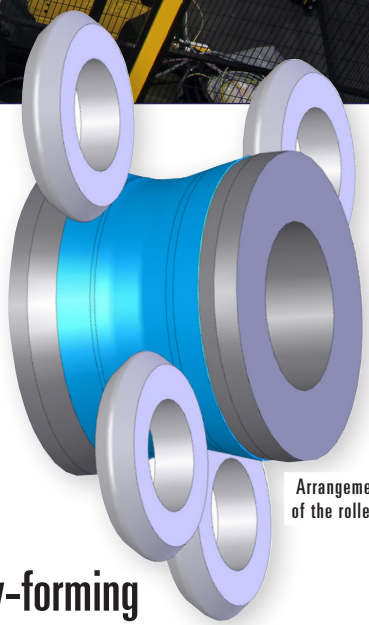
Simpac's MX and SX series presses.



The FFM machine uses the backward flow-forming process to form weight-optimised rim rings.

STRONG LIGHTWEIGHTS

ISMR SAYS:
"We outline the flow-forming machines and processes for weight-optimised wheels."



Arrangement of the rollers.

Less weight means fewer CO_2 emissions for cars and trucks. Flow-forming enables the chipless production of weight-optimised wheels, without loss of payload.

"With our machines and technology, we can design steel rims for cars and trucks so that they are significantly lighter than conventional wheels and yet just as strong," explained Benedikt Nillies, technical director of Leifeld Metal Spinning GmbH in Ahlen in Germany. The company develops machine-tools for chipless metal forming, which are used worldwide in the automotive industry; aerospace technology; the energy industry and in various consumer and industrial goods sectors.

"One of our customers was able to use our technology to produce rims with a payload of 580kg, which is almost 900 grams lighter than with other manufacturing processes," he explained. This pays off, especially in terms of fuel consumption. The more wheels that are used, the better the result. He cited the example of a tractor unit with six wheels, plus spare wheels and trailer wheels.

So why don't manufacturers go straight for aluminium wheel rims? After all, he told *ISMR*, they are much prettier than their steel alternatives and are popular with car buyers when they have been painted, mirror-finished, matt brushed and sometimes chrome-plated. But, he added, they are also more expensive and more vulnerable e.g. to road salt or impact. Repair can also be costly and/or sometimes impossible.

"Steel rims are much more resilient and, with the right manufacturing process, can actually be even lighter in the car sector," Nillies described. This is different from the truck sector. But here, too, weight savings can be attractive to truck manufacturers and buyers who are less concerned with design and more with economy.

If aluminium rims are often cast or forged in one piece, steel rims

Left: Benedikt Nillies, Technical Director, Leifeld.

usually consist of a rim ring and a wheel disk. The rim ring can be produced in the car sector, and both parts can be produced in the truck sector using the flow-forming process. Work hardening improves the microstructure in the material and therefore increases final strength.

"We can reduce the material cross section at certain points and flexibly adjust it to the load requirements of the wheels," said Nillies.

Weight-optimised rim rings

The company offers two different machine production series and flow-forming processes - the FFM series for backward flow-forming and the RSC + RC machines for biconical forward flow-forming. The difference here is the feed direction of the rollers and the flow direction of the material. Both form steel wheels without a tube, in large or small quantities.

Manufacturers can produce cylindrical components such as the rim rings on the FFM machine. For exact ring widths, measuring devices record tolerances in the circular ring which are compensated by the machine control system - without additional trimming. "A modified cross-section of the output sheet metal ring saves weight," explained Nillies.

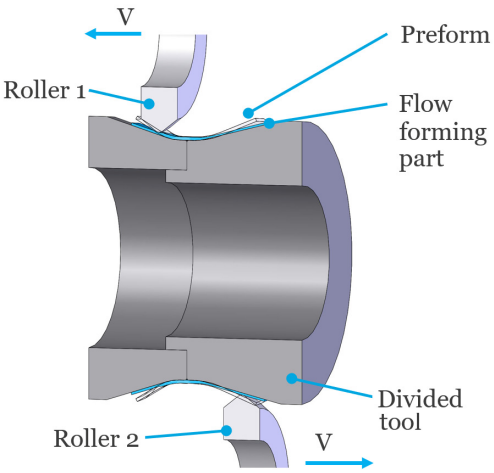
How does that look in practice? He pointed to the equipment. A conveyor belt transports the preform, which was cut from strip, rounded and welded into a sheet metal ring, to the measuring device. If everything fits, a robot picks up the component and places it in the machine's loading device. There, the preform is automatically pushed onto a mandrel and fixed. The main spindle drive sets the mandrel with preform in a turning motion. Under CNC control, the roller, which runs in the opposite direction, flow-forms the material in an axial direction. The wall thickness of the preform is reduced to the desired thickness. The final component length is permanently monitored and stopped in the machining program when the final rim ring width is reached. A scraper on the machine side then removes the finished part from the tool mandrel onto the unloading chute.

Finally, a robot takes the flow-formed component out of the machine. The automatic quick-clamping device for tool mandrels and rollers minimizes set-up times and thus increases cost-effectiveness.

"With cylindrical counter-rotating flow-forming, we can use universally applicable tools for different wheel widths," explained Nillies. "The preform is easy to measure; there is a high degree of work hardening and no need to cut off excess material. That's what makes this machine so popular with our customers".

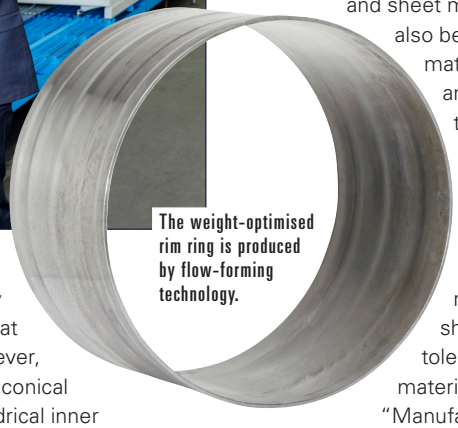
Forward flow-forming

"With biconical forward flow-forming, the preforms for rim rings can be produced not only at an optimised, but also at an optimal, weight. However, this is only possible for biconical components with a cylindrical inner diameter and axial clamping range - such as the drop-centre area," explained the company.



Above: Bi-conical forward flow-forming by Leifeld's RSC and RC series machine process.

Left: Benedikt Nillies in front of Leifeld machine.



