smart_molding international

4/2021

smart-molding.com

The 35th International Exhibition on Plastics and Rubber Industries

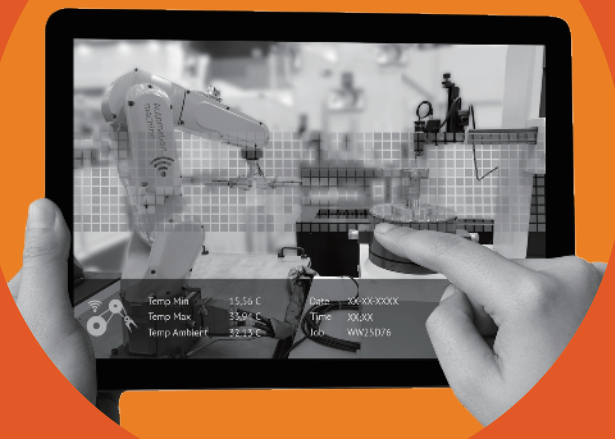
ufi Approved Event

Chinaplas® 国际橡塑展 2022

Chinaplas
国际橡塑展

New Era •
New Potential •
Innovation for Sustainability

Shanghai
National Exhibition & Convention Center, PR China



2022

4·25 / 4·28

CHINAPLAS

Hong Kong (852) 2811 8897 | Singapore (65) 6631 8955 (852) 9602 5262

Chinaplas.PR@adsale.com.hk | www.adsale.com.hk

www.ChinaplasOnline.com

Organizer: ADSALE 雅式 ® ufi Member

Co-organizer: Messe Düsseldorf China

Sponsor: EUROMAP European Plastics and Rubber Machinery

Official Publications & Online Media: ADSALE 雅式 Adsale Plastics Network AdsaleCPRJ.com | CPRJ International China Plastics & Rubber Journal 中国塑料橡胶 AdsaleCPRJ.com

smart-molding international 4/2021

VM Verlag GmbH: P.O.Box 501812, D- 50879 Cologne, Germany

EDITORS
Konstantin Faticzev (Editor-in-Chief)
Tel. +49 152 05626122
editor@smart-molding.com

ADVERTISING SALES
Martina Lerner
Tel. +49 6226 971515
lerner-media@t-online.de
Bella Eidlin
Tel. +49 152 29907895
b.eidlin@vm-verlag.com
Maria Tarasova
Tel. +37 25 7788024
mtarasova@smart-molding.com
Olga Kirchner
Tel. +49 152 05626122
o.kirchner@vm-verlag.com

ADMINISTRATION
Alla Kravets
Tel. +49 2233 949 8793
a.kravets@vm-verlag.com

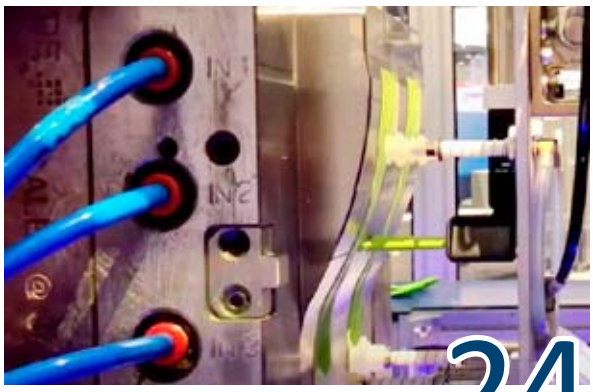
Front page picture: Schall

Index of companies in this issue

CONTENTS

18

ENGEL's stand at Fakuma 2021 put the spotlight on sustainability. The production of decorated monomaterial food packaging and the processing of regrind from labelling waste is supporting circular economy by creating a process chain. At the same time, the company was celebrating the world première of the 4,200 kN version of the ENGEL e-speed injection moulding machine. The sophisticated packaging application combines extreme thin-wall injection compression moulding with stack mould technology.



24

At the recent PLASTEC WEST FCS showcased the Advanced Servo Hydraulic Injection Molding Machine (FA Series), which was based on the theme of food packaging containers and modular specification selection, flexible to meet the industrial needs of food packaging and thin-walled containers. The FA-100 with a clamping force of 100 tons was presented at the exhibition, producing 2-cavity mold of 14g cutlery with an average cycle time of 25 seconds. FA series is highly efficient, stable, and energy-saving.

The SmartPlus 180 exhibited at the Fakuma is the first model to be presented to the general public from a new machine series entirely based on the concept of the proven SmartPower series from WITTMANN BATTENFELD. The name given to the SmartPlus machine series has been derived from its large number of “smart” attributes, from the compact design of its machine body, its intelligent, energysaving drive system and simple, central hydraulic clamping system, right up to injection control via a highly dynamic servo drive.

The Fakuma plastics trade fair started with high expectations also for the machine manufacturer BOY located in Neustadt-Fernthal. After three years of abstinence, the event could take place again as a presence trade fair for the first time. Despite a slightly lower number of visitors, the medium-sized company was highly satisfied. A new operating option via voice input provoked a high demand potential. Many asked for information on possibilities and advantages of a voice control of injection moulding machines.

Multiple hot runner applications with very narrow nozzle pitch dimensions are, especially when using valve gate technology, a major challenge for designers. A needle drive needs space, which means that the distribution of the melt in the manifold is usually associated with restrictions when using a valve gating system. With the HASCO Streamrunner®, the first additively manufactured hot runner on the market, now completely new and space-saving options are also available for valve gate systems.

LANXESS employs a range of calculation models, allowing it to precisely simulate the draping process and so predict and analyze the forming effects and respond accordingly. Not only can LANXESS determine the optimum 2D cutting geometries of the blank, but the forming behavior of the blank can be analyzed virtually and in line with the customer’s tooling concept so that weaknesses can be identified and eliminated early on. This generates huge savings potential in the design of these processes.

Fakuma 2021: inspiring plastics live!

The 27th Fakuma international trade fair for plastics processing celebrated an inspiring restart in Friedrichshafen from the 12th through the 16th of October, 2021. 1470 exhibitors from 39 countries came to Lake Constance for the first major international on-site event for the plastics industry this fall, and presented injection moulding, extrusion technology, thermoforming and 3D printing on a world-class level Overall emphasis was placed on the issues of sustainability, circular economy and recycling.

"We're back! Finally an on-site trade fair again with innovations you can actually handle!" This is what everyone was saying at this year's Fakuma 2021 in the exhibition halls in Friedrichshafen. After the compulsory one-year hiatus, the event was held live again from 12 to 16 October. 1470 exhibitors from 39 countries showcased their innovations covering all aspects of injection moulding, extrusion technology, thermoforming and 3D printing on 85,000 square metres of overall exhibition floor space. The fact that 40% of the exhibitors came from outside of Germany substantiates Fakuma's great significance all over the world, especially in these exceptional times: "For the companies in our industry sector, Fakuma is one of the most important industrial trade fairs of all," notes Annemarie Schur, Fakuma project manager at trade fair promoters P. E. Schall. "Fakuma was even more important this year. On the one hand because on-site trade fairs only became possible again in the fall of 2021, and on the other hand because the issues of environmental protection, circular economy and sustainability are an enormous task that we all have to tackle." This is why Fakuma 2021 also set itself the goal of making a significant contribution to pioneering, forward-looking solutions.

"Now we want to look forward to the future together," said Bettina Schall, trade fair organiser and managing director of P. E. Schall GmbH & Co. KG. "Fakuma is the ideal platform for tackling the current challenges faced by the industry. Record figures and superlatives don't matter this fall. The only thing that counts is that we all cooperate to get this restart going and carry on with our work."

The exhibition halls in Friedrichshafen were very well frequented right from the first day of the event. Interested expert visitors were able to gain an impression of the latest developments and perspectives for concrete solutions in the field of plastics processing. "Many tradition-rich global market leaders have made use of the crisis to advance their innovations. The trend towards digitalisation is accelerating. Cross-company concepts have been developed for the establishment of a circular economy for plastic products. Every crisis presents opportunities too, and many a clever mind is taking advantage of them," confirms Sandra Füllsack as well, managing director of Motan Holding GmbH and spokesperson for the Fakuma exhibitor advisory committee. "As a business platform for innovations throughout the value-added chain, Fakuma 2021 was once again the ideal venue for presenting new products and technological solutions, as well as for discussing trendsetting issues." Extremely practical and with high levels of professional competence, and at the same time in a friendly atmosphere – this is how exhibitors and expert visitors regard the unique and highly esteemed industry event. The next international trade fair for plastics processing, namely the 28th Fakuma, will take place from the 17th through the 21st of October, 2023.

The Friedrichshafen exhibition halls were very well attended from the very first day of the fair (Photo: Schall / agentur kindt)

VM Verlag GmbH Publishing House magazines at Fakuma 2021 (Photo: VM Verlag)

Schall
www.fakuma-messe.de

A successful Fakuma 2021: Largest stand and innovative exhibits

From 12 to 16 October 2021, ARBURG made a clear statement in favour of Fakuma with the largest trade fair stand and the presentation of many new products, including those from the ARBURG Family. Under the trade fair motto “The best of both worlds”, ARBURG 2021 brought together the major topics of the future – digitalisation as well as sustainability and the conservation of resources.

Positive feedback

“After a long time with no major international in-person trade fair in Europe, we travelled to Friedrichshafen with a great deal of joy and excitement, and were hoping for a Fakuma that was as ‘normal’ as possible,” commented Dr Christoph Schumacher, Director of Marketing at ARBURG. “Our expectations were more than met: the quality of the trade visitors and their interest in our exhibits and innovations was very high. Many decision-makers came to our stand to discuss specific projects.”

Topics of the future, exciting live exhibits and world premieres

With arburgGREENworld and arburgXworld, ARBURG combined major topics of the future at its Fakuma trade fair stand – digitalisation as well as sustainability and resource conservation – with its declared aim of increasing customers’ production efficiency and making them future-proof in the long term. Just how sustainability and digitalisation interact was demonstrated by the “CurveCode” and “HolyGrail” marking technologies as innovative solutions for separating plastics by type and returning them to the materials cycle.

Everything digital? “arburgXworld” was a central theme on the ARBURG stand

arburgGREENworld

The sustainable production of plastic parts and their return to the recyclable materials cycle (circular economy) was illustrated by ARBURG using innovative application examples. These will include separation by type using a digital watermark ("HolyGrail2.0" and "CurveCode") during production of IML and espresso cups. A real eye-catcher are "green" sunglasses made of bio-based PA12 and produced on a sophisticated turnkey system.

arburgXworld

ARBURG puts a great deal of know-how into its customer portal "arburgXworld" and the development of new digital services and features that bring genuine added value, such as the "AnalyticsCenter" for process analysis. Another innovation is that it will also be possible to integrate machines and peripheral devices from other manufacturers into the central platform in future.

Trade fair premiere and innovative applications

Other highlights included the premiere of the new ALLROUNDER MORE series, the production of mass-produced medical devices, a “smart” turnkey system based on an electric ALLROUNDER 570 A and the production of masks made of LSR.

The area of additive manufacturing, with an ARBURG freeformer and the exhibit of sister company innovatiQ, rounded off the Fakuma presentation.

ARBURG
www.arburg.com

World premiere at Fakuma: The new Allrounder More multi-component machine (all photos: ARBURG)

NETSTAL at Fakuma: Innovative packaging application and comprehensive services

In keeping with the motto "circular economy meets digital", NETSTAL and its partners were presenting at Fakuma a packaging solution with reduced plastic content and the e-Service, which is available to all users free of charge.

At the spotlight

On an ELION 2200-1000, 1.2 liter SPIES PC round pails with paper chassis are produced. A pre-printed band of coated cardboard is inserted into the two cavities of the mold using IML robotics. A PP plastic is then injected via channels to fill the rim of the bucket and firmly bond it to the cardboard band. The cycle time is 5 seconds. Robotics removes the finished pails and stacks them on a conveyor belt after a camera check. Subsequently, the pail stacks are packed fully automatically into provided boxes with the help of a SMART COBOT BOXING robot. System partners of the exhibit are SPIES Kunststoffe, Muller Technology Conthey, Motan colortronic, EF cooling, SABIC, Storaenso and Engelhardt Etikett.

With this application, NETSTAL and its development partners demonstrate a novel 1.2 liter pail with minimal weight and maximum content of renewable raw materials. To ensure durability of the contents and tightness, the cardboard sleeves are coated with PP and have plastic seams. The design possibilities of the label are just as perfect as with the classic thin-wall packaging, which is decorated using the IML process.

Maximum injection performance with perfect precision and repeatability

The skeleton framework, injection-molded from PP, has a wall thickness of 0.92mm in the area of the flow bars. The plastic content of a round bucket is only 11.5 grams. In order to be able to reliably reproduce the fine structures with high shot weight consistency, high injection performance with precise control is essential. This is a task for which the ELION 2200 in the version with hybrid injection unit and double valve technology is predestined. The flow path/wall thickness ratio of this application is 1:305, which requires very high injection dynamics. Also of key importance: plasticizing must be perfectly designed to ensure optimum color homogeneity. Despite its enormous performance capacity, the ELION operates very energy-efficiently. For high overall system effectiveness, all peripherals have been integrated into the aXos machine control system. The optional SMART OPERATION 4-key control system supports users in achieving their efficiency targets. Guided operation reliably prevents operating errors and unplanned downtimes.

Free NETSTAL e-Service

In the Service Corner of the booth in hall B5, visitors could gather information about the wide range of services offered as part of the NETSTAL Life Cycle concept. In addition to the classic offerings, NETSTAL has been offering its own online service portal since 2018. The document repository included in the e-SERVICE eliminates the need to search for specific machine documents. The innovative platform provides clear access to electrical diagrams, technical data as well as setting instructions. Quick identification and ordering of spare parts is made possible by the integrated 3D spare parts catalog with graphical visualization of the individual machine components. With the user-friendly ticketing system, support can be requested directly from a distance in the event of service. The e-Service is part of the scope of delivery of all NETSTAL machines and can be used by all customers free of charge.

NETSTAL
www.netstal.com/de

Photo: NETSTAL

ENGEL: Fakuma 2021 inspires injection moulding industry

Fakuma 2021 was a great success for ENGEL. "The positive trade fair experience underlines the economic upward trend and is driving investment in new technologies," as Dr. Christoph Steger, CSO of the ENGEL Group, emphasises at the conclusion of the industry event in Friedrichshafen. "Our customers grasped the opportunity to finally exchange ideas in person again and experience innovations in real and live terms."

The industry's first major live event after the automotive crisis and Corona pandemic took place at exactly the right time. "The automotive industry has come back with a bang, and the investment backlog has cleared," says Steger. "Even if the Corona pandemic is still preventing some travel, ENGEL's stand was well attended. We had some excellent talks, concluded numerous projects and got new ones underway." Visitors came from all industries. Besides the automotive industry, the medical technologies, packaging and technical moulding sectors were strongly represented.

Leveraging the full potential of the machines

In particular, innovative solutions for more sustainability in injection moulding and further digitalisation of production processes met with great interest. The two topics are closely linked. "Digitalisation is an important precursor to the circular economy", said Steger. "Smart assistance systems and interconnected systems help us to leverage the full potential of injection moulding machines, for more efficient production while reducing the CO2 footprint." ENGEL's trade fair stand made this vividly clear. Compared to the last Fakuma, ENGEL's stand has become larger. The additional space was used to present digital products and solutions.

The machine exhibits also demonstrated the new opportunities for the circular economy. ENGEL presented a closed process chain for polypropylene involving the production of mono-material food packaging using IML thin-wall technology and the production of protective covers from label offcuts. At the same time, the ENGEL e-speed 420 injection moulding machine celebrated its world premiere. "Hybrid and all-electric injection moulding machines are seeing deployment in an increasing number of applications," says Steger, emphasising another trend that was reflected at ENGEL's stand. Demanding precision applications gave insights into the performance of the various hybrid and all-electric machine series by ENGEL during the five days of the trade fair.

ENGEL
www.engelglobal.com

The stand attracted a constant stream of visitors throughout. In particular, innovative solutions for more sustainability and further digitalisation of production processes met with great interest (all photos: ENGEL)

Husky showcased breakthrough injection molding technology

Husky Injection Molding Systems, Ltd., a leading industrial technology provider to the plastics processing community, was showcasing its latest hot runner and controller technology innovations, as well as its medical manufacturing solutions, at Fakuma 2021 in Friedrichshafen, Germany this October. During the return to in-person trade fairs, Husky was exhibiting on two booths, including:

Hot Runners and Controllers booth that was presenting:

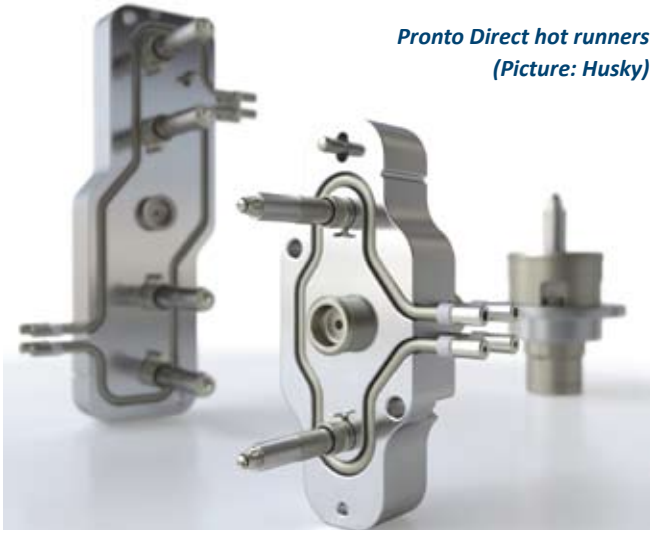
• The live debut of the new UltraShot™ Injection System, a revolutionary display of injection molding technology designed to increase overall part design freedom.

• The latest addition to Husky's hot runner portfolio – Pronto Direct™ – which offers outstanding flexibility, value and performance and is ideal for automotive, packaging and consumer electronics part molding.

• An exclusive preview of the new online shopping experience where customers can spec, configure and get quotes on a range of hot runner and controller solutions.

Medical Manufacturing Solutions booth, featuring:

• An up-close look at the company's specialized molding solution for pipette tip manufacturing, powered by Schottli™ mold solutions. This innovative mold technology incorporates a compact cluster design and lateral symmetrical gating – enabling high volumes and significant material savings while achieving the highest standards of quality.



Pronto Direct hot runners (Picture: Husky)

•An introduction to the company's new integrated system approach for medical device manufacturing for a wide variety of medical applications, such as pipette tips, syringes, blood collection tubes and more.

