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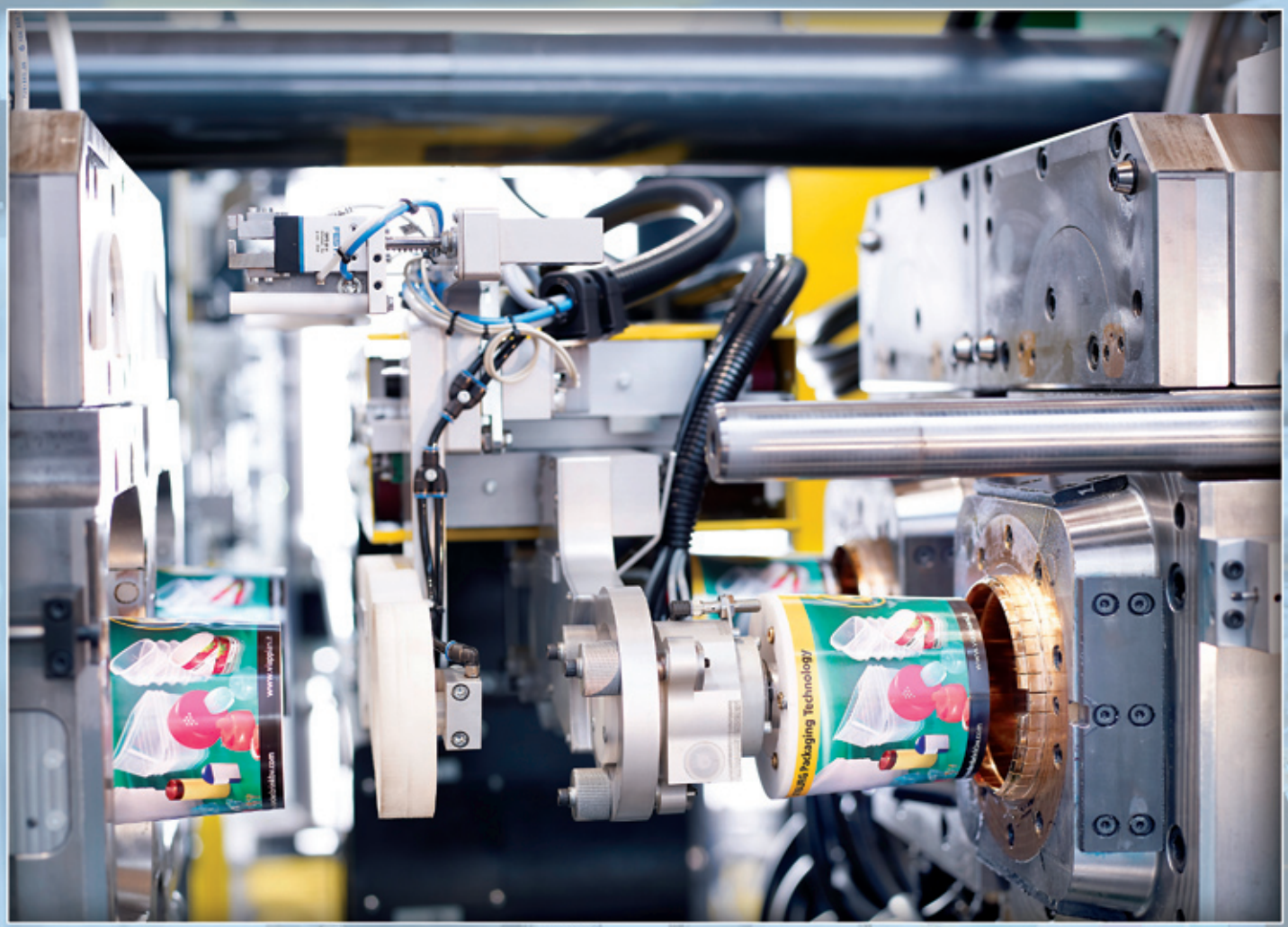

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Front page picture: Arburg

Index of companies in this issue

CONTENTS

18

IMD VARIOFORM® process with Functional In-Mold Labeling (IML) convinced the jury with its triad of efficiency, freedom of design and sustainability. This technological solution bundles the four processes of thermoforming, decorating, integrating a sensor, and punching directly in the injection molding tool, in a single processing phase. The innovative, highly efficient process was developed for the production of plastic parts with extreme 3D geometry, for example, heavily bent, domed or curved shapes.