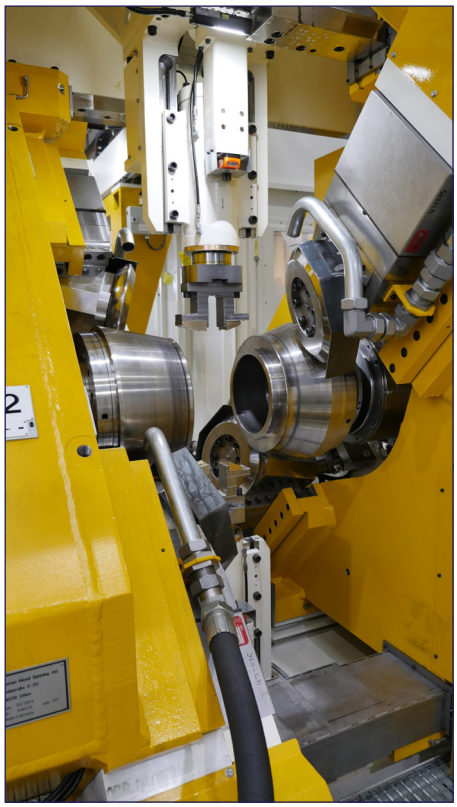
The weight-optimised rim ring is produced by flow-forming technology.

Leifeld offers the RSC + RC series for this purpose. A loading device or a robot picks up the preformed component and places it in the machine. There, it is picked up by two mandrels in a form-fit and force-locked manner. Two co-rotating rollers each press the material in the direction of the axial feed in opposite directions. The area not yet involved in the forming process is pushed in front of the roller.

"The machine therefore ensures symmetrical distribution of forces and a very high degree of rotational accuracy for the component," said Nillies.

With forward flow-forming, no additional calibration expansion and no section length measurement is required. Greater preform and sheet metal tolerances can also be used. The excess material is then removed in another machine so that the desired material thickness and length can be achieved. The component is therefore free of weight differences resulting from the sheet metal thickness tolerance of the pre-material.

"Manufacturers can use our machines to design the wheels as they are required by vehicle producers - light, with a high payload," promised Nillies. "They can therefore safely withstand increasing competitive pressure in the future as well." ■



Above: A view of the working area of the Leifeld RSC Series with four flow-forming rollers.

CONTACT

In 130 years of business, Leifeld Metal Spinning has manufactured over 6,150 machines and delivered them to 60 countries. The company has also filed for patents on more than 140 inventions to date.

www.leifeldms.com

An automatic KASTOcenter varioplus 4 cantilever arm storage system was recently installed by Weser Stahl to help with efficient and ergonomic material flow.

ISMR SAYS:
"The German steel stockholder wanted greater efficiency and productivity levels, as well as more ergonomic working conditions."

GOING WITH THE FLOW

Weser Stahl recently installed a new KASTO storage, sawing and robotic handling system for unattended material flow throughout its factory.

German steel stockholder Weser Stahl, based in Stuhr-Brinkum, has extensively automated its operation to meet increasing competition from international suppliers. The key element of its in-house logistics is a recently installed storage, sawing and robotic handling system supplied by KASTO.

This provides unattended material flow throughout the facility, from storage of the raw stock to provision of the sawn sections for shipment. For Weser Stahl it means greater efficiency, higher productivity and more ergonomic working conditions. The installation has proved so successful that another automated warehouse is being planned for Weser Stahl's site in Plettenberg.

More than 2,500 standard grades of steel are in use throughout the world, from simple construction steel to special alloys, and they are available in a wide range of dimensions and geometries, making the steel trade challenging. Companies who wish to succeed in the increasingly competitive international market must be able to supply their customers promptly with the materials they need, cut exactly to their requirements.

Increasing customisation

Weser Stahl has specialised for many years in the sale of hot-rolled and forged steel bars, steel tubes and bright steel. Production, testing and distribution are combined under one roof at the owner-managed company, which delivers mainly to customers in northern Germany and Scandinavia. It sells about 30,000 tonnes of the 250,000 tonnes delivered by the Westfälische Stahlgesellschaft group, of which it is a member.

More than half of the items shipped are cut to size. This is rising, as managing director Dr. Markus Krummenerl pointed out: "Our customers are outsourcing more and more machining processes. For this

Stieven Harder, Sales Manager, Weser Stahl.

> Our order numbers have been rising while batch sizes have been shrinking

reason, we have continuously expanded our capacity in this area. It has led to increasing customisation. Our order numbers have been rising while batch sizes have been shrinking. This, of course, poses a major challenge for us in manufacturing and logistics."

Weser Stahl relies on modern machinery and equipment to meet this challenge. It has several bandsaws and circular saws supplied over many years by KASTO. "We particularly appreciate this supplier's ability to provide solutions, even when we have special requirements," Dr. Krummenerl added.

This was a key reason behind its decision to engage KASTO, a sawing and storage equipment manufacturer. Weser Stahl decided to launch an ambitious project to automate the provisioning of the saws to run largely unattended. This would enable it to handle the increasing numbers of orders and meet the growing customer demand for part-finished products.

Dr Krummenerl continued, "Another important aspect for us was safety in the working environment. We wanted to make our employees' activities more ergonomic and their daily tasks easier, to prevent accidents and injuries."

An eye on storage

Previously, material had been transferred to the saws by an overhead crane – a laborious and not entirely hazard-free procedure involving bars and tubes weighing a tonne or more. After detailed calculations, KASTO determined that the system to replace this process would be a fully automatic, cantilever-arm storage system.

Weser Stahl opted for a KASTOcenter varioplus 4. Measuring almost eight metres in height, the system provides 1,398 storage spaces for material of up to seven metres in length. The compartments have a usable loading height of 50 to 430mm and each can take a maximum of four tonnes of material. Stock is handled by a storage and retrieval machine (SRM) that moves at speeds of up to 60m/min. Two KASTOvariospeed circular saws, also automatic, and one KASTOtec bandsaw are connected to the storage facility.

The stockholder holds about 20 per cent of its inventory in the storage system. Sales manager, Stieven Harder, explained, "We know what kinds of pre-cut parts are most frequently requested and we give preference in storage to these materials."

Stock is usually delivered by truck in bundles that are unloaded, unpacked and placed in storage via a transport cart. Selection of a suitable storage location is handled by the KASTOlogic warehouse management system, which optimises SRM travel to minimise access times. Mr. Harder further advised that, to protect against rust, there are separate storage areas for bright steel and rolled steel and the rules for this segregation are also contained in the software. The KASTOlogic is connected via a special interface to Weser Stahl's higher-level ERP system, ensuring greater transparency and simplifying the communication of order data.