Husky
www.husky.co

HASCO innovations at Fakuma

As a leading manufacturer of standardised modular quality mould components and customised hot runner systems, HASCO offers innovative and economical solutions for designers, mouldmakers and injection moulders, all from a single source. Numerous new developments and additions to existing product ranges, together with user-friendly tools, CAD features and digital services were presented live at Fakuma 2021.

HASCO product range (picture: HASCO)

Among the highlights were a new multicoupling system, which allows the central connection of cooling lines, an innovative securing system for ejector assemblies that guarantees damage-free transport of moulding tools, and a round locating unit that ensures precise, offset-free centering of injection moulding tools and mould inserts.

The proven HASCO portfolio is rounded off by numerous additions to the company's range of cooling devices and latch locking devices, with a variety of combination possibilities, plus around 170 additional ejector sizes.

HASCO hot runner was showcasing the innovative Primezone H1281 range of control units, together with a new 4-fold control unit of the Basezone H1250 range. Both control units stand out through their intuitive operation, precise control and maximum production reliability.

Another area of focus at the show was the innovative Streamrunner®. The world's first additively manufactured hot runner system on the market will in future also be available as a needle valve version. This could be seen on the HASCO stand in the form of a compact, fully balanced 20-fold system. Another innovation in the portfolio of needle valve shutter technology was the flanged, pneumatic needle valve unit.

HASCO
www.hasco.com

Meusburger highlights at Fakuma

From 12 to 16 October Meusburger was represented at Fakuma, the international trade fair for plastics processing in Friedrichshafen, Germany. The range for injection moulders as well as the standard and custom hot runner systems were in the spotlight. The visitors also got the first look at Meusburger's brand new trade fair stand design. Another particular highlight at the stand was the Engel injection moulding machine, which visitors were able to watch live in action producing bread boxes.

Benefit from Meusburger's range for injection moulders

There was a particular focus on the range for injection moulders at this year's Fakuma. Two things are essential for reliable and smooth operation: the use of high-quality moulds and the fast delivery of replacement parts. Meusburger offers a wide range of over 96,000 items of high quality and functionality. In addition, all items are immediately available from stock. This saves customers time and money when purchasing and operating. Meusburger also has an area on their website especially for injection moulders, which provides optimal support for customers in keeping an overview of the wide product range.

Highly standardised and custom solutions for hot runner systems

Hot runner systems also played a big role at the Meusburger stand for this year's Fakuma. The standard parts manufacturer's hot runner system experts have over 55 years of extensive experience with complicated applications and their requirements, including physical properties, materials, functional integration, surface quality and complicated designs. Meusburger offers both standardised hot runner systems and also customised solutions. From the engineering and design phase to commissioning through to maintenance, Meusburger customers are supported throughout the entire process and receive feedback within 24 hours in every phase of the project. The visitors at this year's Fakuma were able to speak to the field engineers at the Meusburger stand and find out about the extensive hot runner range.

Digital tools to simplify your everyday work

A further highlight at the newly designed trade fair stand was the special area for designers, where the functions and areas of the Meusburger online world were also presented. Visitors had the opportunity, for example, to take a look at the wizards and configurators for mould bases, which make it possible to assemble compatible plates, calculate the corresponding components and export the CAD data.

Meusburger
www.meusburger.com

Meusburger presents highlights at the Fakuma 2021 (picture: Meusburger)

Stratasys to acquire outstanding stake in Xaar 3D

Stratasys Ltd. (NASDAQ: SSYS), a leader in polymer 3D printing solutions, announced in October the decision to acquire all remaining shares of Xaar 3D Ltd. from Xaar plc (LON: XAR), accelerating the company's growth in production-scale 3D printing. Stratasys previously owned a 45% stake in Xaar 3D.

In April 2021, Stratasys introduced the Stratasys H350™ 3D printer, the first system powered by Xaar 3D's powder-based SAF™ technology. Representing the culmination of more than 10 years of research and development, SAF-based 3D printers are designed to deliver cost-competitive parts at production-level throughput. Since the announcement, the H350 has been successfully installed at Stratasys Direct Manufacturing and various beta customer sites in Europe and the U.S., with general availability expected before the end of this year.

"We are committed to being the leading provider of production-scale polymer 3D printing for our customers as additive manufacturing continues to transform industries around the world," said Stratasys CEO Dr. Yoav Zeif. "The H350 printer and SAF technology are central to that mission, giving us a powerful platform for meeting the needs of customers in industries such as commercial goods, automotive, consumer goods, and consumer electronics. Customers tell us this technology's consistent performance at higher volumes helps them grow their businesses and provides them a significant competitive advantage. We are excited to welcome the outstanding team of innovators from Xaar 3D to the Stratasys family."

H Series™ Production Platform printers such as the H350 are designed to deliver part quality, consistency, and reliability that ensures customer satisfaction and high production yield. Using SAF technology, the printers execute key 3D printing steps in the same direction across the print bed to provide a uniform thermal experience – and therefore part consistency – for all printed parts regardless of their placement in the build. This represents a significant improvement over traditional powder-bed fusion processes.

Stratasys H350™ 3D printer, the first system powered by Xaar 3D's powder-based SAF™ technology (Picture: Stratasys)

H Series printers are also designed for production control. Leveraging multiple onboard sensors, build data is logged for process traceability and remains fully under customer control. Materials can be controlled, tracked, and traced, and print settings can be fine-tuned for each customer's needs.

The Xaar 3D team will join Stratasys to continue leading the development of the H Series platform and SAF technology.

"We formed Xaar 3D on the premise that we could help existing powder bed technology make a major leap forward, and that's what's happening thanks to SAF technology," said Ronen Cohen, General Manager of Xaar 3D Ltd. "We have been able to significantly improve thermal management for more consistent and reliable parts while giving customers the production control they need. As part of Stratasys, we will continue to rapidly advance H Series 3D printer development while leveraging Stratasys' global go-to-market infrastructure and blue-chip customer relationships to enable more customers to benefit from SAF-powered additive manufacturing."

Stratasys
www.stratasys.com

KraussMaffei Group France S.A.S under new management

Christophe Longuet has taken over management of the KraussMaffei business in France. Effective January 1, 2022, Longuet will take the helm of KraussMaffei Group France S.A.S. as President. His predecessor Jacques Socquet will focus on the NETSTAL business in France with immediate effect and take over management of the newly established NETSTAL company in France as of January 1, 2022. NETSTAL returned to operating independently within the KraussMaffei Group in October 2021.

Longuet carries with him over 15 years of international sales and marketing experience, including positions as Commercial Director France and Marketing Director Southern Africa in the automotive and renewable energy industries.

Davide Pagliarulo, Director Sales New Machines Western Europe, "We are delighted to welcome Christophe to our company and are optimistic about our future joint steps towards further growth in France."

from left to right: Benjamin Albrecht: Head of Area Manager Service West Europe/Africa Christophe Longuet: President KraussMaffei Group France Tobias Daniel: Vice President Sales New Machines, Chairman Board of Directors KraussMaffei France Davide Pagliarulo: Sales Director West Europe New Machines (photo: KraussMaffei)

Longuet says of his new duties, "I am looking forward to the new challenges and working closely with the excellent team in France. The common goal is to further strengthen our business in the French market, where KraussMaffei holds a leading position. We want to achieve this by introducing new products, services and processes and by focusing on innovation. I am sure that in this way we will bring about a positive change for KraussMaffei France."

Thanking Jacques Socquet, who is moving to KraussMaffei subsidiary NETSTAL, Tobias Daniel, Vice President Sales New Machines and Chairman of the Board of Directors KraussMaffei France, said, "I have always appreciated his commitment and achievements over the past years and wish him all the best in his future role."

KraussMaffei
www.kraussmaffei.com

KEBA honoured with "Austria's Best Managed Companies" Award

Management Board KEBA AG (f.l.t.r.): Andreas Schoberleitner: CFO, Gerhard Luftensteiner: CEO and Franz Höller: CTO (Photo: KEBA)

The international Best Managed Companies programme, which is already established in more than 30 countries and awards outstandingly managed companies, was carried out in Austria for the first time this year. KEBA is one of the first Austrian award winners.

The programme is based on an evaluation process according to international standards, which is accompanied by Deloitte and comprises four central evaluation criteria: governance & finance, strategy, productivity & innovation, and culture & commitment. Based on the results of the analysis, a jury of independent experts determines which companies are awarded the title of Austria's Best Managed Companies.

KEBA took part in this extensive evaluation process, which included personal interviews by experts in the company itself as well as an intensive examination of the business development of the last few years.

"We are very pleased to receive the internationally renowned Best Managed Companies Award. It is a confirmation of our innovative strength and the way we work. Agility and self-responsibility characterise KEBA as well as the extraordinary commitment of our employees. As the last 18 months have shown, we are on the right course with this attitude, even in volatile times." – Gerhard Luftensteiner, CEO of KEBA AG.

KEBA
www.keba.com

WITTMANN BATTENFELD machine Health Factor

Picture: WITTMANN BATTENFELD

WITTMANN BATTENFELD has developed an easy-to-understand and robust performance indicator that shows the health of hydraulic driven units and pumps at a glance. Among other benefits, it enables required maintenance work to be scheduled more effectively.

The servo-pumps in injection molding machines are what drive the movement of the main hydraulic units. These include the clamping unit, ejector, injection unit, and the injection and metering systems. Reliably manufacturing components to a high quality depends on the pumps operating properly.

"Health Factor" developed by WITTMANN BATTENFELD indicates the health status of the main hydraulic units, from which the condition of the pumps can be deduced. The unit related performance indicators computed from the "Health Factor" not only take into account a multitude of internal process parameters of the respective drivetrain in real time, but draw on historical trend values too. If the performance indicator falls for just one unit, it means that only this unit is showing wear. If the performance indicators decrease for all units, it indicates a general pump or wear issue. The information not only allows repair and maintenance work to be planned more effectively, but to target the unit or pump in question. The operator can order the required parts in good time and schedule downtime for the repair work so as to minimize disruption to the ongoing production operation.

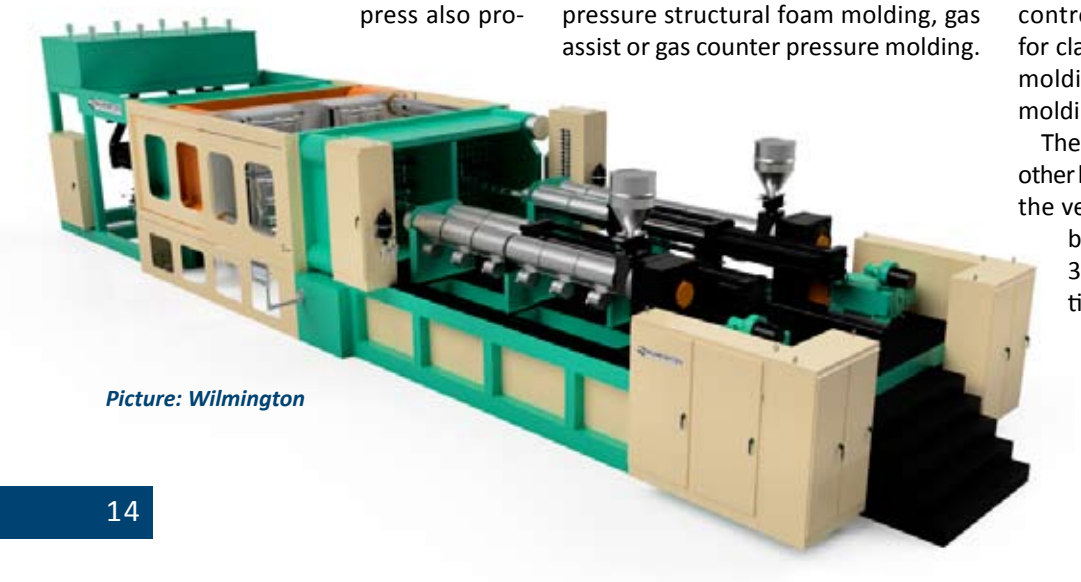
The company's current developments are focused on the health status of electrically driven units.

WITTMANN BATTENFELD
www.wittmann-group.com

New Wilmington HE Series low pressure injection molding machines

The Wilmington HE Series (horizontal elevated) have been completely redesigned to incorporate all of the features and more that are currently available on the company's' low profile models. The new machines have an elevated press that provides for both robotic and beneath the press molded product removal. This same space below the press also provides the clearance necessary for large molds with vertical core movements. Presses are available in 750, 1000, and 1500 tons clamping forces.

The injection unit of the new machines are also elevated which provides for a raised deck for ease of setup of nozzle/manifold components when the machines are being used for classic low pressure structural foam molding, gas assist or gas counter pressure molding.



Picture: Wilmington

Both single and dual two-stage (extruder/accumulator) or reciprocating injection with capacities of 75 – 300 lb. shot capacity and 1500 – 6000 lb./hr. melting capacity are available.

The Versafil controls of the new machines in addition to controlling basic temperature, press motion and injection velocity/pressure also provide for remote troubleshooting, SPC charting, trend analysis, graphing, integrated auxiliary control, all on a large "smart" flat colored panel display. The Versafil control injection feature is standard for classic multi-nozzle structural foam molding and adaptable to hot runner molding.

The new HE Series models join the 9 other low-profile horizontal machines and the vertical machines that Wilmington builds in clamping capacities of 350 – 2000 tons and shot capacities of 25 – 300 lbs.

Wilmington
www.wilmingtonmachinery.com

Sumitomo (SHI) Demag presents a fully optimised LSR production cell

All pictures: Sumitomo (SHI) Demag

Sumitomo (SHI) Demag Plastics Machinery GmbH, Schwaig, Germany, unveiled a state-of-the-art elastomer injection moulding system at Fakuma 2021. For its inaugural presentation on the global stage, the LSR package featured a fully automated Nexus metering system on an all-electric IntElect 130/520-450. All was integrated seamlessly with the company's new own-branded SAM-C kinematic robotic system and meeting the new 2021 OPC-UA 40082-3 standard for LSR dosing systems to optimise and control and processing stability on automotive applications.

Demonstrating the production of a complex freeform automotive axial seal on Sumitomo (SHI) Demag's LSR exhibit, the seal is designed to be moulded using a 'direct gate' without material closure. Describing the processing challenges a high spec component like this presents, Henrik Langwald, Director Automotive & Electronics explains: "The sealing lip must be completely pronounced to offer full functionality. We are setting a new benchmark to repeatably mould the tightest tolerances in 16 cavities, burr-free, with no conversion," he succinctly sums up.

Produced using a Nexus two-plate tool, a retainer keeps the seal component stable on the ejector side. The newly launched SAM-C 'handle & place' cartesian robot developed in-house by Sumitomo (SHI) Demag then removes and stores the part. This involves working with a cold runner needle closure system and direct injection. The tool concept includes interchangeable inserts, ensuring the highest product flexibility. As a result of the high precision processing, stability is maintained to deliver the optimal sealing requirements so critical for automotive safety.

Aligned in efficiency and processing stability

An important component of the innovative production solution is the ServoMix Z200 metering system from Nexus. "The system is unsupported and the barrel can be swiftly and safely changed in less than five minutes from an angle of up to 104 degrees," reports Langwald. This provides easy and faster access for cleaning and maintenance, as well as helping to eliminate human errors.

Additionally, the new generation metering system also features numerous interfaces, including the TrueFlow Nano colour control to ensure precise dosing of colour additives, as well as a calibration function. Material flows are measured in microlitres for major components, with additives measured in nanolitres.

OPC-UA-ready, the flowmeter design features a quick-change pump body with measuring cells located directly on the pump body. Another advantage of this design is faster cleaning of the injection moulding screw. Additionally, all new dosing devices now feature the newly-released OPC-UA interface, directly linking metering measurement data of with the IntElect 130/520-450 processing data, ensuring a fully traceable and stable production process. "The timeshot or balancing system in the mould can be mirrored by the injection moulding machine via VNC," adds Langwald.

Compared to hydraulic systems, the newest ServoMix models report low energy consumption. They work more sustainably, and there is much less waste and material consumption. By regulating the flow rate according to actual requirements, users can save up to 70 percent in energy. The material loss due to residual quantities in the barrel amounts to less than 0.3%. "Overall, the systems are more environmentally friendly," states Langwald, referencing the company's "Act! Sustainably" corporate mission and CSR statement which underpins Sumitomo (SHI) Demag's efforts and future machinery and equipment innovations.

Sumitomo (SHI) Demag
www.sumitomo-shi-demag.eu

The eco-design solutions of the partnership between Texen and Roctool

Picture: Roctool

Just one year ago, Texen and Roctool signed a collaboration agreement to support Texen's customers in their ecological transition through a complementary value proposition. Today, collaboration is intensifying in a logic of proactivity. Texen has just launched its first production and is investing more heavily in new Roctool production systems under its BESST (Beauty + Experience + Sensation + Surface by Texen) Transform brand.

At the origin of this non-exclusive partnership, the two actors are committed to clearly identified strategic issues. On the one hand Texen whose mission is to transform the material into experience in a virtuous way, on the other Roctool whose technological innovation brings real opportunities in the transformation and sublimation of new generation materials.

Keeping the commitments made to the market

After the installation of the first Roctool equipment in 2020, Texen is accelerating the deployment of the technology on its French industrial park. Several of its production lines are now equipped with new Roctool systems. In order to offer a co-development force to its customers, the Texen lab, equipped since the beginning of 2021, offers ways to address the cross-challenges of sustainable design, competitiveness and Brand Equity.

In one year, this partnership approach was concretized by a first ultra-premium development in 100% recycled resin, the beginnings of an iconic makeup range for which the brand has chosen PCR resins.

Roctool
www.roctool.com

Bockatech and Trexel partner to increase benefits of foamed packaging applications

The new partnership will see Trexel and Bockatech working together to create more sustainable recyclable and reusable packaging. Applications include to-go food service, food retail, FMCG and industrial applications.

With headquarters in Wilmington, USA, Trexel has led the development of the MuCell® microcellular foam injection moulding technology and has pioneered many plastic processing solutions.

Specialists at the Bockatech R&D Centre with a Trexel MuCell P-300 Nitrogen delivery system (picture: Bockatech)

Bockatech initially developed EcoCore using chemical foaming agents (CFAs) in powder and liquid forms. These are added to the cold plastic resin pellets before injection moulding and produce gas when heated to create the foamed core of EcoCore mouldings.

Trexel MuCell works by adding gas, typically Nitrogen, into the plastic melt in the injection moulding machine screw. Advantages of using MuCell over CFAs include close control of the amount of gas added and a fine cellular structure.

Combining EcoCore and MuCell is significantly increasing the number of foamed plastic packaging applications and the benefits that can be achieved.