29

Powerful, dynamic, sustainable: Designed for continuous high performance in the packaging industry, ENGEL e-speed injection moulding machines are the most energy efficient and clean hybrid machines in the market. The new e-speed 280/70 with a clamping force of 2800 kN is equipped with an interactive IML (in-mould-labelling) solution, which ENGEL is implementing in cooperation with partners Brink and Verstraete in mould labels. The new size sees ENGEL further optimise its particularly economical hybrid machine,

Orkla worked with the experts at Verstraete IML to introduce Digimarc barcodes into the packaging of one of their most prominent products. These interactive IML labels open the door to new and improved recycling streams. It makes plastics easy to scan, which means automatic sorting is much more accurate.
Moving to a circular economy will see plastic waste greatly reduced through effective recycling systems. But achieving this goal requires a shift in focus: plastics need to be designed to be recycled, right from the get-go.

The digital watermarks are codes the size of postage stamps which are applied directly to the surface of a product or to its label but are not visible to end users and consumers. The individual tile patterns are created through micro-topological variations in the carrier material and multiplied to create a graph which resembles a mosaic. They create a “digital passport” of which a fragment is enough to call up information about the manufacturer, for example, or about the materials processed and whether or not the packaging is suitable for food.

TPE materials are already widely used in automotive interiors, for example in mats, grips and sealings. However, until recently, thermoplastic elastomers have not been viable for large scale trim because these applications have much higher specifications regarding abrasion behaviour, processability and heat resistance. The new Dryflex HiF TPE grades fulfil these requirements and are injection mouldable, making them an interesting alternative to PU coating, PVC slush moulding or TPO foil processes.

A smartphone that sets new standards for lightness, slim design and sustainability is making its debut on the market this spring: the Carbon 1 MK II from Carbon Mobile. "Designed and engineered in Germany, the Carbon 1 MK II reignites miniaturization and drives sustainability in connected devices by replacing plastics and aluminum with advanced composite materials for the first time", says Firas Khalifeh, CEO of Carbon Mobile. The base material for the production of the housing is a thermoplastic composite from the LANXESS Tepex dynalite product range.

New investment to strengthen expertise and electric drives portfolio

Strategic investment in the future: Arburg's entrepreneurial families Hehl and Keinath have acquired AMK Arnold Müller GmbH & Co. KG and with it the Drives & Automation division as of 1st January 2021. The company will operate under the new name of AMKmotion GmbH + Co KG in future.

The AMK Group, which is based in Kirchheim/Teck, is one of the international technology leaders in the electric drive technology, control technology, industrial automation engineering, and automotive sectors. AMK has worked closely with Arburg as a development partner in electric drive systems for more than two decades. This combined effort has contributed significantly to the success story of the electric Allrounder injection moulding machines.

Over the past five decades, AMK has evolved from an engine manufacturer into a system supplier. The AMK Group is divided into two divisions. The product portfolio of the Drives & Automation division, which previously belonged to AMK Arnold Müller GmbH & Co. KG, includes motors, centralized and decentralized drive solutions, and control systems. The Automotive division of AMK Automotive GmbH & Co. KG manufactures items such as air suspension compressors, air suspension systems, and power steering drives. In 2016, the family-owned company from southern Germany was sold with its two divisions to Chinese investor Zhongding Holding Europe GmbH.

AMK products ensure that the Allrounder 820 A, like all other electric Arburg injection moulding machines, is highly productive and efficient

One-time opportunity seized

The Chinese owner's desire for strategic change presented the entrepreneurial families Hehl and Keinath with the opportunity to take over the Drives & Automation division with AMK Arnold Müller GmbH & Co. KG.

"We are very confident about this important acquisition," commented Michael Hehl, Managing Partner and Spokesman of the Arburg Management Board. "This underlines the importance of electric injection moulding machines, whose share in our portfolio has been growing steadily for years and still has plenty of potential for the future."