Material removed from storage is conveyed via roller tracks to whichever saw has been assigned to fulfil the job. A handover station in front of the saw serves as an additional buffer to avoid waiting times. The two KASTOvariospeed circular saws each have a cutting capacity of up to 150mm, while the KASTOtec FC 4 bandsaw is suitable for larger material up to 430mm in diameter. The latter saw was in use before the storage system was built. Kasto simply integrated it into the new system and added the two circular saws.

Continuous material flow

Weser Stahl also relies on automation for the removal of material. The KASTOtec saw is equipped with a turning and stacking system and the two KASTOvariospeed saws each have an industrial robot that automatically removes sawn sections and stacks them onto pallets, as required for each order. The automated peripheral systems including robot integration were also implemented by KASTO. Mechanically, electrically and in terms of software they are matched to the automatic sawing machines and storage system.

Harder stated: "In this way, we have created a continuous material flow that can function fully unattended, if necessary – and around the clock. The result is an enormous increase in efficiency and performance, as well as more ergonomic working conditions for our employees."

Remnants are returned to storage by the conveyer system and SRM. The latter has been specially reconfigured so that it can carry several pieces at a time.

Weser Stahl and KASTO have further plans for automation. They intend to introduce a Jungheinrich driverless transport system to connect the saws and remove pallets with stacked cut parts from the working area of the KASTOsort robot and take them to the dispatch warehouse. KASTO has already created the necessary peripheral equipment, such as the protective enclosures for the saws with a roller gate and optical sensors for entry and exit by the automated guided vehicles. ■

www.kasto.com

Stock is handled by a storage and retrieval machine (SRM) that moves around the store at speeds of up to 60m/min.


Two KASTOvariospeed circular saws are connected to the storage facility. KASTOsort robots handle sawn sections.


The bandsaw is equipped with a turning and stacking system for material removal.


An existing KASTOtec FC 4 bandsaw was integrated into the new system.

12kW fibre laser cutting

AMADA has released its latest high-power fibre laser cutting machine, the ENSIS-AJ 12kW, which complements its currently available 3-, 6- and 9kW versions. ENSIS fibre lasers are designed for manufacturers who need rapid piercing and cutting across a wide range of materials.

The new 12kW ENSIS incorporates all the features of the 6- and 9 kW versions, such as AMADA's original Variable Beam Control and Auto Collimation technologies, as well as the in-house designed and developed fibre laser engine. For the 12kW version, 3 x 4kW diode modules (the highest power, single module produced by AMADA) ensure that high beam quality is maintained for faster cutting speeds. It also opens new avenues for thicker mild steel processing with nitrogen, up to 15mm. The new ECO WACS system for thick mild steel processing with oxygen enhances the overall package.

In recent years, higher power fibre lasers have become more popular for sheet metal processing, providing faster cutting speeds and quicker piercing times and, in turn, lower cost per part. The new 12kW AMADA ENSIS-AJ fibre laser can process 25mm mild steel with the addition of the new ECO WACS (Water Assisted Cutting System) function. It enables very high-quality oxygen processing of thick mild steel. ECO Cut was used for lower thickness oxygen processing (10-15mm), speed increases and running cost reductions.

"ECO WACS combines both these features to allow very thick mild steel processing with an extremely high edge quality and improved bevel angle, whilst maintaining fast cutting and piercing capabilities," explained AMADA.

"The 12kW ENSIS-AJ can now process up to 15mm mild steel with nitrogen and utilises AMADA's Clean Fast Cut (CFC) process to increase cutting speeds and reduce gas consumption by up to 70%, compared to standard nitrogen processing. This unlocks new opportunities for customers in the construction, agricultural and yellow goods markets. These need significantly higher cutting speeds, compared to oxygen, and result in quicker deliveries for the end-user," it added.

A range of automation options are also available. ■

www.amada.co.uk

Heavy duty bending

Pipeline and energy infrastructure companies face huge operational challenges for the transportation of crude oil and natural gas in either liquid or gas form, from production points to refineries and distribution centres. Italian bending specialist, Faccin, has expertise in designing and manufacturing special machines for pipe production in challenging projects.

Recently, the company completed a sturdy electro-welded three-roll plate rolling machine that includes features such as variable axis configuration; maximum pipe length of 40 feet; anti-deflection system for top roll; anti-deflection system for bottom rolls; three-roll drive; automatic pipe ejection system and others.

"This CNC-controlled, high-performance pipe mill bending roll can support pipe production and deliver productivity, repeatability and automation of the entire manufacturing process. It is able to reach specific technical and roundness tolerances, while offering a high-quality finished product that meets high API standards," Ficep told *ISMR*.

To further increase production speed and automation, a post-bending machine that prepares the pipe for welding can be added. Other additions include a series of outboard motorised guide rollers that control the movement of the pipe from the plate rolling machine to the post-bending machine and successive working stations, to achieve a fully automated manufacturing process.

Faccin specialises in the design, manufacturing and sale of plate rolling machines; bending rolls; profile bending machines; dished head machinery and special machines including ship frame benders; hydraulic presses and plate straightening machines. Production takes place in Visano, in the Brescia province of Italy. ■

www.faccin.com

Red Dot award for Robust Feed

ESAB has announced that its Robust Feed wire feeder has received the highly coveted Red Dot Award: Product Design 2021. This is the second Red Dot award that ESAB has won for product design. The brand won in 2018 for the Renegade TIG power source.

The Robust Feed was designed for portability, durability and productivity, featuring a fibre-reinforced case and select areas of double-wall steel to provide additional impact resistance. An optional heater drives off moisture to preserve wire integrity. All controls, power and gas connections are inside the case with a dedicated service cover, providing easy access to the electronics. It is, says ESAB, the only portable feeder with an IP44 protection class rating, which means it is protected against water splashes from all directions, as well as solid objects larger than 1mm.

For more than 50 years, the "Red Dot" award has established itself internationally as one of the most sought-after seals of quality for good design. For this year's competition, designers and manufacturers submitted more than 18,000 objects to the competition and a jury comprising roughly 50 members assessed the products. The strict judging criteria, which include level of innovation, functionality, formal quality, ergonomics and durability, provide a frame of reference which the jurors then complement with their own expertise.

The ESAB Robust Feed portable wire feeder.

"I believe Robust Feed won this esteemed award because customer insights and real-life scenarios shaped its form and functions," said Jarkko Havia, ESAB global industrial design manager. "We never intended to compete with existing feeders — we wanted to redefine the category, and Robust Feed achieves that goal."