"Bockatech and Trexel started collaborating to enable us to better understand the actual benefits of using gas foaming agents, in place of chemical foaming agents, for packaging," said Chris Bocking, Founder and Chief Strategy Officer at Bockatech.

Currently, Bockatech is using Trexel's MuCell to develop innovative and more sustainable retail food packaging for one of the best-known US food brands and caps for a leading FMCG brand in Europe.

MuCell is a registered trademark of Trexel Inc.

Bockatech
www.bockatech.com

From petroleum to rapeseed oil

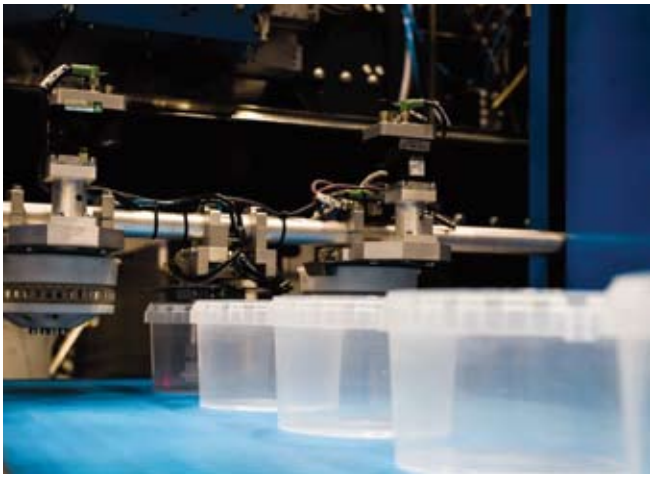
Dijkstra Plastics proudly announced in October of the acquisition of the International Sustainability and Carbon Certification, or ISCC Plus certification. Thanks to this certification, the company took another step in the development in the area of sustainable plastic packaging solutions. This gives Dijkstra Plastics the opportunity to use biological (bio-based) material as a raw material for their packaging tubs.

What is bio-based material?

Until now, the vast majority of polypropylene granulate has been made from fossil-based raw materials (petroleum). But more and more alternatives of more sustainable origin are available. For example, bio-based material is made from palm oil or rapeseed oil, amongst others, which can be used to make new polypropylene. By avoiding the use of petroleum to do this, Dijkstra Plastics achieves a great reduction in CO_2.

Alternative: Chemically recycled material

At the moment, Dijkstra Plastics predominantly offers Post-Consumer Recycled (PCR) material for the non-food market. Because this material comes from many sources and is processed into new granulate, it does not meet legal requirements for use as packaging material in the food industry. To realise this, the material must be broken down to molecular level, or chemically recycled. By recycling this material accordingly, all contaminant substances are removed from the raw material, and chemically recycled material can also be used in the food industry.



Picture: Dijkstra Plastics

Although this is not the end of the line, the company is proud to be able to collaborate on these projects that lay the foundation for the future. Dijkstra Plastics wants to make the packaging industry circular as well as sustainable.

Dijkstra Plastics
www.rdplastics.nl

75 percent plastic reduction

Muller Technology has collaborated with a leading European packaging manufacturer to develop the industry's first hybrid pail with strong barrier properties and a more sustainable packaging option.

Picture: Muller Technology

The new package takes a unique approach to improved sustainability. The injection moulded container consists of a polypropylene skeletal structure and a pre-cut paperboard label. The pail uses 75 per cent less plastic than typical PP pails of this volume. The container has 47 square centimetres of projected area with an L/T (flow length/wall thickness) ratio of 350. The container also incorporates a tamper-evident break-off tab made of PP. The Skel-Pac makes use of Muller's unique mold and IML technology, fully automated cobot case packing system, and vision inspection system.

Taras Konowal, Director of Sales and Marketing, North America, for Muller Technology, said: "We take our responsibility as stewards of the environment very seriously and we're committed to helping our customers meet the growing demands for more sustainable packaging. In response to volatile resin pricing, brand owners and packaging manufacturers are exploring alternative packaging that delivers sustainability benefits and cuts cost."

The manufacturing system features a two-cavity mould and a four-cavity IML base robot which results in a 4.5-5 sec cycle time. The hybrid pail offers an attractive shape while excellent printing and design capabilities showcase the brand. The new package is commercially available in Germany. Leading brand owners are considering this technology for a range of other food and non-food products.

Muller Technology
www.muller-technology.com

ENGEL e-speed injection moulding machines with hybrid injection unit and electric clamping unit promise very short cycle times, maximum precision and very high injection speeds for extreme energy efficiency

Thin-wall injection compression moulding for stack mould technology

ENGEL's stand at Fakuma 2021 put the spotlight on sustainability. The production of decorated monomaterial food packaging and the processing of regrind from labelling waste is supporting circular economy by creating a process chain. At the same time, the company was celebrating the world première of the 4,200 kN version of the ENGEL e-speed injection moulding machine. The sophisticated packaging application combines extreme thin-wall injection compression moulding with stack mould technology.

All the five days of Fakuma trade event, an e-speed 420/90 injection moulding machine with integrated in-mould labelling (IML) was used to produce ready-to-use margarine tubs from polypropylene in a fully automated injection compression process. The containers, which had a wall thickness of 0.4 mm (including the label), were removed from the 4+4-cavity stack mould via high-speed, side-entry automation and stacked on a discharge conveyor following camera-based quality control. Corporate partners at the trade show were MCC Verstraete, Plastisud, Campetella, Mevisco and Borealis.

The continuing trend for reducing wall thickness is leading to ever more extreme flow path/wall thickness ratios that are often in the range of 1:400. From a ratio of 1:300 and above, consistently high component quality in many applications can only be achieved by means of injection compression moulding. Other advantages of injection compression moulding technology include the lower clamping forces and injection pressures required in comparison with conventional compact injection moulding, plus the fact that even high-viscosity materials can be processed in a repeatable manner. Overall, this means reduced energy consumption and competitive unit costs.

Despite this, injection compression moulding tends to be seen as ruling out the use of a stack mould; this is because for many injection moulding machines, the speed of the platen movements is insufficient for a stack mould. For the ENGEL e-speed injection moulding machine – designed to handle the long-term, high-performance output required by the packaging industry – things are different. The electrically driven clamping unit and the toggle lever design facilitate very fast, short compression strokes – 4 mm in the case of the margarine tubs. The parallel movements can be controlled very exactly – the prerequisite for coordinating the compression stroke and injection profile to the necessary degree of precision.

High-performance e-speed machine available in new size

With the new e-speed size 420, which offers 4,200 kN of clamping force, ENGEL continues to diversify its product range, aiming to tailor its injec-

tion moulding machines and systems solutions even more closely to specific applications, thereby maximising overall efficiency. The ENGEL e-speed injection moulding machines with hybrid injection unit and electric clamping unit combine very short cycle times with maximum precision and very high injection speeds of up to 1,200 mm per second; they operate with extreme energy efficiency. An innovative energy recovery system absorbs braking energy from the platen movements and returns the stored energy to the motor – for example, to accelerate the mould mounting platens again.

The toggle lever is encapsulated to ensure particularly low oil consumption and maximum cleanliness. In this way, the machines of the e-speed series meet the strict requirements of the food industry as standard.

Intelligent labelling technology

The labels of MCC Verstraete, which were used for the production of the margarine tubs at Fakuma, were interactive. These labels are based on technology by Digimarc and, much like a QR code, Digimarc codes can be scanned with any smartphone camera. The main advantage of these is that they extend invisibly over the entire label surface. The camera can scan any point. Moreover, the codes do not interfere with the packaging design.

From production through retail and recycling, the interactive labels offer added value. Consumers can discover the details of the ingredients and manufacture for both the product and the packaging while shopping. And when the packaging has reached the end of its useful life, the label provides information on the recycling process. Where the containers and labels are made of the same material, interactive IML packaging becomes fully recyclable.

The food containers have a wall thickness of 0.4 mm including the label. At the trade fair, an e-speed 420/90 injection moulding machine with integrated IML was used to produce ready-to-use margarine tubs by means of a fully automated injection compression process

At the ENGEL stand, Pöppelmann tapered closures were produced from waste label offcuts. GPN 600 closures from KAPSTO's standard range provide protection in various logistical applications (All pictures: ENGEL)

From margarine tubs to tapered closures

The margarine tubs produced at the Fakuma event were made of polypropylene, as were the labels. At the end of its service life, the monomaterial packaging can be shredded as is the case for production waste from the manufacturing process; the raw material thereby obtained is used in the processing of new products. At its stand, ENGEL was demonstrating these possibilities by processing waste label offcuts in the form of regrind. An ENGEL victory 460/80 was used to produce Pöppelmann tapered closures from an 8-cavity mould. Like ENGEL, Germany-based Pöppelmann is pioneering the establishment of a circular economy for the plastics industry. Protective elements in Pöppelmann's KAPSTO product range are used in the logistical and construction fields, among others. The plastic in these products is 100% recycled material.

Recycling, thin-wall technology, energy efficiency and transparency of information are critical to the success of any circular economy – and ENGEL's stand at the trade fair was underlining this point. *smi*

ENGEL
www.engelglobal.com

SmartPlus 180
(All pictures: WITTMANN BATTENFELD)

WITTMANN BATTENFELD presented new SmartPlus

The highlight of the WITTMANN BATTENFELD exhibition at the Fakuma 2021 was the new SmartPlus. The outstanding features of this servo-hydraulic machine are its high level of cost efficiency, energy efficiency and repeatability.

The SmartPlus 180 exhibited at the Fakuma is the first model to be presented to the general public from a new machine series entirely based on the concept of the proven SmartPower series from WITTMANN BATTENFELD.

The name given to the SmartPlus machine series has been derived from its large number of "smart" attributes, from the compact design of its machine body, its intelligent, energy-saving drive system and simple, central hydraulic clamping system, right up to injection control via a highly dynamic servo drive.

While the SmartPower was designed as a high-end solution in the area of servo-hydraulic machines which can be configured with innumerable different equipment options, the SmartPlus will offer a limited choice of equipment and consequently cover the sector of standard applications. This is why it was decided to create a machine series primarily geared to less complex applications and with less need for equipment variance, without compromising on high quality standards. These considerations led to the birth of, the SmartPlus. Here, "Plus" stands for the added value this new machine series has to offer for the types of applications just mentioned.

Use of proven technologies and carefully selected options has made it possible to offer the SmartPlus with short delivery times and an excellent price/performance ratio.

The SmartPlus comes with the proven UNILOG B8 control system logic and the highperformance B8X hardware. These enable a higher clock frequency, shorter response times and higher repeatability in parts production, with user friendliness and the familiar visualization concept remaining unchanged. Like all other machines from WITTMANN BATTENFELD, the SmartPlus fully supports the integration of robots and auxiliaries under WITTMANN 4.0.

Of course, the SmartPlus is also equipped with the KERS energy recovery technology originally designed for

the EcoPower. To enable processing of regrind without any problems in the interest of sustainable production, this machine is also offered with the HiQ Flow® application software, a program to offset the viscosity fluctuations which often occur whenever this type of material is being processed.

All SmartPlus plasticizing/injection units are freely accessible, compact and swivel-mounted. The machines are all equipped as standard with a wear-resistant plasticizing unit. Another special feature of the SmartPlus is its further improved "Dive-on-Demand 2.0" drive technology. It increases the machine's response speed even more by a booster unit specially developed in-house, which enables a higher clock frequency. This drive unit is only activated as long as required for movements and pressure generation. During cooling times or cycle breaks for parts handling, the servo drive remains switched off and consumes no energy. In operation, "Drive-on-Demand 2.0" is the basis for highly dynamically controlled machine movements and short cycle times.

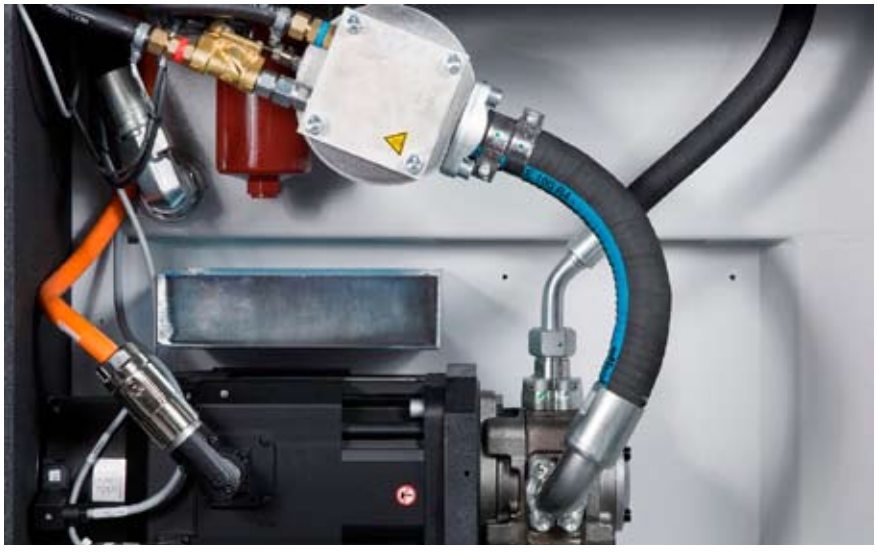
Like the SmartPower, the SmartPlus is also available as an Insider production cell version with an integrated parts handling system, conveyor belt and protective housing permanently connected with the machine, furthermore as an Ingrinder model with an integrated sprue picker, vacuum conveyor and granulator. The SmartPlus is already being used for practical test runs on the premises of selected customers.

The advantages of the new SmartPlus were demonstrated at the Fakuma 2021 on a SmartPlus 180/750. This machine is equipped with the HiQ Flow® application software, the new CMS-Light condition monitoring system to monitor an extended range of service-relevant machine parameters and a GRAVIMAX G14 gravimetric blender. The automation system, using a PRIMUS 26T robot from WITTMANN, is implemented via an Easy Cell developed and manufactured by WITTMANN BATTENFELD Deutschland in Nuremberg. The Easy Cell requires no safety gate and thus takes up only a minimal amount of space beside the injection molding machine. In spite of its compact design, customers receive the complete range of CE-compliant safety features.

On the SmartPlus 180/750 a hubcap for lawn mowers was manufactured from PP, using a mold supplied by Uralan, Germany. In the interest of sustainable manufacturing, the part was produced from a mixture of virgin material with regrind. ***smi***

WITTMANN BATTENFELD
www.wittmann-group.com

Swivel-mounted injection unit of the SmartPlus 60



"Drive-on-Demand 2.0" servo drive technology

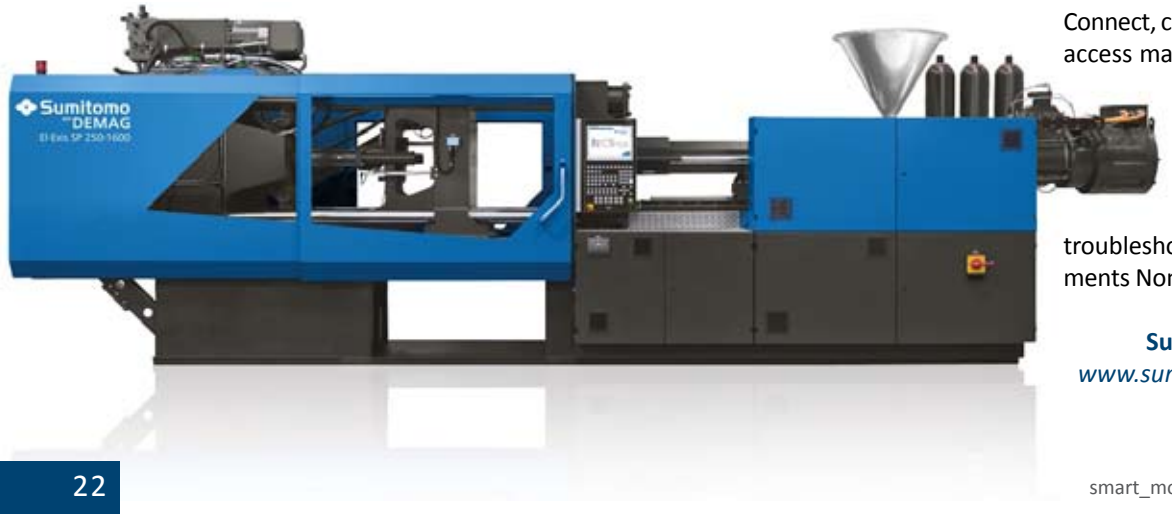
High-speed rotor achieves greater packaging sustainability

Sumitomo (SHI) Demag presented El-Exis SP 250 at Fakuma 2021. The fastest packaging machine on the market can produce ever thinner and lighter packaging items, significantly reducing raw material requirements, packaging waste and carbon footprint.

Sumitomo (SHI) Demag Plastics Machinery GmbH, Schwaig, exhibited a small version of its El-Exis SP 250 packaging machine series to Fakuma 2021. Available worldwide, the El Exis SP range, now comprises ten machines, with a clamping force range of 150 to 1,000 tons. At the trade fair in Friedrichshafen, a cup application, made from a ISCC Plus-certified polypropylene material, was impressively demonstrating the high speed, user-friendliness, sustainabillity and durability of this hybrid machine.

"The opening and closing sides of our machine are the fastest on the market," explains Arnaud Nomblot, Business Development Director, Packaging. “Achieving injection speeds of 1,000 mm/s with short cycle times is a direct result of the hydraulic accumulator. Further supporting the sustainability agenda, processors can produce ever thinner and lighter packaging items, significantly reducing raw material requirements, packaging waste and carbon footprint”, notes Nomblot.

Picture: Sumitomo (SHI) Demag



Revealing Act! "Sustainably" benefits

Unveiling the company’s new trade fair slogan Act! "Sustainably", the El-Exis SP series underpins Sumitomo (SHI) Demag‘s efforts and future production innovations. Integrated firmly into the company’s mission statement, only machines and equipment that are compatible with these ecological and corporate social responsibility credentials will be considered for production projects moving forward.

Examining the key post-pandemic packaging trends, Nomblot highlights that environmental compatibility and multi-purpose capability are now the most important decision factors for packaging moulders, along with price of “green” packaging and how product quality is perceived. Additionally, with the introduction of the EU Packaging Levy on non-recycled packaging waste within EU Member States, a shift towards more sustainable and single material packaging is inevitable.

“Thanks to our diversified machine portfolio and our high performance machines, we are in the position to meet all requirements and are therefore involved in nearly all new packaging projects,” verifies the packaging expert. Measured against competing technologies, not only is the El-Exis SP’s processing cycle time significantly shorter, the hybrid design also offers discernable energy efficiency advantages, Nomblot confirms.

Accelerating circular agenda

At Fakuma, the El-Exis SP 250 demonstration was showcasing the efficient production of four decorated cups every 5.5 seconds in collaboration with Société Nouvelle Caulonque, Soustons (France), supplier of the four-cavity mould tool. Feeding labels with precision into the packaging machine is an automated Spark IML system from Pagès Group, Foncine-le-Haut (France), with iPB Printing B.V., Reusel (Netherlands) supplying the high quality labels. Leader in recyclable materials Borealis, Vienna (Austria) supplied its BJ368MO PP copolymer for the trade fair application.

For optimum efficiency, the El-Exis SP 250 at the booth featured Sumitomo (SHI) Demag’s web-based "myConnect" software solution. Giving customers direct access to a wide range of fully networked support services, the central platform assists packaging production managers to better manage inefficiencies, reduce costs, improve total cost of ownership, troubleshoot errors and minimise machine downtime. "With myConnect, customers can instantly access machine documentation online. Additionally, our helpdesk experts can remotely access the machine and provide valuable troubleshooting support," comments Nomblot. ***smi***

Sumitomo (SHI) Demag
www.sumitomo-shi-demag.eu

Successful BOY-presence at Fakuma 2021

The Fakuma plastics trade fair started with high expectations also for the machine manufacturer BOY located in Neustadt-Fernthal. After three years of abstinence, the event could take place again as a presence trade fair for the first time. Despite a slightly lower number of visitors, the medium-sized company was highly satisfied.

Andreas Scheideler, Domestic Sales Manager, comments: "We had discussions of high quality and with good prospects. Many interesting projects could be initiated at Fakuma 2021 which offer great potential for the future." "This clearly distinguishes this presence fair from a digital or virtual event," adds Thomas Breiden, Marketing Manager at BOY. "Our success at Fakuma 2021 makes it clear that visitors want to experience an injection moulding machine live and have intensive technical discussions on site. A virtual trade fair simply can't offer that."

For Fakuma 2021, BOY attached special importance to the topics:

- Automation in the production process
- Increasing digitalisation of injection moulding machines
- Assistance systems directly at the machine

All four applications at the BOY booth were equipped with a BOY-automation. Three handling units BOY LR 5 removed the moulded parts from the mould, and on the BOY 80 E *hybrid*, the linear automation was even used for the further assembly of the two-component moulded part. A removal automation system completely integrated under the safety gate was demonstrated on the BOY 25 E. Here the pneumatic picker removed the moulded medical-technical part from the mould and placed it on a conveyor belt that is also integrated.

Visitors on the BOY booth showed great interest in the possibility of connecting the injection moulding machine via a WLAN-stick wirelessly to the internet with a simple hotspot via an internet-compatible mobile phone. Alternatively, the connection via the WLAN-stick can also be made into the existing company network. Once the connection is established, the BOY Customer Service can access the machine from Neustadt-Fernthal and support the user online.

With the "Moulding Assist" demonstrated at Fakuma 2021 for the first time, BOY is providing a software that can be used to identify and eliminate injection moulding defects. The digital and adaptive assistant provides the user with constructive solutions directly at the injection moulding machine. The functions of the Moulding Assist are started via a webserver and are callable from any injection moulding machine with a network connection. After the installation of the Moulding Assist on the machine, the complete machine manual can be opened via the web browser and the helpful BOY-app with cooling time and clamping force calculations as well as tables with processing data for many plastics can also be used.

Two further premieres complemented BOY's trade fair appearance at the Friedrichshafen event:

- Electro-mechanical ejector (for BOY 50 E – BOY 125 E) with a function independent of the main drive of the injection moulding machine and high dynamics as well as exact path positioning with synchronisation of ejector and handling movement
- Cooling water distribution with electronic flow rate recording (optional: temperature display with process data monitoring). The set flow rate is digitally recorded, displayed on the machine display and monitored.

More than just words…

A new operating option via voice input provoked a high demand potential among the visitors. Many asked for information on possibilities and advantages of a voice control of injection moulding machines. This could be demonstrated with a demo control on the BOY trade fair booth. With this acceptance test, the clever "BOYs" want to demonstrate further possibilities for digital assistance systems. **smi**

BOY
www.dr-boy.de

FCS pursues the target of carbon neutrality in the injection molding machine market

In recent years, the dynamic demand for plastic products and the development of new biodegradable materials have propelled the technology of the injection molding machine industry towards high precision, high efficiency, low energy consumption, environmental safety, and intelligence.

The invention and use of plastic have brought great convenience to people's daily life. In comparison with metal, stone, and wood, plastic products feature low cost and high plasticity, and are widely used in the national economy. But have you noticed that under the policy of plastic restriction and plastic ban, plastic has undergone great changes, including biodegradable plastic straws for bubble tea stores, and biodegradable lunch boxes for takeouts?

This phenomenon is due to the increasingly alarming problem of plastic pollution in the environment. Non-biodegradable plastic waste poses a huge environmental safety hazard. As China's environmental policies become stricter, plastic pollution prevention and treatment are expected to be strengthened and Taiwan's plastic product demand is gradually shifting to biodegradable materials which are more eco-friendly.

In recent years, the dynamic demand for plastic products and the development of new biodegradable materials have propelled the technology of the injection molding machine industry towards high precision, high efficiency, low energy consumption, environmental safety, and intelligence.

Downstream industries stimulate new demand to promote the steady development of injection molding machine industry

Injection molding machine is an important general manufacturing equipment in the industrial field. In the downstream of the injection molding machine industry, the prevalence of 5G products; 3C home appliances with precision and lightweight; and automobile weight reduction towards lightweight are the overall trend of each industry, which will greatly spur the demand for plastic.

On the one hand, the growth of the industrial output value of plastic products directly drives the demand for injection molding machines; on the other hand, the changing demand for plastic products and the R&D of plastic materials prompt the technology of injection molding machine manufacturers to innovate and develop, leading to new demand growth points, thus promoting the development of injection molding machine manufacturing industry.

Domestic substitution process speeds up, dual cycle promotes the upgrading of the traditional manufacturing industry

Along with the decline of the demographic dividend, the trend of machine substitution in has picked up speed, triggering the transformation and upgrading of the manufacturing industry and ushering in dividends in the general machinery industry.

Internal circulation drives consumption and industrial upgrading. China's demand for high-end machinery and equipment has been growing. Coupled with policy support and financial security, the vast space of China's high-end market is expected to boost the upgrade of domestic general machinery,

and give rise to a number of industry leaders.

The external circulation leads to the creation of global industry giants. The efficiency and price advantages of Chinese manufacturers are fully demonstrated during the pandemic, which may attract global capital and accelerate the upgrading of the industry.

At present, Chinese injection molding machine manufacturers mainly occupy the middle and low-end market, but in the high-end market, the leading companies are gradually narrowing the gap with foreign high-end companies. Against the background of the reduced revenue of downstream companies due to COVID-19, domestic injection molding machines with good quality and low cost are gaining more popularity among customers.

This is attributed to the fact that compared to imported injection molding machines, domestic injection molding machines have been improving in terms of technology and quality while maintaining their price advantage, which is certainly inseparable from the upgrading and optimization of hardware. At the 75th United Nations General Assembly in 2021, China solemnly announced its commitments to attain carbon emission peak by 2030 and carbon neutrality by 2060.

This marks, as the important domain of the manufacturing industry, the plastic machinery sector will undergo a bigger reform. Together with the "plastic restriction", higher requirements will be put forward for upgrading the equipment of manufacturing enterprises!

According to incomplete statistics, the market share of energy-efficient equipment in China is only around 3%, and the overall operating efficiency of energy-efficient products and systems is about 20% lower than that of developed countries. This indicates that China has a huge potential to enhance the energy efficiency of servo energy-saving equipment.

Advanced Servo Hydraulic Injection Molding Machine (FA Series)

At the recent PLASTEC WEST, the largest annual plastics exhibition in North America, FCS showcased the "Advanced Servo Hydraulic Injection Molding Machine (FA Series)", which was based on the theme of food packaging containers and modular specification selection, flexible to meet the industrial needs of food packaging and thin-walled containers.

Advanced servo hydraulic injection molding machine (FA Series)

FA-100: demolding process (All pictures: FCS)

This exhibition not only matched the demand of the China market but also was well received by the global market in the context of COVID-19!

The FA machine can be equipped with FCS' proprietary iMF4.0 Intelligent ManuFactory, which is also compatible with other injection molding machine brands, enabling production managers to keep track of production status. Currently, 30% of FCS customers in Taiwan have incorporated iMF4.0 into their production management, allowing them to reduce uncontrollable factors in the production process.

The FA-100 with a clamping force of 100 tons was presented at the exhibition, producing 2-cavity mold of 14g cutlery with an average cycle time of 25 seconds. FA series is highly efficient, stable, and energy-saving, which is suitable for household, stationery, automotive, 3C, home appliance industries, computers, and other peripheral parts.

Green and low-carbon sustainable development path has become an inevitable choice for enterprises, which accentuates the importance of energy-saving and high-efficiency injection molding machines for manufacturing enterprises. As a manufacturer of injection molding machines, FCS is actively promoting carbon neutrality in the injection molding machine market by improving its servo energy-saving injection molding machines, of which, this goal is both a comprehensive challenge and a manifestation of the social responsibility of FCS. **smi**

FCS
www.fcs.com.tw

A look into the production at Monoflo: Depending on customer requirements, up to 100% recycled material is processed (all photos: Monoflo)

"Two machines do the work of three"

Monoflo relies on automatic mold changes for ten heavyweight injection molding machines from the KraussMaffei MX series, manufacturing larger logistics packaging. Two new MX machines and seven GX 1100 machines are currently on order, some of them equipped for automated labeling, in mold labeling and palletizing.

From the distribution center to the supermarket, from the supplier to the automaker – and all the way to the assembly line by means of an automatic conveyor system. Goods are being moved everywhere. They need a sturdy container for solid protection. Monoflo in Virginia specializes in pallets, collapsible bulk containers, totes, and trays – and, since 2015, has been using technology from KraussMaffei.

At its Winchester location, about 70 miles from Washington, DC, ten heavyweight injection molding machines from the KraussMaffei MX series with clamping forces of 10,000 to 32,000 kN are in use already, and two new MX machines (one MX 1600 and one MX 2300) and seven GX 1100 machines are currently on order, some of them equipped for automated labeling, in mold labeling (IML) and palletizing. Monoflo is a family-owned company. It pursues a strategy of continuous expansion of its capacity and technologies to be ahead of the game in its market. Its claim is even printed right on the employees' uniforms – "Crafting Better Plastics."

At manufacturing locations in Virginia and Kansas, two hundred and fifty employees produce reusable transport packaging products such as pallets, collapsible bulk containers, totes with and without lids – some of them stackable – as well as trays and totes for automation solutions 24/7. Most Monoflo customers are from the logistics industry, followed by the automotive sector, automation and the food industry. Most of the products are standardized for each industry. Depending on the client, they can be produced in custom colors, marked with the client's name, and labeled to their exact specifications. The customer list includes global players such as Amazon, General Motors, Mercedes, and Aldi.

IML as new option for more profitability

Manufacturing efficiency and cost-efficiency are particularly valued at Monoflo. You have to keep this in mind if you want to introduce technologies that are not yet widespread in the US. In the words of Henning Rader, the CEO, "Currently we apply customer specific

barcode labels to totes and trays after they have been produced. Applying the barcode labels during the molding process using IML offers advantages, specifically when the products are used in cold storage applications or when they are frequently washed. The IML process permanently bonds the barcode label to the product during the molding process, thereby eliminating the chance for the label to separate from the product or become wrinkled. For this exact reason, we're going to start offering IML as an option on our products going into these applications. But IML will increase the cycle time which in turn affects the cost. This means we will have to see how receptive the market is, and we have ordered the GX machines with specifications that will allow us to do both conventional and IML labeling."

The collaboration between Monoflo and KraussMaffei began in 2015 – and it began with a bang, that is, a five-million-dollar deal. Rajesh Shah, a KraussMaffei sales person, had been keeping in touch continually for three years and happened to catch Monoflo at the right moment when machinery was needed for a new application. Henning Rader remembers, "Of course it is quite crazy to start such a large-scale project with a new partner, but we felt that KraussMaffei would be a perfect fit – and indeed it was. Their service is simply excellent. Together, we always find a solution for our challenges."

Mold change in just 9 minutes

How an area of concern resulted in a special highlight in the production hall. Automotive customers of Monoflo sometimes need only 500 pieces of a particular tote and 1000 of another, meaning that these molds must be changed relatively frequently. The net time requirement for a mold change is 45 minutes. But since there was not always a skilled mold setter available right away, the machine was sometimes down for multiple hours. The company searched for a remedy and found it in the automatic quick mold change system from KraussMaffei. Now the time that passes between the last part from the old mold to the first good part from the new mold is down to a mind-blowing nine minutes.

Broad product portfolio of large logistics packaging: Monoflo specializes in pallets, collapsible bulk containers, totes, and trays and thus supplies global players such as Amazon, General Motors, Mercedes and Aldi

Other special applications from KraussMaffei are also at work in Winchester. In an MX 3200 TwinForm, two components of a collapsible bulk box are created in one shot. The components are bonded to each other afterward, and since the charged material is often abrasive and sometimes highly viscous, the screws are designed and coated accordingly.

Up to 100 percent recycled content

The raw material is of interest to Monoflo for an additional reason. Transport containers travel a lot and may be stored outdoors and become damaged. These damaged products are an ideal starting point for new totes, pallets, and bulk containers. Therefore the company even operates its own recycling plants at its Virginia and Kansas locations. Incoming raw material is shredded, washed and recycled so that it can be used to produce new goods. Many of Monoflo products contain recycled material; in some products the content is even 100 percent.

As the percentage of regrind varies, this is the ideal place for the APC plus machine function. Based on the viscosity of the melt and stored parameters, this function regulates the filling quantity individually from shot to shot. Avoiding overflow is a must when producing high-precision technical parts due to their narrow tolerances. However, for the robust articles from Monoflo, the bottom line above all is managing cost.

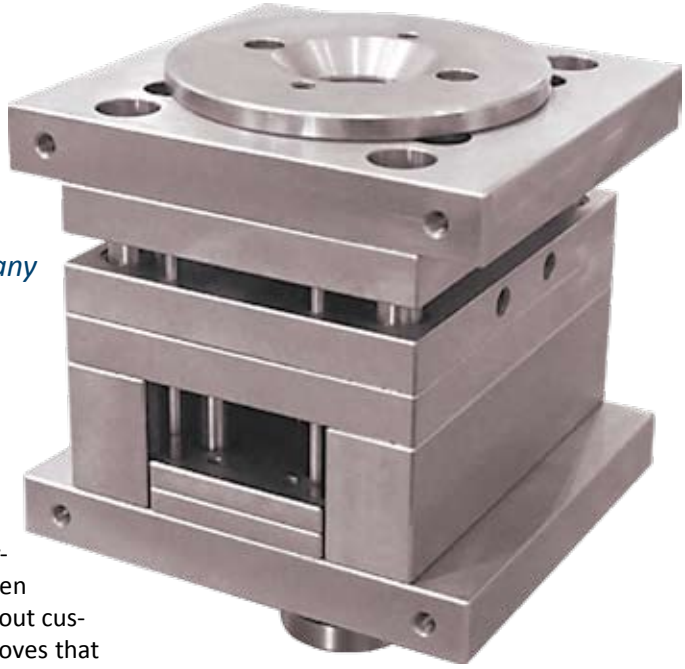
In view of the current prices, every gram of material that is not wasted in injection is a gain. The production scrap rate in the industry is two percent on average. Henning Rader says, "We are always below one percent, and our process technicians love APC plus." Other digital aids such as smartAssist and socialProduction are also going to be tested in the near future.

Currently Monoflo is building a new hall as a home for the injection molding machines that have been ordered from the MX and GX series – and this is not the end of the line. Henning Rader says, "We foresee significant growth in our segment over the next five years. This means more large machinery." *smi*

KraussMaffei
www.kraussmaffei.com

World-class plates for press moulds

All pictures: EuroDetal



EuroDetal Ltd. (OOO "EuroDetal"), Russia, Saratov is engaged in manufacturing and supplying parts of press moulds and die sets, as well as special processing of such parts according to the drawings of the customer. The company was reorganized in 2010 from ZAO "Tantal-EOC Normalien" (closely held joint-stock company), which was initially established in 1990 by Saratov enterprise "Tantal" and German company EOC Normalien from Ludenscheid. Thus, the enterprise has more than 30 years of history.

Today EuroDetal is export-oriented: the share of products, shipped to Europe (Germany and the Czech Republic), exceeded 74% of the total volume of products manufactured in 2020. This fact was noted by Russian Export Center that awarded the company EuroDetal with Russian exporter certificate.

Quality standards

The company's quality management system is certified according to the ISO 9001:2015 standard. The quality of products, being offered by EuroDetal Ltd. is confirmed by 30 years of deliveries to demanding and scrupulous buyers in Europe, namely in Germany. The company has been working for many years without customers' complaints and it proves that it is quite possible to find high quality and precision products of mechanical processing in Russia. In 2020 EuroDetal Ltd. has been awarded the quality mark "Made in Russia" for the high quality of its products.

Alexander Ryzhov, Executive director of EuroDetal Ltd. (OOO "EuroDetal")

Technical control department strictly controls each stage of production

Technical control department is equipped with modern measuring machines, devices, and tools, which were mainly made in Japan or Germany. All measuring instruments are being verified according to the approved schedules. EuroDetal Ltd. in-house technology bureau develops technological documentation for all manufactured products. All plates undergo the thermal process of normalizing and annealing before going into production, and this allows to relieve stresses in the metal, remaining after its processing or sawing as well as to improve the structure of the material.

Range of products

The enterprise delivers products of various sizes, from small (156×156 mm) to large (696×996 mm), wherein the thickness of the product as standard is up to 136 mm, and on request — up to 160 mm.

EuroDetal Ltd. has a comprehensive fleet of equipment for turning, milling, boring, wire-cutting works with CNC, flat grinding and others. There is also production area for heat treatment in the company, including furnaces for hardening, tempering, annealing, normalizing and carburizing.

In products manufacturing Steel 45 (analogue of steel 1.1730) is mainly used, as well as 1.2312, 1.2311, 1.2767, 1.2083, 1.2085, 1.2343, 1.2344 and other steel grades that are delivered by the company Swiss Steel. EuroDetal works with non-ferrous metals too. Modern CAD- and CAM-systems are used to design and manufacture parts according to customers' 3D models.

Shipment policy

EuroDetal Ltd. delivers products to clients in Europe at its own expense: the shipment cost is already included in the price of products as well customs clearance in Russia.