The Robust Feed accepts wire spools of up to 300mm, measures 595 x 250 x 430mm and weighs 16.8kg. For greater mobility, the wire feeder has an optional wheel kit that mounts on either the bottom or side of the feeder. It also features ESAB's new PreciDrive wire drive system to feed solid wires up to 2.0mm and cored wires up to 2.4mm. Robust Feed automatically connects to ESAB's Warrior and Aristo inverter-based power sources, and a connection kit enables use of the unit with competitive inverters. Equipped with an optional push-pull torch, it can also be used for welding aluminium. ■

www.esab.com

www.red-dot.org

3D metrology scanner

The new GOM Scan 1 sensor is a compact and mobile 3D scanner to digitally capture objects and achieve precise 3D meshes for applications such as 3D printing, reverse engineering and dimensional inspection. The system comes with the latest GOM software, walking users through the entire workflow.

GOM Scan 1 features a compact shape filled with advanced technologies. From GOM's fringe projection technology to the stereo camera principle, this sensor is designed to deliver 3D data with high precision. The lightweight system aims for simple and quick measurements of small and medium-sized parts – even in confined spaces.

"The pre-installed GOM Inspect software takes meshes to the next level, supporting users to get 3D data easily and rapidly. For different applications, GOM Scan 1 is available with three measuring volumes: 100mm, 200mm and 400mm fields of view," added the manufacturer.

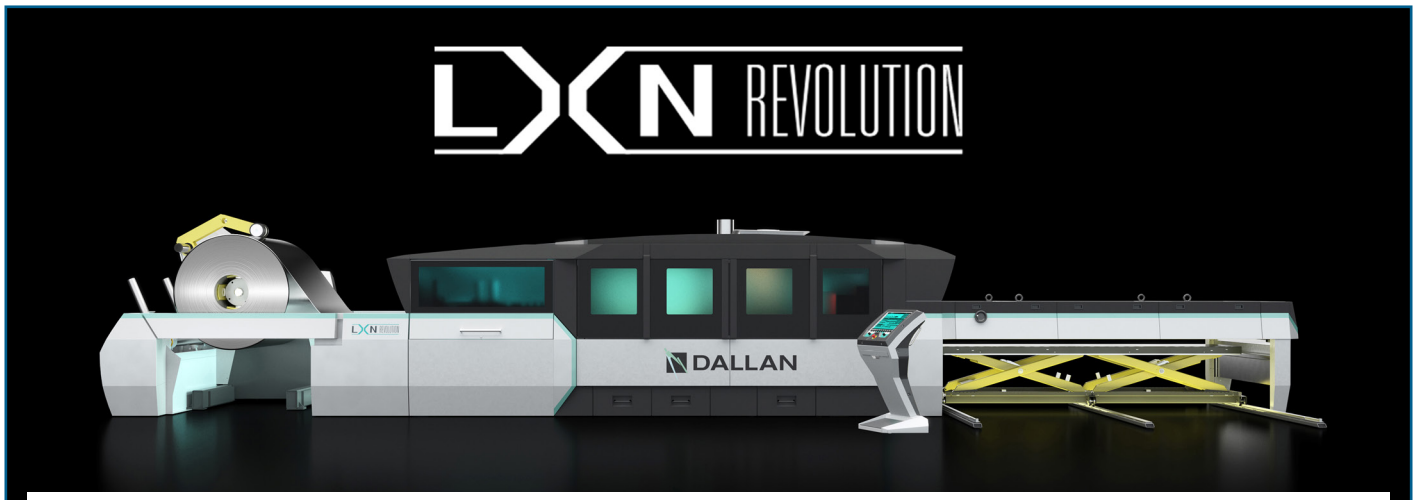
"GOM Scan 1 operates with GOM Inspect, a standard in 3D metrology, and supports tasks such as 3D printing, 3D visualisation and reverse engineering. It captures high-quality data in a short amount of time while the powerful mesh editing functions make it easy to reproduce parts, create precise 3D models or develop new products. The software functions enable users, for example, to smooth, thin and refine polygon meshes, fill holes or extract curvature lines, achieving accurate meshes that can be saved in many common formats. The smart polygonisation function creates meshes with strong detail while keeping the mesh size easy to handle," it continued.

GOM Scan 1 is an optical 3D fringe projection scanner with Blue Light Technology. It captures the complete surface of components with narrowband blue light – recorded by two cameras that work based on GOM's stereo camera principle. The powerful light source enables short measuring times and filters out interfering ambient light during image acquisition.

"Thanks to the stereo camera principle, the sensor recognizes changing ambient conditions during operation and can compensate for these changes. To ensure the quality of the measuring data, the sensor software continuously monitors the calibration status, transformation accuracy, environmental changes and part movements. GOM Scan 1, with GOM Inspect, delivers accurate and comprehensive measurement results making 3D part inspection effortless. With the software, users can easily import and align CAD and mesh files, create surface comparisons or dimensional inspections and generate reports," added GOM.

GOM Scan 1 will be available worldwide through both the GOM global metrology network as well as the #HandsOnMetrology platform, a joint portfolio of 3D scanning solutions by GOM and ZEISS. ■

www.gom.com/goto/3fxg



Coil-fed laser cutting

After a year of prototyping and tests, Italian manufacturer Dallan has launched the LXN Revolution, a coil-fed laser cutting system that incorporates its expertise in coil processing, laser cutting and efficient sheet metal processing.

"Did you know that, if you work with traditional sheet metal laser cutting, this probably means that you're wasting more than 20% of your raw material? If you've also been adversely impacted by material cost increases in 2020 and 2021, this is the opportunity to acquire a strategic asset that offers a built-in vision system and the ability to process material right up to the edges, optimising material use up to almost 100%!" explained Dallan.

"Our engineers have redesigned the LXN down to the smallest detail: new solutions adopted range from lighting of the vision system, which further increases its accuracy, to the support system that enables easy cleaning and replacement of the bars. All these solutions are patented," it continued.

The system facilitates unattended processing and its vision system allows users to load and process large quantities of raw material, while pick and place unloading or stacking systems enable processing without the need for personnel directly dedicated to the machine.

For manufacturers who wish to produce a prototype or test new material, LXN allows them to choose between coil-fed processing (for small, medium and large batches, and strong material savings) and sheet-fed processing (if, for example, they need to frequently change the type of material).

"Inspired by Italian Luxury Sportscars, the new design of the Dallan LXN is something of a revolution: it reflects the production speed of the line and the many innovations featured, such as the patented extraction system and the new vision system," concluded the Italian coil processing specialist. ■

www.dallan.com

Expanded robot line

FANUC America, a supplier of CNCs, robotics and ROBOMACHINEs, has expanded its line of SCARA ROBOTS, offering more reach and payload options to companies with assembly, packaging, pick and place, and inspection processes.