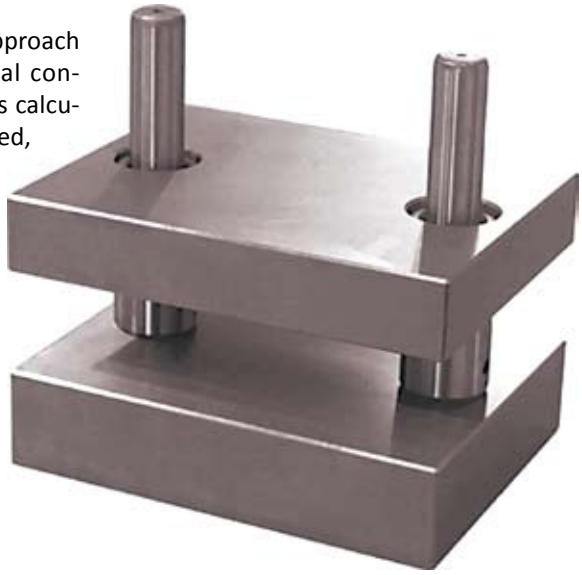
Clients, who have chosen to work with EuroDetal, have no risks, because the company offers deferred payment

mechanism, and European customers pay for the ordered products only after receiving the goods and after checking their quality.

In times of crisis

Pandemic year of 2020 was a real challenge for the manufacturing sector. Nevertheless, EuroDetal functioned all the year without downtimes, providing all necessary security measures concerning the employees' safety. This was achieved due to compliance with strict regulations, which allowed preventing the spread of coronavirus infection.

At the beginning of 2021, there is a crisis in the industry, associated with rising prices for rolled metal products. It has hit the mechanical processing sector much harder than COVID-19. By mid-2021, metal prices in Russia have doubled! In spite of this, EuroDetal hasn't made a commensurate increase in product prices. Instead the company practices a very delicate approach to solving the problem: metal consumption of each product was calculated and then it was considered, what technological changes needed to be introduced, in order to ensure the production of parts at a lower cost without reducing the quality level. The company has even sacrificed its profits working on the brink of profitability. These measures made it possible to ensure there was only a small increase in cost for the customers.



EuroDetal is a reliable partner for European customers — the fact proven for decades.

EuroDetal's principles of work are as follows:

1. High quality
2. Good delivery performance
3. Competitive pricing

EuroDetal will be glad to see you among the partners! *smi*

EuroDetal
www.euro-detal.com

Tests confirm suitability for rapid mold making

EnvisionTEC and Covestro collaborate on material and printer solutions for DLP 3D printing tooling applications. New resin e-PerFORM, based on SLA resin Somos PerFORM, has been optimized for EnvisionTEC 3D printers.

EnvisionTEC and Covestro today announced their collaboration on material+printer solutions to accelerate adoption of industrial 3D printing. Together, the two companies aim to lower the entry barriers for companies looking to adopt 3D printing for producing molds for low volumes or parts with detailed features faster and more economically.

Perfactory P4K Series: the only DLP-based 3D printers utilizing a true 4M pixel projector with UV optics tuned to 385nm wavelength (Picture: EnvisionTEC)

The combination of Covestro material expertise and EnvisionTEC printer technology resulted in a complete industrial manufacturing solution for 3D printing injection mold tooling. Until now, no solution was available that met the stringent industry-required properties in terms of dimensional stability and minimal warpage. The patented material formulation from e-PerFORM™, optimized for EnvisionTEC's equipment, brings the benefits of Somos® PerFORM to a faster and more economical printer technology.

To bring customers a workable and demonstrated material+printer solution, EnvisionTEC and Covestro optimized print parameters and verified Covestro's new DLP resin e-PerFORM on EnvisionTEC's Perfactory P4K series printer. EnvisionTEC further tested e-PerFORM resin with key molding institutes to validate the material's performance. Completed mold trials demonstrate that e-PerFORM resin, with high stiffness and high temperature performance, behaves similarly to stereolithography resin Somos PerFORM for injection molding tooling.

Tests confirm suitability for rapid mold making

Tests done by Polyvia, the French Federation of Plastics and Composites, confirm the suitability for rapid tooling. Guy Chrétien, Process project manager at Polyvia confirmed: "We tested the new e-PerFORM resin printed on the EnvisionTEC P4K printer and demonstrated that we could achieve very good results in part fidelity and in the number of shots molded in both polypropylene and glass-reinforced nylon. With the cost effectiveness and print speed of the P4k platform and with the properties of the e-PerFORM resin, this creates additional opportunities for rapid tooling."

Al Siblani, EnvisionTEC CEO commented: "The combination of our P4K printer and Covestro e-PerFORM optimized for our printers enables fast, cost-effective production of injection molding tooling. Our collaboration has resulted in a new and much-needed solution."

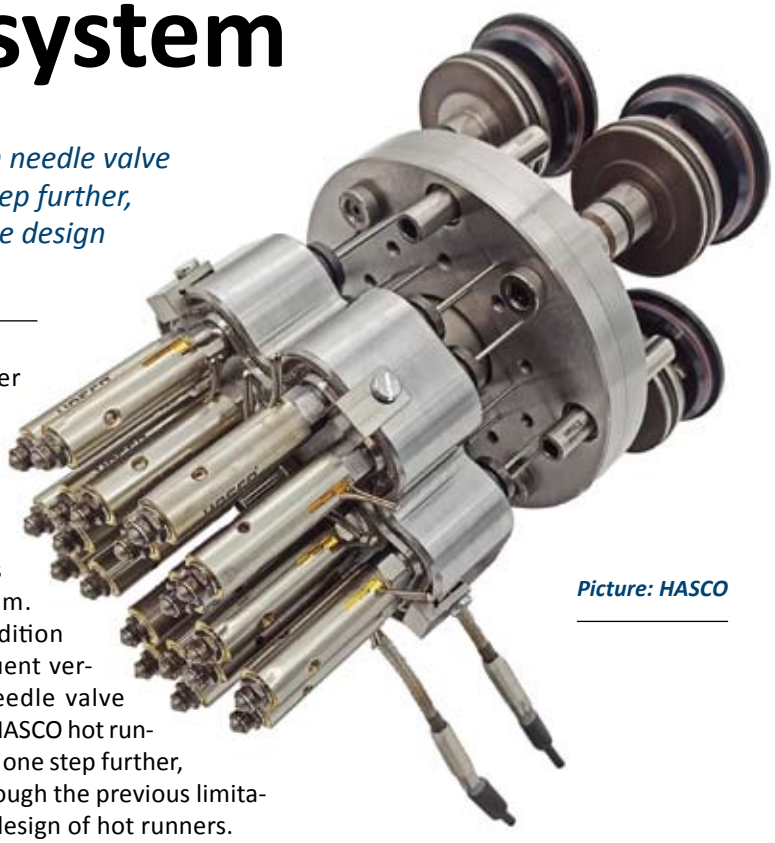
Hugo da Silva, Head of Additive Manufacturing at Covestro commented: "By working closely with our partner EnvisionTEC, we developed a material that meets critical needs voiced in the market: improved dimensional stability and minimal warpage for optimal functionality. The validation and proven solution with their P4K printers will help accelerate the adoption of additive manufacturing of injection mold tooling."

The combined solution of Covestro DLP resin e-PerFORM on EnvisionTEC's Perfactory P4K series DLP 3D printing were first presented during RAPID+TCT in Chicago this September. *smi*

EnvisionTEC
www.envisiontec.com

HASCO Streamrunner® with needle valve – the first additively manufactured needle valve system

With the addition of a subsequent version with needle valve technology, HASCO hot runner has gone one step further, breaking through the previous limitations in the design of hot runners.



Picture: HASCO

Multiple hot runner applications with very narrow nozzle pitch dimensions are, especially when using valve gate technology, a major challenge for designers. A needle drive needs space, which means that the distribution of the melt in the manifold is usually associated with restrictions when using a valve gating system This basically leads to a greater space requirement and consequently also to larger mould sizes and injection moulding machines.

With the HASCO Streamrunner®, the first additively manufactured hot runner on the market, now completely new and space-saving options are also available for valve gate systems.

For many years HASCO has been intensively engaged in the application of additive manufacturing in hot runners HASCO aroused enormous interest on the market with the introduction of the Streamrunner®. Since then, several customer projects have been carried out, demonstrating the advantages of the system. With the addition of a subsequent version with needle valve technology, HASCO hot runner has gone one step further, breaking through the previous limitations in the design of hot runners.

With the invention of the modular standard component system, HASCO has defined international standards and revolutionised mouldmaking. Designers and mouldmakers benefit from a complete range of ready-to-install, high-precision system components and intensive specialist advice.

As a new exhibit at Fakuma it demonstrated the impressive advantages of the Streamrunner®. A fully balanced 20-dorp system with needle valve technology in which the outside dimensions of the hot runner are just 124 x 124 mm was presented.

Gentle passage of the melt

Thanks to the additive manufacturing technology, the flow channels can be optimally designed rheologically by completely avoiding sharp edges and areas with poor flow characteristics. This gentle passage of the melt results in considerably lower shear stress in the melt and consequently better quality of the injection-moulded parts.

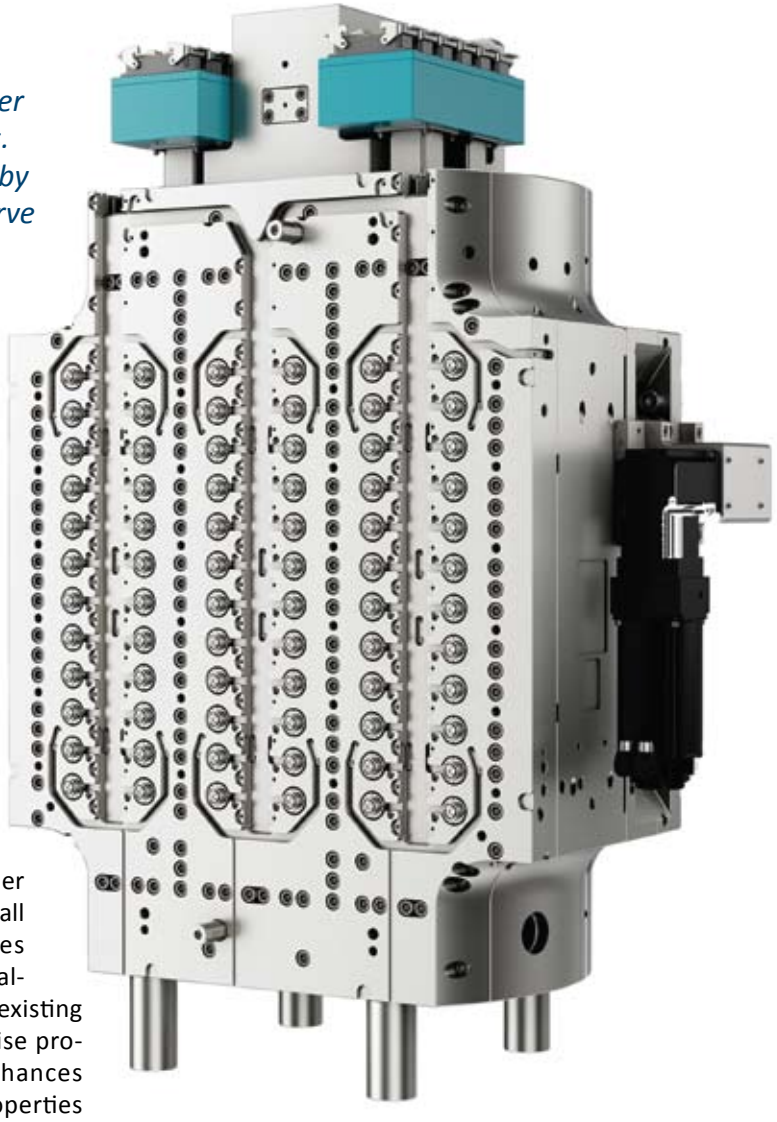
As absolutely no plugs are needed, this compact design of the hot runner enables in some cases a pitch of only 18 mm. The system is equipped with individually controlled, screw-in nozzles, which can also be used for engineering plastics. The stroke motion of the needle takes place via a circular plate package that is driven by four pneumatic cylinders.

As with all other hot runner systems from HASCO, the Streamrunner® with needle valve technology is individually designed and adjusted exactly to the respective application. The hot runner specialists from HASCO develop tailor-made solutions for every project. ***smi***

HASCO
www.hasco.com

Mold-Masters extends shelf life of dairy products

Mold-Masters is proud to announce that their industry-leading co-injection multi-layer systems are now available for injecting light blocking barrier materials as the core layer packaging applications. Light blocking barriers reduce light transmittance by up to 99.9% to extend product shelf life and preserve freshness and flavor of dairy products.



72-cavity PET Co-injection mold (All pictures: Mold-Masters)

Lower CAPEX and minimize risk for thin wall packaging and PET preform co-injection applications (Co-injection Connect)

With Mold-Masters Co-injection Connect Package, molders can easily and economically convert their existing single shot injection molding equipment over to produce co-injected (multi-layer) parts. By converting existing equipment this allows molders to reduce their CAPEX of injection equipment (E-Multi Auxiliary Injection Unit vs. 2k Injection Machine) which also helps minimize project risk. Additionally, a Co-injection solution with E-Multi can be implemented with much faster lead times compared to purchasing a completely new 2k IMM. Mold-Masters Co-injection technology is compatible with a wide range of materials including Bio-Resins and PCR.

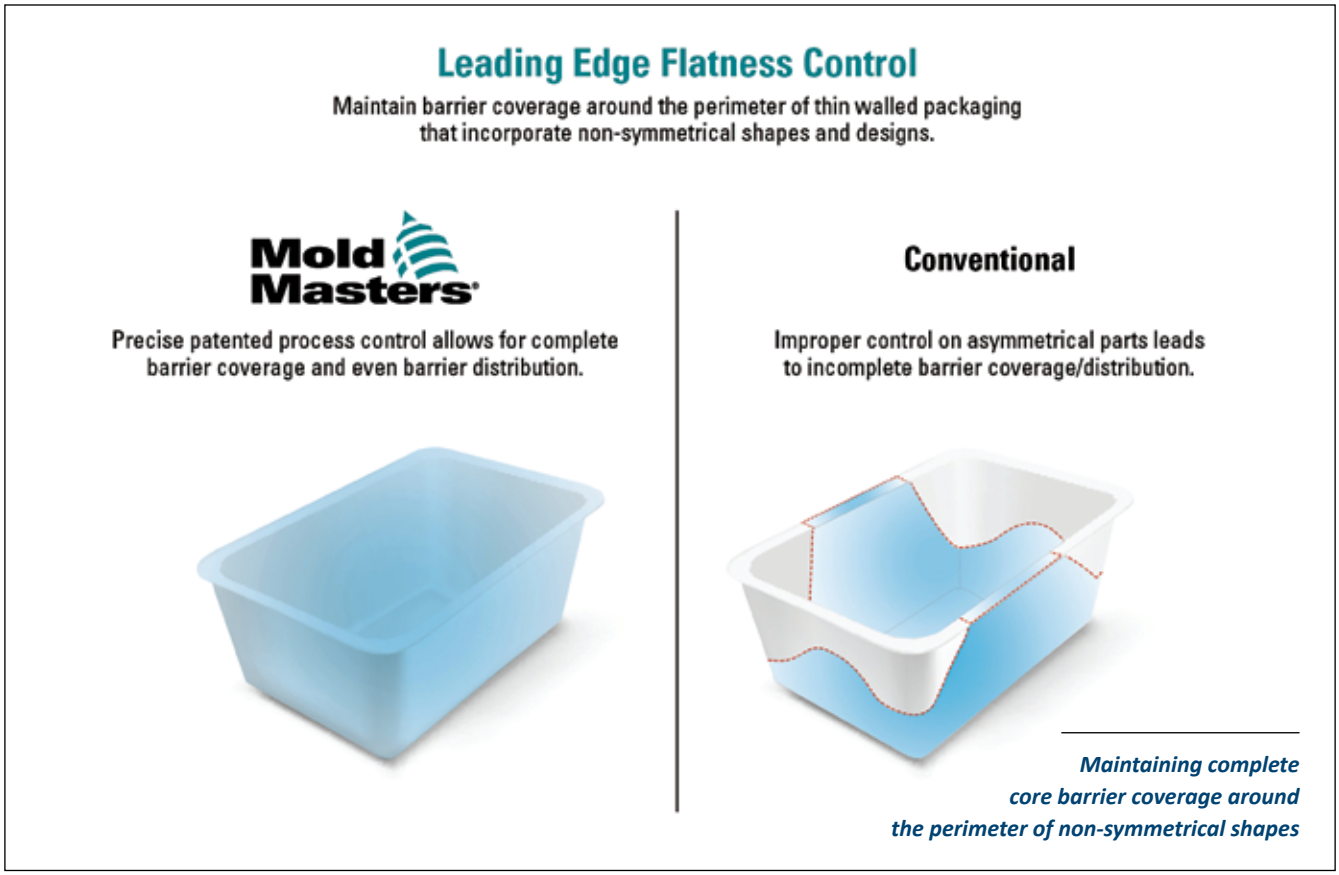
Industry-leading co-injection technology

Mold-Masters industry-leading Co-injection Technology utilizes a proprietary nozzle design that allows for two different resins to be combined into a single 3-layer melt stream. By incorporating a high-performance barrier as the core layer in packaging products, co-injection extends shelf life, maintaining freshness and flavour, longer than mono-layer blends. From a processing perspective, Co-injection increases productivity by eliminating the requirement for secondary processes and minimizing scrap. It can also minimize the use of expensive mono-layer barrier materials. Mold-Masters Co-injection Technology is fully customizable to create a moisture, gas or light barrier for containers of all shapes and sizes without any penalty to a molders existing cycle time. Precise process control enhances molded part properties by adjusting barrier layer placement and thickness to ensure uniform distribution.

Light blocking barriers for thinwall packaging

Mold-Masters currently offers co-injection hot halves for thin wall packaging in any cavitation. The light barrier can be virgin or recycled material, both are compatible. Dosing of Black Core can be customized to meet the specific requirements of the molded part (Dosing 5% to 30% dependent on total part weight). Mold-Masters patented process control capabilities allow to maintain complete core barrier coverage around the perimeter of non-symmetrical shapes and designs without core breakthrough.

Additionally, Mold-Masters Patented Co-injection Process for thin wall offers excellent heat seal bond



Maintaining complete core barrier coverage around the perimeter of non-symmetrical shapes

(uniform thickness for good adhesion), a fully encapsulated barrier, dimensional stability, design freedom and is compatible with IML (In Mold Labelling). In many cases, the existing cold half can be reused. A co-injection hot half only replaces the mono-layer hot half.