FANUC's family of 4-axis SCARA robots has grown to include the SR-3iA, SR-6iA, SR-12iA and new SR-20iA models with 3kg, 6kg, 12kg and 20kg payload capacities, and a 400-1,100mm reach, respectively.

"The small SR-3iA and SR-6iA SCARAs have a compact footprint and space-saving design for maximum efficiency. The SR-3iA/H and SR-6iA/H are 3-axis variants that provide strong performance and an affordable alternative to small linear slide products. The higher-payload SR-12iA and SR-20iA provide flexibility with a large vertical stroke, and an environmental option for harsh conditions," said the manufacturer.

Powered by the R-30iB Compact Plus controller, FANUC's SCARA robots have the same intelligence on all FANUC robots including integrated iRVision®, conveyor tracking (iRPickTool) and most other software options. FANUC's latest SCARA iRProgrammer user interface makes it easy to set up and program the robot on a Tablet or PC (Teach Pendant is optional).

Space-saving design minimizes interference with peripheral devices. The SR-3iA and SR-6iA have an ultra-compact footprint and slim profile. The SR-12iA and SR-20iA have internal cable routing to eliminate interference. Six models are available: SR-3iA (4-axis/400mm reach); SR-3iA/H (3-axis/400mm reach); SR-6iA (4-axis/650mm reach); SR-6iA/H (3-axis/650mm reach); SR-12iA (4-axis/900mm reach) and the SR-20iA (4-axis/1,100mm reach). ■

www.fanucamerica.com/scara

BRUDERER

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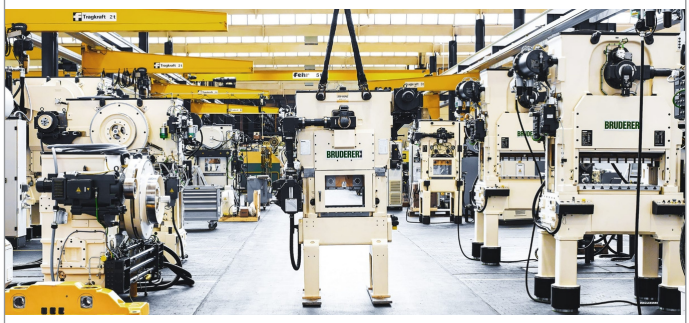

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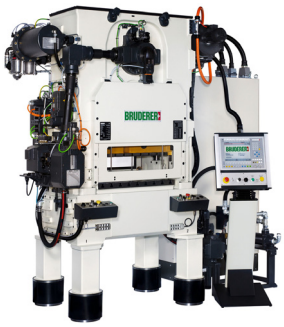

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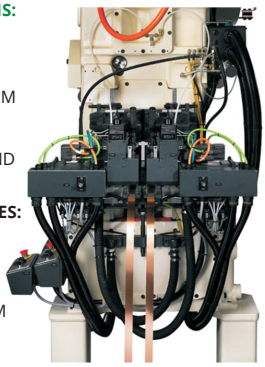
  - STRIP WIDTHS UP TO 70MM AT 2MM MAX MATERIAL THICKNESS.



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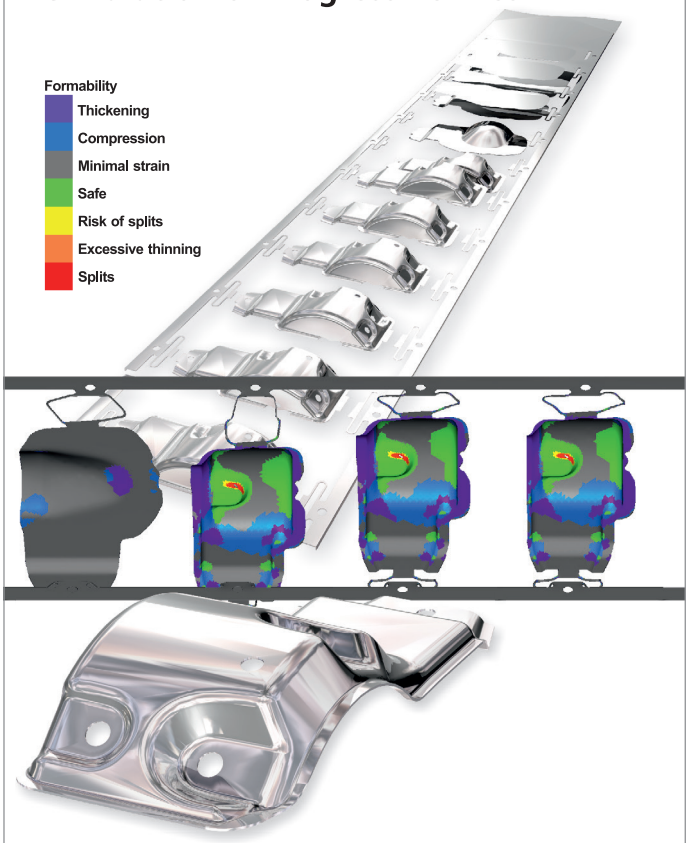
WEBSITE: WWW.BRUDERER.COM

Logopress® ProgSim

Software for Forming Simulation of Progressive Dies



Logopress ProgSim enables progressive die designers working in SOLIDWORKS to efficiently simulate, modify, and validate their strip layouts. The software allows them to gain deep insight into the forming process and take corrective measures on the computer screen to prevent costly prototyping and/or trial and error in the tryout press.

www.logopress.com

LOGOPRESS

part of AutoForm Group

Smart Factories™ in focus

Zyter, Inc., a leading digital health and IoT-enablement platform, has announced the launch of Zyter Smart Factories™. This end-to-end intelligent solution connects factory floor machinery, workers and building systems using the latest Internet of Things (IoT) technology devices on Zyter's digital transformation platform.

Zyter Smart Factories is a component of the Zyter SmartSpaces IoT platform. Trusted by Qualcomm® to be the foundation of its Smart Cities Accelerator Programme, the Zyter SmartSpaces Platform breaks down silos of information by integrating and consolidating data from IoT devices and applications in a seamless interface.

Zyter Smart Factories gives manufacturers a 360-degree view of what is happening across the entire factory floor using a network of connected devices and sensors, including safety equipment worn by workers. IoT sensors send alerts and notifications on worker safety issues, authorisation breaches, machinery utilisation and asset monitoring to the Zyter Smart Factories dashboard. Zyter Smart Factories translates this data to analytics to help manufacturers understand factory productivity and safety metrics, as well as gain insight into other metrics related to factory management, operations and efficiency improvements.