PET preform

Light blocking barriers for PET preforms

• Mold-Masters currently offers co-injection PET Preform hot halves to inject light blocking barriers as the core layer.

• Switching from mono-layer to co-injection (with Light Barrier) can extend shelf life, maintain freshness and preserve flavor of UHT Milk and other dairy products.

• Co-injection gives brand owners greater design flexibility for differentiation on store shelves (enhance brand appeal).

Mold-Masters Co-injection PET Preform hot halves:

• Dosing of Black Core, as a layer, can be customized to meet the specific requirements of the molded part (dosing 3% to 30% depending on total part weight).

• By co-injecting the black layer, there is opportunity to take thickness out of the container and achieve the same light blocking performance with a thinner wall. This translates into an even lower cost package through significant potential for overall material cost savings. About 80% of the package cost is the raw material.

About Mold-Masters

Mold-Masters is a leading global supplier of hot runners, controllers, auxiliary injection and co-injection systems. The company designs, manufactures, distributes, sells and services highly engineered and customized plastic processing equipment that caters to every market. Mold-Masters is credited for patenting the first commercially viable hot runner system in 1965. Today, Mold-Masters conducts business in over 100 countries and employs a diverse workforce that exceeds 2,150 professionals. Mold-Masters Global Headquarters is located in Georgetown, ON Canada. *smi*

Mold-Masters
www.moldmasters.com

With a system change to new competitiveness

In the past, relying on vertical injection molding machines instead of traditional horizontal molding machines when it came to the production of 2C molded parts was usually the exception to the rule. And even then, it was only an option for small and medium-sized molded parts. It was only when the automotive supplier ELDISY in Gardelegen / Saxony-Anhalt was faced with molded parts in the top size segment that the system change proved to be an unavoidable alternative because it was foreseeably more reliable and therefore more productive. In the Bavarian injection molding machine manufacturer LWB-Steinl, the company found a partner who not only had the necessary system components but also many years of experience in large-scale machine construction to enter this new territory.

The alternative machine concept from LWB-Steinl, derived from the VR-vertical-machine-series with modular frame-shaped clamping unit and a horizontal orientated turntable, supported by four pressure units (Pictures: LWB-Steinl, ELDISY)

Multi-component injection molding is a process of great importance and high demand. Because it enables the combination of two or more plastic components with different properties in one injection molding process. In other words, multi-component injection molding allows different molded parts to be combined inline in the injection molding machine. This replaces assembly operations. Today, no branch of industry can do without the resulting productivity and precision advantages (due to the consistently correct position and form-fit connection). The automotive industry is outstanding in terms of quantities and innovation. Currently, the switch to electric drive technology is proving to be an upswing to the next level of innovation. This is because, because instead of the combustion engine noises, the wind or rolling noises of the tires come to the fore, as do body vibrations.

This is the environment in which Messrs. ELDISY (= Elastomer Sealing Systems), who focuses on sealing systems for automotive and industrial applications and operates with seven production sites worldwide. The company mainly produces extruded profile seals for all door openings in automobiles, as well as a wide range of single- and multi-component body components.

One example of ELDISY's systems expertise is that it has been commissioned by Volkswagen's commercial vehicle division in Hanover to produce all the plastic exterior components for the new VW ID.Buzz, which will be available from 2022.

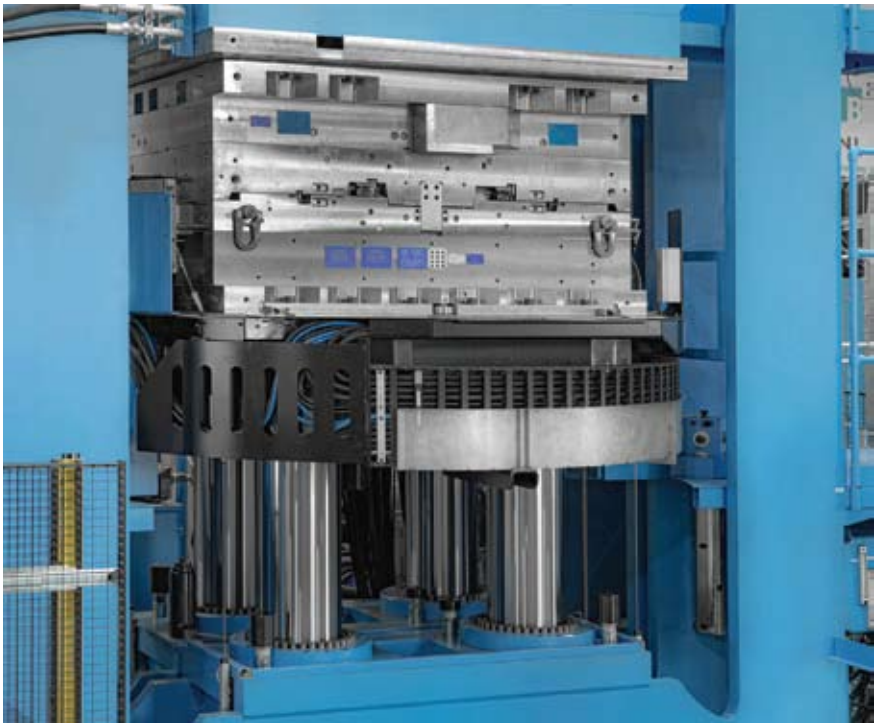
One of the components from this parts package is the approximately 180 cm wide "water box cover" installed in front of the windshield. It consists of an arc-shaped polypropylene structure combined with elastic

TPE-sections at the contact points to the metal body and at the through-holes for the windshield wipers.

Only "rethinking" could lead to the desired goal

2-component automotive parts are not new for the ELDISY injection molding department. Examples from previous contract manufacturing include water deflectors, sill strips, joint seals or window guides. The production machines used for this purpose were or are the 2C variants of conventional horizontal injection molding machines from various manufacturers. All of them are equipped with a rotary table on the moving machine platen and injection by means of two injection units in piggyback arrangement through the fixed machine platen.

Dr. Detlef Scharge, Eldisy's plant manager for many years but recently retired, comments: "For many years, this concept was regarded by us as the "state-of-the-art system" for multi-component injection molding. We used it consistently over a wide clamping force range. However, the larger the machines became, the more serious the system-related disadvantages became. In particular, the horizontal rotary axis, including the rotary feedthroughs for the media fed to the mold, suffered from the one-sided weight load of the injection molds hanging on the rotary tables. This resulted in increased maintenance and servicing costs. The hot runner design was also more restricted than desirable with increasing mold size due to the system-related close proximity of the injection positions of the piggyback units. Therefore, the search for alternatives had been on our agenda for some time. But the real catalyst for this was the order for the water box cover. Because of its size, we had to find a solution, as we would have needed a 16,000 kN machine to install the mold for it according to the old principle, which would have been uneconomical both for the technical reasons already mentioned and because of the investment required for this."



Detailed view of the rotary table with the 18 t injection mold and the four pressure pad modules

The system change takes shape

This opened the door for a market research. Chance came to the rescue, namely at the K-2019 trade show booth of the LWB-Steinl company. There, LWB had exhibited a production cell with a large rotary table clamping unit with thermoplastic injection unit. A similar layout seemed to be the alternative ELDISY management was looking for. It was the starting point for the discussions. By coincidence, the LWB managers responsible for design and sales and company boss Peter Steinl were also present at this time and immediately took up the ideas of the ELDISY management and were able to sketch out a feasible machine concept together with them.

Helpful was also the presentable additional reference of a large machine delivered in 2019 in the form of a precision sheet metal press with a clamping force of 19,000 kN with a clamping area of 2.5 x 2.5 m.

Both of these things together then paved the way for a concrete project inquiry that initiated the system change in 2C-large-part production. And this despite the fact that LWB had not previously been "on the cards" as a possible supplier for plastic injection molding machines of this size.

The alternative is the VR-machine-system from LWB

At the end of the subsequent concept phase, a machine with the specific type designation VR 12000 / 1097 / 220 Dual Sonder took shape. This bulky designation stands for a machine from the VR (vertical frame) series. Its clamping concept is a specific LWB development and occupies a special position between the tie-bar-less C-frame machines and the conventional tie-bar machines. The central components are portal frame modules as carriers for the mold fixing platens and the press modules for generating the clamping force. The VR series has a modular design throughout and is therefore largely freely scalable. The reason for this, and this is the great advantage of the VR system, is that the size of the clamping unit is not tied to the size of castings. Since the frame modules are

Two injection units are mounted separately on the top of the clamping frame modules and are thus easily accessible

made from thick sheet semifinished products, this allows an individual and largely free choice of dimensions. In this specific case, the portal opening was selected in consultation with the customer and the mold maker to accommodate a rotary table with a turning diameter of 2720 mm, on which molds with a platen size of 2200 x 1600 mm or 2000 x 1800 mm can be clamped. This made it possible to align the machine to the clamping force requirement (maximum 12,000 kN) and not to the given size specifications of conventional horizontal machines.

Advantages in every respect

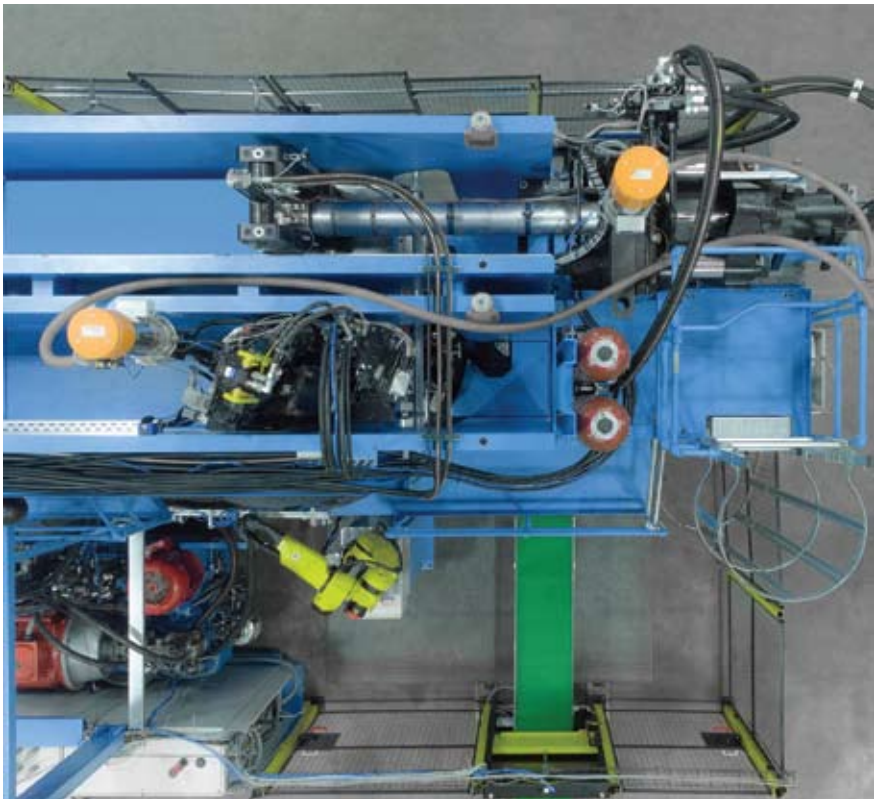
In addition to flexibility in dimensioning, the VR-machine-system from LWB-Steinl also offers other advantages: the clamping unit, for example, which consists of two frame modules, offers the possibility of adjusting or balancing the clamping force to the two moldcavities, if required, thanks to the four pressure modules positioned above both frame units. The horizontal rotary plane of the rotary table eliminates all weight influences on its rotary axis bearing and the rotary feedthroughs for the coolants and the electro supplies.

The injection unit positions also differ from the usual ones. Instead of the piggyback configuration with close injection spacing through a central opening in the fixed machine platen, the two units are mounted separately on the top of the clamping frame modules and are thus easily accessible.

Another advantage of the VR-clamping unit is its slim structure. This provides good accessibility to the mold area by means of an industrial robot positioned next to the machine - and is thus also comparatively easier and more space-saving than with the horizontal machines.

For the (infrequent) mold changes, a mold station with a mechanical telescopic cross transport is docked to the machine and the mold, which weighs up to 18 tons, is pulled out of the clamping unit. The in-house transport of the mold station and the mold is handled by the overhead crane.

Tool changing station which, can be docked to the machine using an indoor crane



Detailed view of the thermoplastic injection units positioned on the top of the frame modules and injecting from above

Another advantage of the VR-concept over a conventional horizontal injection molding machine should not go unmentioned: Due to the vertical configuration, the floor space requirement is significantly smaller than that of the horizontal machine. However, the vertical space requirement is comparatively taller and places demands on the hall height in this respect.

Change of direction completed

Commenting on the experience gained so far with the alternative 2C-injection-molding-cell, ELDISY Managing Director Dipl.-Ing. Elmar Stoffel summarizes on behalf of the entire project team: "We consider the new machine concept to have eliminated all our points of criticism of the injection molding systems used to date and will thus be able to supply the molded parts required by Volkswagen. Our confidence in the correctness of the decision has prompted us to order three more VR-machines from LWB-Steinl, this time with 9000 and 18000 kN. Several more are in concrete planning. With this, we have completed the system change and assume that we have thus further secured our competitiveness as an automotive supplier."

The molded part in question is made of two thermoplastic components, specifically the main body made of polypropylene, which is combined with elastic TPE-sections at the contact points with the car body and in the passage areas for the windshield wipers

About ELDISY-GmbH

Founded in 2000 in Gardelegen / Saxony-Anhalt, the company, whose name is an acronym for "Elastomeric Sealing Systems", is part of the highly diversified German Vorwerk family holding.

With around 1,200 employees worldwide, Eldisy primarily develops and manufactures sealing systems as well as mono- and multi-component injection-molded parts for original equipment manufacturers and Tier 1 system suppliers in the automotive industry. They meet high functional requirements in static and dynamic applications and also contribute to the overall appearance of cars in terms of design and feel.

In addition, sealing systems are also produced for industrial applications such as windows, garage doors and electrical appliances. Depending on requirements, these are individual components or complex assemblies. *smi*

Author:
Reinhard Bauer - Technokomm
LWB-Steinl
www.lwb-steinl.com

Lightweight load compartment well for luxury sedans

- *On-board power supply battery remains firmly secured even in case of a crash*
- *Lighter than sheet metal*
- *High degree of strength and stiffness*
- *Precision forming of the large-format composite insert*

Tepex dynalite continuous-fiber-reinforced thermoplastic composite materials are increasingly being used as an alternative to metal in light-weight design. One new application for these composites from LANXESS is in the manufacture of the load compartment well installed in the Mercedes-Benz S-Class for accommodating the 48V on-board power supply battery. The composite components can withstand high mechanical stresses and are around 30% lighter than comparable sheet metal components. “In the event of a crash, the battery must not penetrate or in any way damage the recess wall. This is ensured by the high strength and stiffness of our fabric-based composite material,” says Dr. Klaus Vonberg, an application expert for Tepex at LANXESS. “The composite design also ensures that the load compartment well is leaktight, preventing the ingress and egress of fluids like water and battery electrolyte.”

Cost-cutting functional integration

The safety component is manufactured economically in a hybrid molding process using a blank that is around 110 x 80 centimeters large produced by a water cutting machine. The blank is made from polyamide-6 -based Tepex dynalite 102-RG600(2), which is reinforced with two layers of continuous-glass-fiber fabrics. The easy-flowing polyamide 6 Durethan BKV60H2.0EF DUS060 from LANXESS is used as a back-injection material for the cost-saving integration of fasteners, but also of reinforcing ribs. Sixty percent of its mass comprises short glass fibers, which also make it extremely strong and stiff and a perfect match for the Tepex.

Complex forming process

Forming (draping) of the blank is performed by a stamp and is a highly complex process, among other things due to the high draw ratios. This is because the composite material does not

The load compartment well can withstand high mechanical stresses and is around 30% lighter than comparable sheet metal designs (all photos: LANXESS)

expand plastically like sheet metal but undergoes deformation in response to the movement (draping) of the fibrous material, which means that the composite material has to be supplied from outside continuously during the forming process. If the movement is too great, the fibers can inhibit the forming process, breaking as a result and impacting the rest of the process.

Integrative simulation saves development costs

LANXESS employs a range of calculation models, allowing it to precisely simulate the draping process and so predict and analyze the forming effects and respond accordingly. Not only can LANXESS determine the optimum 2D cutting geometries of the blank, but the forming behavior of the blank can be analyzed virtually and in line with the customer's tooling concept so that weaknesses can be identified and eliminated early on. This generates huge savings potential in the design of these processes. "For the load compartment well, we also determined when the critical shearing angle of the fabric is reached during forming, where wrinkles form and when fibers start to break," says Vonberg. "Our calculations and simulations also helped to ensure that the rounded corners of the component can withstand the expected loads." The local orientation of the continuous fibers themselves in component areas with a pronounced 3D contour (e.g. in the rounded corners) was also simulated. This is a prerequisite for precisely predicting mechanical component behavior in terms of integrative simulation. "All this is part of our service offering under the HiAnt brand with which we supported our customers' development experts in designing the load compartment well," says Vonberg.

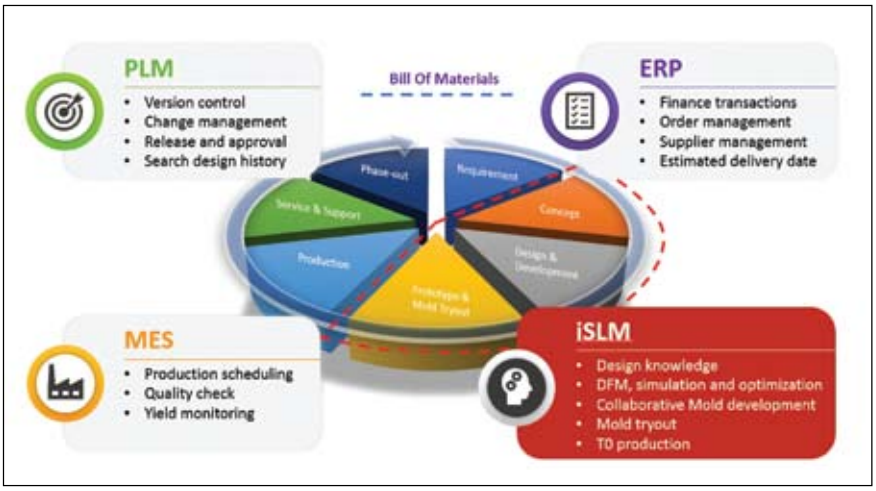
Further series applications

In the Mercedes-Benz C-Class, Tepex dynalite is now also used for manufacturing load compartment wells designed to accommodate the on-board power supply battery. "We also see huge potential in electric vehicles – so for safety devices, complete battery system housings or components for the stowage space now available under the 'hood' – because our lightweight structural material is much lighter than metal and so helps to extend the range of electric vehicles," says Vonberg, looking to the future.

LANXESS is a leading specialty chemicals company with sales of EUR 6.1 billion in 2020. The company currently has about 14,800 employees in 33 countries. The core business of LANXESS is the development, manufacturing and marketing of chemical intermediates, additives, specialty chemicals and plastics. LANXESS is listed in the leading sustainability indices Dow Jones Sustainability Index (DJSI World and Europe) and FTSE4Good. ***smi***

LANXESS
www.lanxess.com

Why a dedicated system for plastics mold development is indispensable



iSLM completes product development lifecycle management with its comprehensive capabilities to trace the design-optimization process and acquire molding knowledge (All pictures: CoreTech System)

When it comes to useful tools that can enhance teamwork efficiency, we usually think of the Product Lifecycle Management (PLM) systems. However, for the plastic part and mold designers, general-purpose PLM systems might not be satisfactory enough. The reason is that they cannot fully cooperate with the time-demanding yet complicated plastics mold development process, and it is usually too costly for small and medium-sized enterprises to adopt.

Plastics mold making has its unique design and manufacturing process. Frequent design changes and short delivery time make the situation even more challenging. Also, due to the high entry barriers of this industry, knowledge and skill gaps tend to occur. Under these circumstances, the preservation and inheritance of design experiences are extremely critical for enterprises today.

PLM focuses on managing the overall product lifecycle. It does not provide comprehensive features to bring design and engineering data together. The industry needs a platform to help acquire design and molding knowledge, and organize them in readable, searchable, and visualizable formats for future utilization. However, useful tools for tracing the design-optimization process, instant sharing and visualization of simulation results, comparing mold tryout and quality inspection data are missing in most PLM systems.

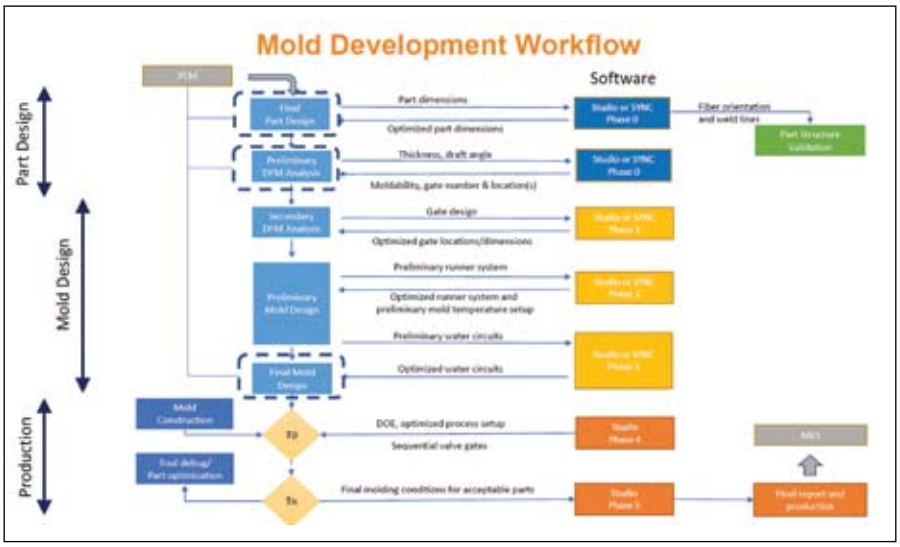
Every new plastic part and mold development involves many stages and different talents, such as product design, mold design, mold manufacturing, mold tryout, and production. When receiving a new project from an internal request or external customer via PLM, the design manager usually holds a preliminary Design for Manufacturing (DFM) meeting to determine the part requirements for preparing a quote. Numerous design and simulation iterations will then be performed in order to decide the gate number, locations, and sizes, improve flow balance, optimize runner system and water circuits, estimate cycle time and deal with potential shrinkage and warpage problems, etc. After the final mold design is concluded, the mold steel is cut and assembled for the first mold tryout (T0). Before T0, it would be very helpful to receive advice from simulations in order to optimize process conditions. Tool debug, part optimization, and mold tryouts are further proceeded to yield acceptable parts with competitive cost.

The above-mentioned process is critical to the long-term competitiveness of each company. However, different engineers oversee various stages in the whole process, and their data is usually stored in many different software, hardware, or file systems. To ensure a streamlined workflow and traceability, it is necessary to integrate and systemize these scattered data on one single platform.

Different from general PLM systems, iSLM is a web-based platform that can record various mold design data, such as material data, machine specifications, Moldex3D CAE analysis projects, mold information, mold tryout conditions, and molding results, etc. Users can access this data management platform through a browser on any device anywhere.

Only one click is needed to upload Moldex3D projects to iSLM. The sys-

A typical mold development workflow involves a series of design and optimization steps using simulation and various tools. However, very limited information is capitalized in PLM for future utilization



tem can automatically extract the representative information of project data, including run information, models, materials and processing conditions, etc. iSLM supports instant 3D visualization of analysis results. It is not needed to download the entire project back to users' local desktop computers for visualization. Team members or clients can view the analysis data through browsers and collaborate in real-time.

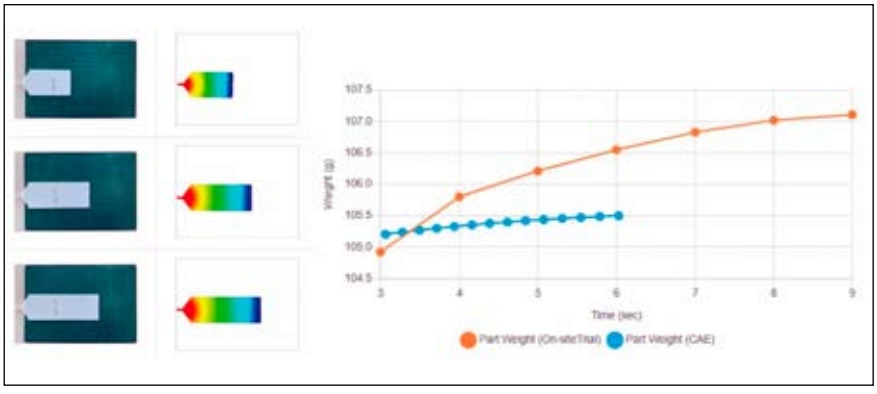
When recording process settings, it would make the most sense to connect the molding machines with iSLM via a Manufacturing Execution System (MES). However, due to the low level of digitalization of most injection molding shop floors, it is not uncommon that many factories are still recording process conditions on paper. Companies should not wait until all their machines are connected to the network before starting to build their molding knowledge database, risking losing valuable molding experiences and talents every day. iSLM provides tools that can help collect the molding parameters of on-site mold tryouts. It can cover complete process parameters, including the temperature control of the screw regions, mold opening and closing settings, screw plasticization, suck back and forth settings, and stroke settings (injection, packing, ejection, etc.). For some molding machine types, iSLM even supports converting the process conditions from screen snapshots taken with a tablet or smartphone. Optical Character Recognition (OCR) is embedded in iSLM to convert the machine parameters effectively, saving a lot of effort and avoiding human errors. Afterward, a mold trial report is automatically generated, preventing the errors caused by manually copying the trial form.

In addition, the quality inspection data after mold trials can be properly preserved on iSLM. Since most products usually require specific inspection items, iSLM supports customized inspection item columns to meet different needs.

To preserve both virtual CAE mold trial and physical on-site mold tryout data, iSLM further provides unique virtual-physical comparison features. Users can easily compare information such as short shots and molding curves on the web interface. The comparison results can also be recorded on the system for inspection next time, or export a report to the customer.

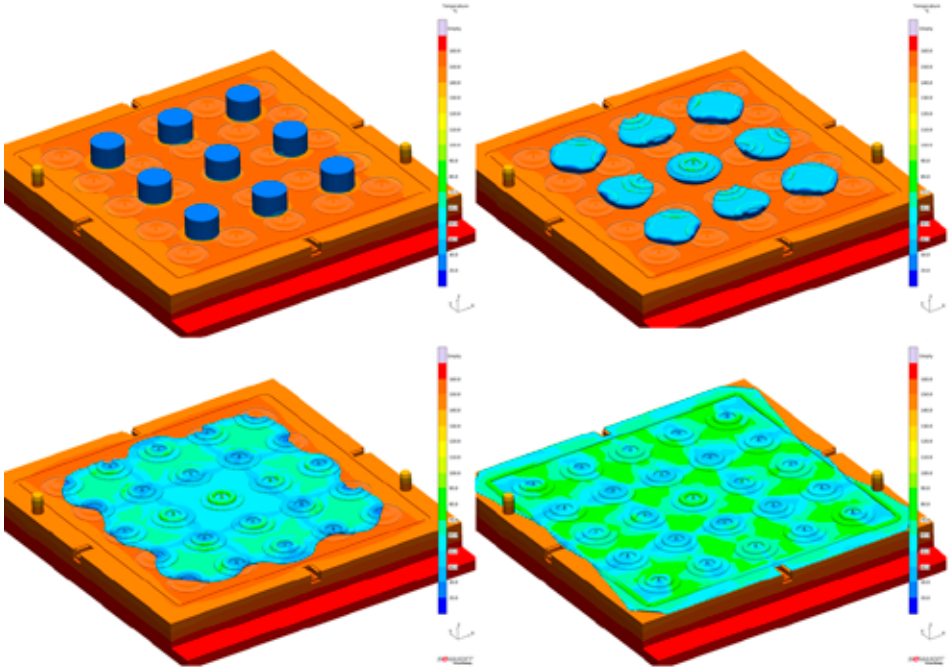
As today's industries are generating a much larger volume of data about the physical world, the "digital twin" is necessary and creates corresponding digital systems to store and utilize these data effectively. As the production modes get complicated, the way to manage and maintain such big data also needs to keep evolving. In the race of smart manufacturing, choosing the right tool is vital for enterprises to boost production efficiency and accelerate digital transformation. iSLM is designed to help accumulate design know-how and acquire molding experiences, and transform these digital assets into a valuable knowledge base, bringing additional values and realizing corporate sustainability. ***smi***

iSLM provides unique functions to compare simulation results with real molding samples comprehensively. The models can be compared in the same 3D view angles, and molding information can be compared in the same graph



CoreTech System
www.moldex3d.com

Simulate compression molding for the first time



25 cavities and 9 preforms in a compression molding process (picture: SIGMA)

During Fakuma 2021, SIGMA Engineering presented the latest release of SIGMASOFT® Virtual Molding. Besides a further refined prediction of warpage and numerous enhancements for the calculation of multicomponent parts it contains the possibility to analyze compression molding processes for the first time. The development of this new simulation mode was accompanied by a close exchange of experiences with leading elastomer processors.

During Fakuma 2021 in Friedrichshafen, Germany, SIGMA Engineering GmbH presented new developments of SIGMASOFT®. The new version 5.3.1 now allows the simulation of Compression Molding processes of rubber compounds.

Up to now, simulative design of mold and process was mainly focusing on modern injection molding technology. Since SIGMASOFT® is successfully introduced at many leading elastomer-molders, there was always a request to also implement the older processes, which remain technically required and/or cost-critical for manufacturing precision parts and O-rings, partly in small series. The simulation allows reliable prediction of curing degree and cycle-data. Questions around shape, weight, position and number of preforms can also be investigated. The quality of the molded parts can be optimized while reducing the material consumption, without time-consuming and costly trial-work.

"It sounds easy, but implementation was relatively complex", explains SIGMA CTO Timo Gebauer: "The challenge is, that the cavity, or the room into which we inject, constantly changes during the closing of the mold. At the same time the inserted preforms are already heating up, are plasticizing and deforming. This development would not have passed the finish line without continuous advise and validation through our customers."

Different to Thermoplastics, in the industry only few standardized elastomer compounds are available. Therefore, SIGMASOFT® features the creation of own material laws, based on internal or external measurements and supports users during implementation.

"It's interesting, with this approach there is practically no remaining difference between Transfer and Compression Molding processes for the simulation. Technically, the injection sprue in the middle platen becomes part of the cavity. In the validation, we therefore also calculated Transfer Molding Tools successfully", says Gebauer. "We are curious, how the most advanced simulation approach is accepted by the experienced rubber manufacturers for the oldest processes."

SIGMASOFT® v5.3.1 not only includes the first possibility to simulate Compression Molding of Elastomers, but offers especially in the area of Thermoplastics numerous innovations and improvements for example a more precise prediction of warpage and shrinkage. The Autonomous Optimization feature included in the software now also works for 2 component parts. Additionally, the material data base was enhanced. **smi**

SIGMA
www.sigmasoft.de

StackTeck optimizes TRIM™ pail design to pass UN test standards

StackTeck Systems Ltd., a global manufacturer of multi-cavity, high-volume production molds, has successfully optimized the design of a TRIM™ 5-gallon pail to pass UN standards.

The incorporation of TRIM™ technology in the molding of pails represents another step in offering sustainable solutions to the consumer markets that are looking for part weight reductions while being fully compliant with UN test standards for drop tests and compression.

The optimized TRIM™ pails are 8% lighter than a benchmarked industry standard 5-gallon pail, while meeting UN standards 7.4 (drop test) and 7.5 (compression test). With filling analysis software, we were able to optimize the pail for injection pressure and tonnage increase.

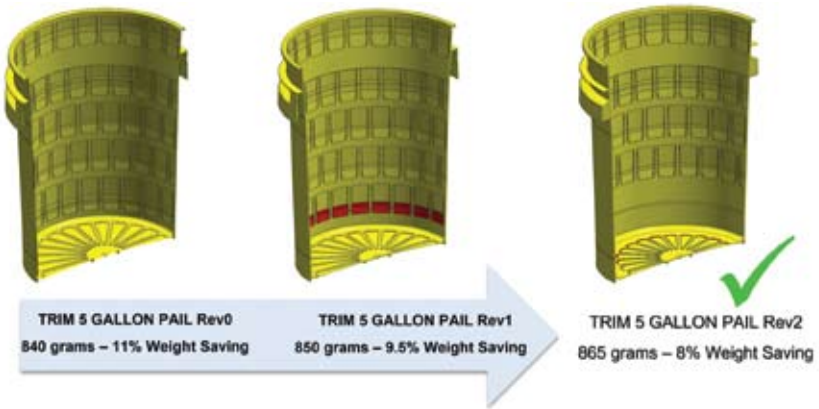
According to Jeff Ngai, StackTeck's Engineering Director: "We did structural filling analysis to ensure top load strength and survival of drop tests. From the simulations that we ran, we identified that there is a big reduction in the strength and performance of the part when we had thinned out portions closer to the bottom corner of the pail. We then evolved the design to remove the TRIM patterns from the lower portion of the part while maintaining the light weight in the remaining areas of the pail which did not affect structural strength. This is a great milestone for us to have achieved in times like this when there is a substantial demand for more sustainable packaging solutions."

According to StackTeck's President and CEO, Vince Travaglini, "We can now offer our customers a complete solution for pails, whether they are looking for standard industrial pail molds, a lighter sustainable pail alternative, IML robots for pails, or complete turnkey pail systems. We are delighted to say that we can fully support them with all of our expertise and serviceability right here in North America."

StackTeck has built a demonstration pail mold with 2 cores, so the mold can switch back and forth between the optimized TRIMTM design and a conventional version of the same pail with a uniform 0.090" wall thickness. According to Jordan Robertson, VP Business Development and Marketing, "The demonstration pail mold was configured to show the differences in pail strength between conventional and TRIM pails. We also incorporated features to enhance mold cooling using our KoolTrack mold designs and special alloys, to demonstrate a cycle time difference. For the wall thicknesses in the conventional pail, we know it typically runs at 16-18 seconds cycle time, and when we put the KoolTrack components in the mold we were able to run good parts at 13 seconds." ***smi***

Development and optimization of the TRIM™ pail (all pictures: StackTeck)

StackTeck
www.stackteck.com



BCN3D releases brand new Cloud for real-time 3D printing fleet management

Picture: BCN3D

BCN3D makes strides in its software strategy by releasing an enterprise-grade solution focused on streamlined workflows, fleets, and teams management as well as privacy & security through a set of 3 different plans: Standard, Teams, and Private. This major update is based on the core technology of recently acquired cloud software company AstroPrint, making it the first release led by the new software team.

BCN3D, a leading 3D printing solutions manufacturer, has announced a complete reinvigoration of their current BCN3D Cloud platform. The new web-based cloud will allow companies to scale up their additive manufacturing operations and make entire printing workflows more efficient, controlled, and easier than ever before.

Apace with the continuously growing AM market, BCN3D's main verticals in 2021 shifted to automotive, manufacturing, and engineering, with its main applications becoming functional parts, tooling, and low volume batches. The company's transition from entry-level to workbench machines started in 2019 with the release of the BCN3D Epsilon and the materials partnership with BASF Forward AM and Mitsubishi Chemical. Later in 2020, BCN3D completed the Epsilon Series by launching the Smart Cabinet that ensures filaments are consistently kept at optimal humidity levels. In light of this deep hardware evolution combined with the growing demand for 3D printing, BCN3D set a goal of creating software to level up to their hardware solutions. The result is the new BCN3D Cloud, which centralizes all aspects of remote printer and resource management in one place for the easy implementation of a systematic workflow.

"For BCN3D's current clients, the integration of AM processes in their business is becoming more critical as the applications are more demanding, an indicator of the tendency is that BCN3D machines are currently printing more than 12h a day on average. With such increasing printed part volumes, more people, and more machines interacting, the workflow needs to be robust and seamless. To support those customer needs, the vision of BCN3D is to provide software layers that add effective value on top of hardware, closing the circle of an enterprise-level solution." Daniel Arroyo, Chief Software Officer of BCN3D.

2021 has been key in the development of BCN3D's software vision, with the release of the new slicer BCN3D Stratos and the addition of the integration with Teton Simulation's SmartSlice for print parameter optimization. Alongside this, BCN3D has also worked with Autodesk to include BCN3D printers in Fusion 360, to offer users a fast-tracked printing process. Most recently, the new Cloud announced today has been built based on the Astroprint IP, a 3D printing software company known for its sophisticated cloud solutions, which was acquired by BCN3D this last July.

Availability

BCN3D has cultivated a brand new platform with a completely renewed user experience and interface to ensure frictionless usage. The new BCN3D Cloud is available since October. BCN3D has also developed three different customer plans:

The BCN3D Cloud Standard plan is included for all BCN3D customers and is ideal for driving the adoption of additive manufacturing within companies.

The BCN3D Cloud Teams allows advanced organizations to administrate a departmental structure with customized roles and permissions for members.