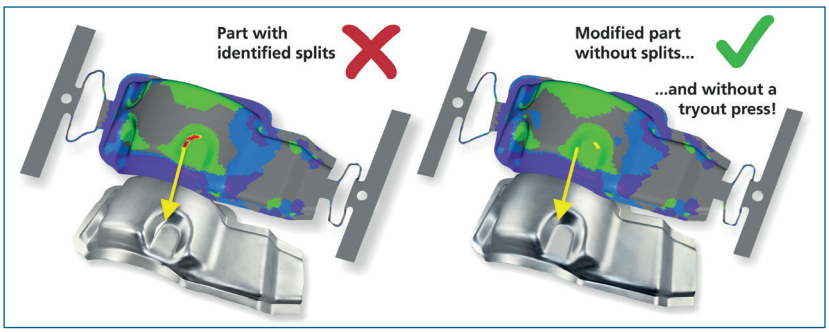
"This meets the increasing demand from manufacturers for IoT technologies that help make the factory run more efficiently," said Sanjay Govil, founder and CEO of Zyter, Inc. "With the analytics gained from complete visibility of the factory floor, machinery monitoring and worker tracking, manufacturers can make more informed decisions to make their factories smarter, safer and more productive."

Key features of Zyter Smart Factories include 'Factory Floor Productivity'; 'Worker Safety and Tracking' as well as 'Asset Tracking and Utilisation'. Ready for 5G connectivity, Zyter Smart Factories enables manufacturers of all sizes to upgrade from legacy hard-wired IT and Wi-Fi systems to a private 5G-enabled IT or cellular network that supports multiple IoT devices. Zyter partners with Qualcomm and other telecom companies to provide manufacturers with access to enhanced connectivity services. ■

www.Zyter.com/smartfactories

Forming simulation of progressive dies

Logopress®, a long-time SOLIDWORKS® software partner, has launched a new software product called Logopress ProgSim. This new software enables progressive die designers working in SOLIDWORKS to efficiently simulate, modify and validate their strip layouts.



"The software allows them to gain deep insight into the forming process and take corrective measures on the computer screen to prevent costly prototyping and reduce time spent in the tryout press. Logopress ProgSim was developed using incremental simulation technology powered by AutoForm solver. It is customised for small to medium-sized progressive die companies that want to attain highly accurate results in stamping simulation but cannot justify the cost of incremental simulation software that does not have a size limitation on the parts that it can simulate. Logopress ProgSim is affordable, easy to use and accurate forming simulation software which fully meets the needs of these companies, even for those without any prior FEA experience," commented software specialist, AutoForm.

The newly developed software allows progressive die designers rapid and accurate forming simulation of the progressive die process including drawing, flanging and forming operations as well as springback. Users can gain deep insight into the forming process, including force prediction, and can quickly identify problem areas such as wrinkles, splits or excessive thinning that might occur during the process. According to AutoForm, this knowledge of the forming process (revealed on the computer screen) expands the overall formability expertise of the entire design department and is also useful for estimators and die-makers.

Logopress ProgSim acts as a virtual tryout press for forming and enables die designers to validate a process quickly and accurately, even before the actual die design has begun. This reduces the time and costs related to prototyping, as well as time spent in the tryout press.

Yves Thizy, Global Sales Director, Logopress, stated: "I am pleased and excited that we can offer such an effective software option to progressive die designers, working with SOLIDWORKS & Logopress DieDesign, as it enables them to eliminate formability issues before they build a die. Logopress ProgSim allows them to see what they will achieve in the tryout press while still designing the strip layout.

"I started my career in the tool & die industry, 30 years ago, at the time of the 'wire EDM machine revolution'. My feeling is that Logopress ProgSim will soon become as natural and indispensable for a die designer as a wire EDM machine has been to every company that builds dies. Without doubt, it will lead to consistently faster and more profitable delivery of progressive dies."

Since 1989, Logopress has been primarily focused on the development of die design software for the tool & die and metal stamping industry, as well as related flattening software for various applications. Logopress is a specialist in die design software and its products have achieved SOLIDWORKS Certified Gold Partner status. Since 2019, Logopress has been part of the AutoForm Group. ■

www.logopress.com

www.autoform.com

Welder training

"No noise, no smoke, no heat, no material input – Fronius Virtual Welding offers a totally safe and sustainable framework for training new welders. Similar to a flight simulator, 3D glasses and amazing graphics enable a realistic welding experience. The result is high-quality welder training that also saves on costs," Philipp Schlor, Product Manager Virtual Welding, Fronius International GmbH told *ISMR*.

With Virtual Welding, Fronius has developed a sophisticated training concept for providing theoretical knowledge about MIG/MAG, TIG, MMA welding and more, with a testing system to assess learning progress. A ranking list encourages trainees to enter into friendly competition with one another. The combination of guided practical exercises and theoretical units enables trainees to complete much of their training independently using the welding simulator. They acquire basic knowledge and fundamental manual skills before moving onto the real welding system. This enables training centres to improve the quality of their training, while also reducing costs.

To master their manual skills, trainees first practise with a virtual instructor known as the Ghost. Step by step, it shows the right welding speed, distance and tilt angle of the welding torch relative to the workpiece, giving the trainee immediate feedback. The task gradually increases in difficulty until finally welding is completed without the Ghost in a realistic simulation. The Virtual Welding system records the welding operations, making it possible to play them back later and analyse them with a real trainer.

"We believe that Virtual Welding makes a significant contribution towards improving training quality. The Ghost provides every student with one-on-one tuition and immediate visual feedback, something that a real-life trainer is simply unable to do," said Hannes Krempl, a trainer in welding technology and transport at the Fohnsdorf Training Centre.

Savings on consumables, such as gas, wire and sheet, make the training significantly cheaper. "In total, we save around 230 euros per participant on material costs – despite the longer arc time," said Krempl. ■

www.fronius.co.uk

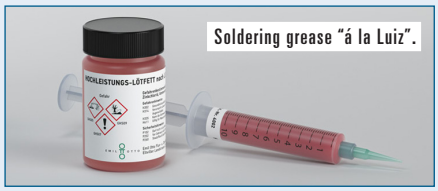
Smoothing the way

Emil Otto GmbH continues to expand its product portfolio for metalworking and has introduced the new high-performance soldering grease "á la Luiz". This grease can be used for all standard soft soldering processes as well as for all common metal surfaces. It can also be used for soldering stainless steel and stainless-steel alloys.

The bright pink, water-repelling and UV-detectable soldering grease "á la Luiz" is highly active. It has a wide process window and, said the manufacturer, excellent wetting and spreading properties.