Finally, the BCN3D Cloud Private is an on-demand plan dedicated to corporations that must be absolutely certain that their specific privacy and security requirements are being met. ***smi***

BCN3D
www.bcn3d.com

Nexa3D unveils virtual booth to enable industry-wide access to latest 3D printing technology

Nexa3D virtual exhibition booth on the company's website

Nexa3D's RAPID +TCT virtual exhibition booth is part of an ecosystem of recordings and virtual experiences, allowing everyone to experience the technology for themselves.

Nexa3D, the maker of ultrafast polymer 3D printers, has recently announced that its end-to-end 3D printing validated workflow, launched at RAPID + TCT 2021, can be viewed on its virtual exhibition booth.

Visitors to the online experience can discover first-hand the speed, innovation, and productivity that Nexa3D's equipment can bring.

The range of technology on display includes the company's QLS 350 ultrafast thermoplastic 3D printer, alongside a range of aerospace, automotive, and general production applications and parts. Able to function at higher operating temperatures and using broader powder processing windows, the QLS350 can process a wide range of aerospace and automotive approved polyamide powders, including PA12 and PA6-6, and is ideal for volume production.

Online visitors also have the chance to see the NXD 200 and NXE 400, featuring 8.5-liter and 16-liter build volumes, respectively. The NXD 200 is an ultrafast dental production system with intelligent optimization and is featured alongside a range of sample dental prints, including bridges, crowns, arches, guides, and trays.

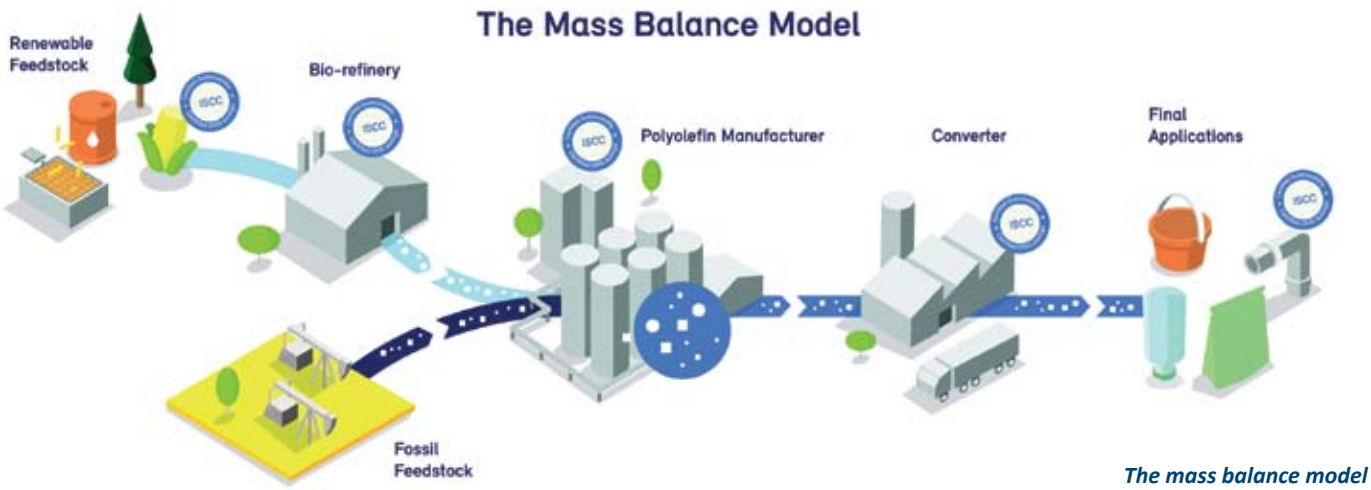
The company's xCURE and xWASH products, which provide post-print curing and washing to improve part strength and provide consistent mechanical performance, complete the end-to-end workflow display. Overall, Nexa3D's printers boast productivity rates up to 20 times faster than competing systems.

Also on the stand is the Arcimoto ultra-efficient electric vehicle, which is used in California, Oregon, Washington, and Florida for delivery, emergency response, and leisure purposes. It features multiple parts created in collaboration with Nexa3D, including the hand grips, coolant container, mirror, and windshield fluid funnel, further demonstrating the industrial-grade capability of Nexa3D's portfolio.

"Lights out production using 3D printing was fiction a few years ago. Ultrafast printing in dental environments was fiction a few years ago. Ultra-efficient electric vehicles with high-volume 3D printed parts were fiction a few years ago," said Avi Reichental, co-founder and CEO of Nexa3D. "We aren't just making machines that print parts here, we are making machines that print the future.

"Normally, the place for 3D printing professionals and the wider manufacturing industry to find out about this future is the real-world RAPID + TCT event," continued Reichental. "But attending an exhibition is no longer easy, so our virtual booth, and the organization's eco-system of on-demand video, means that the groundbreaking product announcements from the event and the industry's most respected experts can be accessed from anywhere. You can still see the future, but virtually, and this isn't a luxury in 2021. It's vital." smi

Nexa3D
www.nexa3d.com



The mass balance model for the Bornewables range from Borealis encompasses the entire value chain (picture: Borealis)

Cup prototypes made of Bornewables™ – premium polyolefins designed for circularity

By using the Bornewables™ portfolio, Greiner Packaging is for the first time incorporating renewable resources in the production of food cups made of polypropylene with in-mold labeling as the decoration technology. Initial prototypes of the cups are available now. The new premium polyolefins designed for circularity by Borealis offer a host of advantages:

- *Manufactured using second-generation feedstocks not based on fossil fuels*
- *Same performance as virgin materials; drop-in solution, approved for food contact*
- *SCC PLUS certification, based on the mass balance approach*
- *Carbon footprint reduced by up to 120 percent*

Greiner Packaging is pursuing various approaches to make its packaging solutions as sustainable as possible. One course of action is to use so-called circular materials – that is, renewable, non-fossil fuel feedstocks. For the first time, the packaging manufacturer has now produced a food cup made of premium polyolefins obtained exclusively from waste and residue streams. The Bornewables line of products is manufactured by Borealis, a leading supplier of polyolefins based in Vienna, Austria.

Unlike renewable raw materials produced with agricultural crops grown for food and livestock feed, the Bornewables products are made from second-generation (i.e., renewably sourced) feedstocks derived solely from waste and residue streams: from vegetable oil production as well as oil waste and residues, from the timber industry, or from the food industry – for instance, used cooking oil.

Same material performance, fast production changeover

The Bornewables offer the same characteristics as virgin polyolefin materials while boasting a substantially reduced carbon footprint. "The Bornewables portfolio represents a key step in our efforts to offer products decoupled from traditional feedstock, with the aim of providing a solution to the CO2 challenge. Through this product range, we are helping our customers and the value chain achieve their own sustainability targets, maintain their existing quality standards, and provide packaging solutions that are approved for food contact. We focus on the needs of our customers and the value chain as we work to drive the transition to a circular economy for plastics," says Trevor Davis, Head of Marketing, Consumer Products at Borealis.

Carbon footprint reduced by up to 127 percent

A life cycle analysis initiated by Borealis at its Kallo site in Belgium, showed that using Bornewables substantially reduces a product's carbon footprint by at least 2.7 kg CO2eq for every kilogram of polymer. This repre-

sents a saving of up to 120 percent in comparison to fossil-based PP from Borealis and roughly equates to charging 2,700 smartphones in a year. Moreover, using these premium polyolefins designed for circularity reduces the depletion of fossil resources by around 69 percent. The entire Bornewables line of products has been certified as part of the ISCC PLUS (International Sustainability & Carbon Certification) system. This chain of custody certification guarantees customers that the feedstock used in the material is certified as renewable and sustainably produced and can be traced to its point of origin. Certification is based on the mass balance approach, which means that a contribution to the use of chemically recycled or renewable materials is made in every material stream. A number of Greiner Packaging's locations are also already ISCC PLUS certified.

New prototype in-mold labeling cup produced by Greiner Packaging, made of renewable (bio-circular) polypropylene from Borealis (picture: Greiner Packaging)

A focus on design for recycling

The new prototype IML cups for dairy products are made of Bornewables monomaterial and were developed to be recycled as normal in conventional facilities – completely in line with the principle of design for recycling. The chemical structure of the PP material used in the cups is similar to that of standard plastic and can be recycled in the same loop as conventional polymers. This is a great example of how the packaging specialists at Greiner Packaging take into account sustainability from the very start. "Concepts like our new IML food cups only work when all partners along the entire value chain get involved and share the same sustainability targets – from feedstock suppliers through to brand owners. As a packaging producer, we support these efforts in the context of our own circular economy strategy and pursue new approaches alongside partners and suppliers like Borealis," says Stephan Laske, R&D Director at Greiner Packaging. *smi*

Borealis
www.borealisgroup.com

Evonik presents new photopolymers for industrial 3D printing

With INFINAM® RG 3101 L and INFINAM® FL 6300 L, the specialty chemicals company has developed two new photopolymers for industrial 3D printing. These products will be presented for the first time at the Formnext trade show this November.

Evonik and Cubicure have developed the first industrially suitable elastomer from the photopolymer class branded INFINAM® FL 6300 L (all pictures: Evonik)

Evonik is continuing its material campaign in 3D printing. With INFINAM® RG 3101 L and INFINAM® FL 6300 L, the specialty chemicals company has developed two new photopolymers for industrial 3D printing. They expand the product line of synthetic resins launched just this year that are suitable for use in common photopolymer 3D printing processes such as SLA or DLP. Evonik will present the new products for the first time at the Formnext trade show from November 16 to 19 in Frankfurt am Main.

"We are relentlessly putting our global innovation strength into the development of new photopolymers that enable infinite applications. In this way, we are resolutely driving large-scale industrial 3D printing forward. The Formnext trade show is one of the most important international industry venues for 3D printing. We are therefore very pleased to present our latest ready-to-use high-performance materials here for the first time," says Dr. Rainer Hahn, Head of the Market Segment Photopolymers in the Additive Manufacturing Innovation Growth Field at Evonik.

INFINAM ® RG 3101 L is another specialty resin for use in SLA and DLP 3D printing technologies from Evonik's innovation hub in Singapore

INFINAM® RG 3101 L is another specialty resin for use in SLA and DLP 3D printing technologies from Evonik's innovation hub in Singapore. The ready-to-use material combines excellent impact resistance with high temperature resistance while exhibiting long-lasting thermomechanical performance. 3D components printed from INFINAM® RG 3101 L, such as drones, buckles, or automotive parts, can be processed by machine and remain fracture-resistant even when subjected to strong forces.

Elastomer photopolymer developed by Cubicure and Evonik

With INFINAM® FL 6300 L, Evonik and the Viennese 3D printing company Cubicure are commercializing an innovation project jointly launched in 2019. The hot lithography printing process developed by Cubicure makes it possible for the first time to process highly viscous light-curing polyester-based resins. In contrast to conventional stereolithography, Hot Lithography creates objects at an elevated processing temperature using light-induced polymerization. The process allows a significantly wider range of processable components.

The result of this collaboration is the first industrially suitable elastomer from the photopolymer class. INFINAM® FL 6300 L enables the additive manufacturing of highly flexible 3D objects that excel in material properties essential for elastomers: in addition to outstanding low-temperature elasticity, its strengths include dynamic load cycles of up to one million load cycles.

"INFINAM® FL 6300 L enables completely new manufacturing possibilities in the field of elastic components. Thanks to the high precision with which the elastomer is processed in our hot lithography systems, it is possible for the first time to produce the most complex structures from a rubber-like material. The sports industry is showing great interest in using the material for cushioning elements in shoes, grips or backpacks," says Dr. Robert Gmeiner, CEO of Cubicure.

INFINAM® materials for infinite 3D applications

Evonik bundles its expertise in 3D printing in the Additive Manufacturing Innovation Growth Field. The strategic focus is on the development and production of new high-performance materials for all major polymer-based 3D printing technologies. Within this framework, Evonik has organized its product range of ready-to-use materials under the new INFINAM® brand. smi

Evonik
www.evonik.com

Kistler at Fakuma 2021: Sensors and systems for smart injection molds

ComoNeo from Kistler is the leading process monitoring system for smart injection molding production – and the new version 4.1 offers a whole series of improved features (Picture: Kistler)

How can you make injection molds smart? "Smart Mold – Smart Process": that's the motto for the comprehensive portfolio of plastics processing solutions Kistler showcased at Fakuma 2021. Highlights included cavity pressure and temperature sensors, the ComoNeo 4.1 process monitoring system and the new piezoresistive miniature sensor for hot runners.

Smart injection molds are the key to sustainably optimized and transparent plastics processing – and those goals can only be achieved with the right sensor technology. Cavity pressure and temperature sensors plus a high-performance process monitoring system: a combination that achieves high levels of process transparency, opening up vast potential for optimization and enhanced cost-effectiveness. At Fakuma 2021, Kistler showcased its complete coordinated package of solutions for smart injection molding – including many new innovations and advanced developments.

Curtain up on the best ComoNeo of all time!

Directly connected to the injection molding machine, the ComoNeo process monitoring system comes with innovative new features to help users optimize the entire molding process – including control and assistance functions, and even model-based prediction of part quality. The new ComoNeo 4.1 integrates an envelope curve function, so process curves can be monitored with no need to waste time and effort on settings. Another plus: the system is WLAN-compatible for the first time, and extended interfaces ensure secure, reliable transmission of data to the injection molding machine and other peripherals.

Preview: miniature pressure sensor for hot runners and 3D printing

Kistler is opening a new chapter in the evolution of measurement technology with a preview of its new 4004A pressure sensor for hot runner applications and additive manufacturing. With an operational and measurement range of up to +350°C, this piezoresistive sensor can now be deployed directly on the hot runner injection nozzles to ensure precise characterization of these injection molding processes. This ultra-compact sensor has a frontal diameter of only 3 mm; it includes TEDS and can be connected with as many as three additional sensors via an adapter, to create one measuring unit. The 4004A should be available as of mid-2022, with three measuring ranges: 500, 1,000 and 2,500 bar.

New sensors to monitor mold temperature

Kistler is adding three temperature sensors that match different mold geometries to its portfolio for quality assurance in injection molding. Themocouples 6196A, 6197A and 6198A feature a measuring range from 0 to 400°C; thanks to their short response times, they guarantee highly reliable detection of anomalies in mold temperature conditioning, flow fluctuations and blocked cooling channels. To optimize integration into the injection mold, these robust thermocouples are available as mineral-insulated or angle versions, and also with a bayonet cap.

Everything at a click: Kistler's hybrid booth concept

Kistler has responded to the new location and the changed conditions for the event by adding a virtual dimension to its booth. Even if customers are not present in person at the booth, they can use a link to connect individually with one of Kistler's experts to discuss their chosen topics – such as solutions for specific industries including medtech, special connectivity solutions or the company's extensive product portfolio. *smi*

Kistler Group
www.kistler.com

exhibitions calendar

Arabplast
15-18 November 2021
Dubai, UAE
www.arabplast.info

Arabplast has become one of the biggest events in the plastics and rubber industries in the United Arab Emirates developed. International exhibitors are represented at this exhibition and present their latest innovations, technologies and machinery in the industry.

Formnext
16-19 November 2021
Frankfurt am Main, Germany
www.formnext.com

Formnext is the leading exhibition and conference dedicated to additive manufacturing and all of its upstream and downstream processes. It is where experts from a wide range of industry sectors, such as automotive, aerospace, mechanical engineering, medical technology, electrical engineering, and many more, come together to discover additive manufacturing, industrial 3D printing, and innovative production technologies for themselves.

Plast Eurasia
01-04 December 2021
Istanbul, Turkey
www.plasteurasia.com

The exhibition areas of the Plast Eurasia include plastic, machinery and equipment, mold making, plastic products, raw materials, packaging technology, hydraulics and pneumatics, as well as related industries and trade journals. International exhibitors can present their latest trends, products and developments to an interested audience here.

Interplastica
25-28 January 2022
Moscow, Russia
www.interplastica.ru

Interplastica is an international specialized exhibition for plastics and rubber processing and the region's leading industry platform. It provides a representative overview of machinery and equipment for the plastics and rubber industry, as well as processing and recycling machinery, tools and peripheral equipment, measuring, controlling, regulating and verification technology, raw and auxiliary materials, plastics and rubber products, logistics, warehouse technology and services.

Asiamold
03-05 March 2022
Guangzhou, China
www.asiamold-china.cn.messefrankfurt.com

Asiamold – Guangzhou International Mould & Die Exhibition is a leading trading platform for China's mould and die industry. The fair is dedicated to assisting industry players around the globe by offering an array of the latest mould making, 3D printing and die casting technologies and solutions to help participants to enhance their business results. The fair is held concurrently with SPS – Industrial Automation Fair Guangzhou (SIAF) to provide a total smart manufacturing sourcing ground for industry players.

Plastimagen
08-11 March 2022
Mexico city, Mexico
www.plastimagen.com.mx/en

Plastimagen represents Latin America's plastics sector's most important forum for the exchange of ideas and networking. It is the industry's premier expo in the region, where the world's leading suppliers gather in a single forum to provide key decision makers with state-of-the-art solutions for machinery and equipment, raw Materials, transformation of plastics and plastic products, services for the plastics industry.

Chinaplas
25-28 April 2022
Shanghai, China
www.chinaplasonline.com

Chinaplas is the largest plastics and rubber trade fair in Asia and widely recognized by the industry as one of the most influential exhibitions in the world. The rapid development of science and technology has dramatically increased the range of applications of plastics and rubber in various manufacturing sectors, including automobile, electronics and electrical appliances, information technology and telecommunication, building and construction and others.

Green Plast
03-06 May 2022
Milan, Italy
www.greenplast.org

Green Plast is a plastics and rubber industry event dedicated to innovative solutions to boost environmental sustainability, energy efficiency, options for Reducing-Reusing-Recycling, and progress towards a circular economy.

Web conference

December 8, 2021 • Start: 10.00 CET

lab.extrusion-info.com
The official language of the conference is English

Laboratory & quality control in plastics processing

Developed by:

VM VERLAG Cologne/Germany

EXTRUSION

smart_molding international

Our sponsors:

GOLD PROMIX Solutions

GOLD KRÜSS Advancing your Surface Science

GOLD SIKORA Technology To Perfection

GOLD OCS® Optical Control Systems

COLLIN LAB & PILOT SOLUTIONS

- Laboratory equipment
- Quality control of input raw materials
- Quality control of finished products
- Analytical equipment
- Measuring equipment
- Pilot and test lines
- Desktop mini IMMs and mini extruders
- Laboratory mixers and compounders
- Laboratory and processing simulation software
- Metrology and equipment verification
- Laboratory analysis services
- Formulation development services
- Certification services
- External engineering and research services
- R&D in the enterprise