"Because of this, the grease should be applied sparingly," explained Markus Geßner, marketing and sales manager for Emil Otto GmbH. Luiz's soldering grease is suitable for all common metal surfaces as well as stainless steels. The grease is designed for 'problem-free' soldering or tinning, especially on strongly oxidizing surfaces. It can be processed using flame, hot air, soldering iron etc. Crystallisation, said Emil Otto GmbH, does not occur.

"The selected formulation of our high-performance soldering grease results in an enormous effective temperature range, which is between approx. 150 - 300°C. A maximum of 450°C is also possible," Geßner continued. The reaction of the grease to the metal surfaces is very intense "As a result, we can remove the oxide layers necessary for soft soldering or tinning. At the same time, new oxidation is suppressed during the processing operation," added Geßner. Most leaded and lead-free tin-based solders can be used as filler metals.



The range of applications for Luiz's soldering grease is broad, as Geßner emphasised: "Because we also offer small packaging units, our soldering grease is also suitable for applications in the trade sector. For example, it is used in radiator manufacturing; toolmaking and mechanical engineering; roofing work; installation and plant construction; and measurement and control technology." ■

https://bit.ly/3fcX80K

Coil feeding line

Saronni recently supplied a new automatic coil feed line, with tilting production shear, to one of its customers in a plant located in Poland. The line has been designed to process high-strength steel strip widths of 2000mm and thickness of between 0.7 to 7mm.

The coils, of 25 Ton max., can be prepared in masked time on the coil car and the strip head can be indexed by the coil car rolls to speed up insertion in the straightener.

"Two pairs of automatic lateral cones ensure coil containment during the process and the decoiler spindle servo motor, synchronised with the straightener servo-motor, enables perfect tension of the strip. Proprietary A.S.A. (automatic straightening adjustment) software can set the position of the straightening rolls, according to the material dimensions and mechanical properties set by the operator in the line control panel," Saronni told *ISMR*.

The straightener roll pack can be replaced by another to increase system capacity in terms of material cross section and yield strength. An electronic servo feeder feeds the strip into a tilting production shear that can cut square, rectangular and trapezoid blanks to be fed into the press. ■

https://saronni.com/en

Robust plasma cutting

Metallic blank cut surfaces with the HiFinox technology for plasma cutting of stainless steel and aluminium (© Photo: Kjellberg Finsterwalde).

Kjellberg has released new HiFinox cathodes for its Q, Smart Focus and HiFocus plasma power sources.

"The cut quality is clear in metallically bright cut surfaces, narrow kerfs and significantly less dross. The cathodes can be used for stainless steel and aluminium from 1- to 6mm. Due to the new design of the cathodes, the optimised production process and new patent-pending technology, we have considerably increased the lifetime of the cathodes– with a cutting current of 60 A by factor 5 to 10.

"The low backburn of the cathodes guarantees consistently high cutting quality, which is shown in metallic blank surfaces with significantly less dross," it told *ISMR*.

The new cathodes (E042, F042+ and G042+) are standard consumables for all Kjellberg's current Q, Smart Focus and HiFocus plasma power sources and can be used by applying existing cutting data. ■

www.kjellberg.de

Tube and pipe forming

Sharpe Products, a North American specialist in custom tube and pipe bending, has purchased its eighth Unison Breeze all-electric CNC tube bender. The machine, an 80mm (3") single-stack model, will be installed at Sharpe Products' Wisconsin-based manufacturing centre, where it will be used to further expand the company's production capability for its increasingly diverse customer base.

Sharpe Products and UK-based Unison Ltd. have a long history of working together. Sharpe's President and CEO, Paul Krickeberg, bought into the concept of all-electric tube bending many years ago, when it was still a relatively new technology.

"Our new Unison Breeze tube bending machine will help further support our capacity to offer short lead times and consistent accuracy – attributes that are essential to our customers," he told *ISMR*.

"All-electric tube bending technology, with the advantages of automatic set-up, has equipped Sharpe Products with the ability to take on all manner of tube manipulation challenges, including projects involving traditionally difficult-to-bend alloys," commented Unison Ltd's managing director, Alan Pickering.

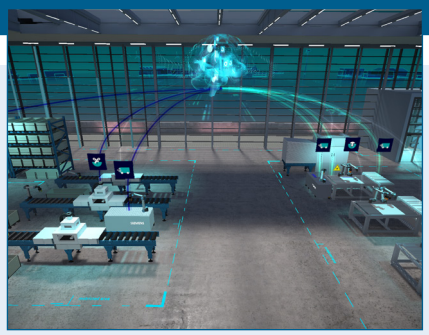
The 80mm single-stack Unison Breeze machine is equipped with recently upgraded Unibend software, which offers cycle time speed improvements in the region of 25%, compared to earlier versions, and incorporates new teach routine and simulation features. The 80mm (maximum tube diameter) Breeze

also offers rapid set-up; fast tooling changes; rigid mechanical design and all-electric control for right-first-time repeat subcontract work, or immediately after producing a single trial part.

Other Unison Breeze machines operated by Sharpe Products include a 50mm (2") Unison Breeze-Revolution tube bender – a machine equipped with a rotating head, enabling it to make left-hand and right-hand bends in one continuous manufacturing cycle. Sharpe also has 76mm (3"), 80mm (3") and 130mm (5") multi-stack Breeze machines which can accommodate several tools for rapid changeover between bending cycles - and a 100mm (4") single-stack model. ■

www.unisonltd.com

www.sharpeproducts.com



AI-based solutions in manufacturing

Google Cloud and Siemens have announced a new cooperative agreement to optimise factory processes and improve productivity on the shop floor. Siemens intends to integrate Google Cloud's data cloud and artificial intelligence/machine learning (AI/ML) technologies with its factory automation solutions to help manufacturers innovate for the future.

"Data drives today's industrial processes, but many manufacturers continue to use legacy software and multiple systems to analyse plant information, which is resource-intensive and requires frequent manual updates to ensure accuracy. In addition, while AI projects have been deployed by many companies in 'islands' across the plant floor, manufacturers have struggled to implement AI at scale across their global operations," said Siemens.

"The potential for artificial intelligence to radically transform the plant floor is far from being exhausted. Many manufacturers are still stuck in AI 'pilot projects' today – we want to change that," said Axel Lorenz, VP of Control, Factory Automation of Siemens Digital Industries. "Combining AI/ML technology from Google Cloud with Siemens' solutions for Industrial Edge and industrial operation will be a game-changer for the manufacturing industry."

By combining Google Cloud's data cloud and AI/ML capabilities with Siemens' Digital Industries Factory Automation portfolio, manufacturers will be able to harmonise their factory data, run cloud-based AI/ML models on top of that data and deploy algorithms at the network edge. This enables applications such as visual inspection of products or predicting the wear-and-tear of machines on the assembly line. ■

https://sie.ag/3seQWlz

Automated grinding

CLOOS and FerRobotics have been cooperating on automated grinding technology since 2020. The first systems are already being used by customers in various industries. CLOOS (Haiger, in Hesse) specialises in highly complex manufacturing solutions for welding and robot technology and FerRobotics (Linz, Austria) develops sensitive robotic elements and both have combined core competences.

The QIROX robot QRC-30/45/60-PL by CLOOS and the versatile, sensitive end effectors.

While CLOOS contributes its robot and system engineering expertise to their joint projects, FerRobotics adds technological expertise for grinding applications with patented force/contact intelligence. The automated grinding and deburring solutions are designed to close automation gaps and generate the necessary repeatability that is combined with increased efficiency in manufacturing processes.

"The demand for highly complex, chained production systems is constantly growing," explained Christian Landau, Head of Sales & Marketing, CLOOS. "Our customers increasingly want to integrate solutions for automated welding technology with upstream and downstream processes, such as grinding, in a production line."

CLOOS has therefore developed the new low net weight QIROX robot QRC-30/45/60-PL and added it to the robot portfolio. The robot has a high load capacity for a wide range of applications. In combination with the grinding applications from FerRobotics, the robot offers a wide range of possibilities for different areas of application. These include the compact eccentric grinding solution (AOK Active Orbital Kit) for surface treatment and preparation; the AAK Active Angular Kit for deburring and grinding with an angle grinder; the ABG Active Belt Grinder for grinding, polishing and deburring using a belt grinder and more. Users can choose between different end-of-arm tools from FerRobotics for their individual task.

"Process optimisation is more than a 'nice to have' in times of Industry 4.0. Grinding, polishing and deburring are the supreme disciplines in surface treatment. Flexible, contact-intelligent automation solutions with the latest robots raise this problematic manual work to a top Industry 4.0 standard. Our process-optimised and sensitive end-of-arm comfort packages by FerRobotics solve this requirement sensibly and economically," added Harald Gschnaidtner, Key Account Manager, FerRobotics.

In the future, CLOOS and FerRobotics would like to further expand their cooperative activities to make even greater use of synergies in sales and service. ■

www.cloos.de/de-en/

www.ferrobotics.at

Mobile dual recoiler

When stamping small electrical connectors, the stamped parts may need to remain as a coil. These coils must be cautiously recoiled so as not to damage the parts, which are very fragile due to the nature of the stamping. Recoiling of these coils is combined with decoiling of the protective paper.

Usually, stamping workshops dedicated to these products have several low-tonnage, high-speed presses. Set-up times must be the shortest possible and available space in the workshop is at a premium.

"To optimise the recoiling of such delicate products with minimum investment, optimised footprint and low set-up times, we have developed a motorised dual recoiler, combined with a paper decoiler. To quickly switch from one press to another, all the components are mounted on wheels and power can be easily connected via Harting connectors," explained French manufacturer, Dimeco.

Moving from one press to another must be rapid, but users also need to optimise settings changes. The mandrel of the Dimeco recoiler can handle coils of 40-, 50- and 200-550mm inside diameter.

"If current production does not require such a system, it can be quickly and easily moved outside the production area to be ready for the next time it is needed," explained Dimeco. ■

www.dimeco.com

Industrial tablet

Advantech, a specialist in advanced IoT intelligence systems and embedded platforms, announced the launch of its industrial tablet, AIM-75S, in May 2021. Designed for industrial users and rugged environments – the outdoors, extreme weather conditions etc. – AIM-75S features the Android 10 operating system with plenty of prepared application programming interfaces and enhanced security. The industrial tablet is also Google Mobile Services-certified, passing seven test suites with two million test items to guarantee compatibility, as well as access to over one million Google applications.

The company partnered with Qualcomm, a CPU manufacturer, on the AIM-75S for longevity, support and performance stability. The eight-inch industrial tablet features a barcode reader to eliminate human errors in data recognition and collection. It provides 12 hours of battery life, as well as connectivity, to keep workflow consistent no matter the location and offers a user-oriented design that is targeted to reduce downtime and increase productivity.

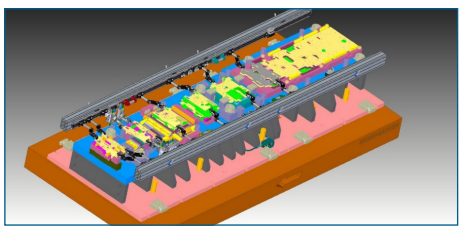
"What sets AIM-75S apart from other industrial tablets is also our superior service model. We can guarantee that our production line remains consistent throughout a product's entire life cycle," said Joseph Hanna, Product Manager, Advantech.

AIM-75S can withstand a four-foot drop test and has an Ingress Protection Rating of 65. It comes with a host of peripherals including extension modules, accessories and docking stations so that users can customise the tablet to fit their needs. ■

https://bit.ly/3oDQNye

Transfer die analysis

Misati has launched a new Transfer Dies Analysis service, which consists of a comprehensive revision of those elements of the die that affect the productivity of the transfer bars and the maximum speed of the system.



"We are offering this new service free of charge to ensure that stamping companies obtain optimised dies that reach up to 35spm," it explained. It is also providing another service, the technical study of the transfer, for free with each quotation.

Misati has long experience in automating transfer bars and has been working with large stamping companies worldwide for over 20 years. It offers stampers a range of services, from the design and manufacture of components to commissioning of the pincer-holder profiles. It is a technological specialist in transfer bar automation.

The die specialist has also automated transfers that stamp sheet at 35 strokes per minute. Stamping a sheet involves many elements: the sheet itself, the dies, the press, the transfer bar, the end-of-arm-tooling (EOAT) etc. To achieve maximum speed, the die must be designed with the transfer in mind. Some elements inherent in stamping dies do not affect the stamping of the sheet itself but do affect the transfer tooling. In some transfers automated by Misati, a reduction of just 100mm in the distance between dies (from 600 to 500mm) has generated an increase of more than 20% in the number of strokes per minute.

"Not optimising a die means loss of profitability for a stamper throughout the working life of the sheet. When it has been possible to modify dies, we have seen astonishing productivity increases of 50%," explained Misati.

"The key is to analyse dies at an early stage of the automation process of the sheet, preferably as soon as the layout of the sheet is available. Once the dies are built, it might be too late or too expensive to implement our recommendations," it added. ■

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