The former AMK Arnold Müller GmbH & Co. KG will operate under the name AMKmotion GmbH + Co KG in future. The employees of the former AMK Drives & Automation division will be retained, and the Kirchheim/Teck and Weida locations in Germany and Gabrovo in Bulgaria will also continue.

Moving forward with renewed strength

Acquiring the important AMK division is intended to give Arburg access to its expertise and influence on future development work. This will enable pioneering refinements to be made even more quickly and efficiently to the drive systems of the electric Allrounders.

Besides the technology and long-standing partnership, the new company's sound basic philosophy was also a factor for the Arburg partners in the purchase. AMK and Arburg traditionally have similar values and exemplify long-term entrepreneurial commitment with a view to stability and a sustainable strategy focused on expertise.

By acquiring AMK Arnold Müller GmbH & Co. KG, Arburg Partners Juliane Hehl, Michael Hehl and Renate Keinath (from left) are investing in the future of electric injection moulding machines

Joint success story

So the Arburg partners are not buying an unknown quantity: The development partnership with Arburg in the engine sector has existed since 1994. An important milestone of the successful collaboration was the market launch of the first electric series machines, the Alldrive series, in 2001. Since that time, the Allrounder A machines have largely been equipped with AMK drive components.

Winner of the Arburg Energy Efficiency Award

Arburg's requirements for energy optimisation, environmental protection and resource conservation have been strongly supported by AMK and implemented in its drives. AMK was awarded the Arburg Energy Efficiency Award in 2013 for its successful developments in this respect.

Arburg
www.arburg.com

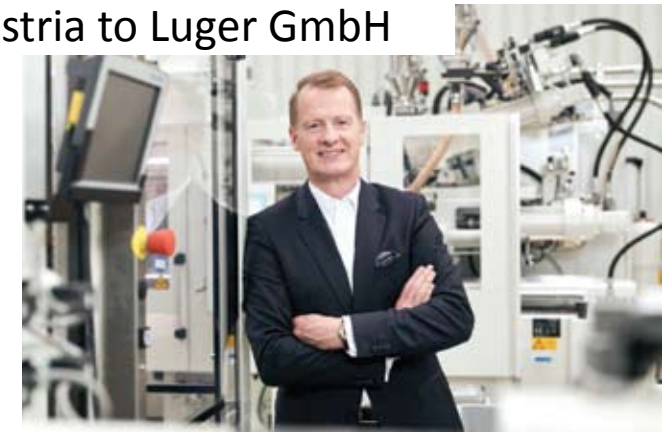
KraussMaffei sells KraussMaffei Austria to Luger GmbH

The Munich-based machinery manufacturer KraussMaffei Group is selling its subsidiary KraussMaffei Austria to the Austrian family-owned company Luger GmbH. There, it will continue to operate under the name KMAT Maschinen- und Service GmbH. The eight employees of the former KraussMaffei Austria will continue to be employed. The transaction took effect on March 1, 2021.

With this sale, the KraussMaffei Group is aiming to further intensify its sales and service business in the Austrian and Hungarian markets for injection molding, reaction process and extrusion machinery. The KraussMaffei Group is one of the world's leading suppliers of all three technologies. Following the takeover of the previous KraussMaffei employees, more than 60 experts will in future be responsible for sales and support of plastics machinery under the KraussMaffei and Netstal brands. Both brands belong to the KraussMaffei Group.

The Luger GmbH is an Austrian family business with headquarters in Purkersdorf near Vienna. The company's business activities focus on sales, planning, assembly and service of machines and peripheral equipment for the plastics processing industry. KraussMaffei and Luger had already extended their sales cooperation in the middle of last year.

Dr. Michael Ruf, CEO of the KraussMaffei Group, is confident that KraussMaffei customers in particular will benefit from the transaction: "The sale of KraussMaffei Austria is part of our strategic realignment. It will bring us even closer to our customers. With the sales and service competence of Luger and its employees, we will be able to act even faster and more efficiently in Austria and Hungary in the future."



Dr. Michael Ruf, CEO of KraussMaffei

Luger's CEO Thomas Luger also expects a significant increase in competitiveness from the integration of KraussMaffei Austria into Luger GmbH: "The integration of KraussMaffei Austria under the future name KMAT Maschinen- und Service GmbH will considerably strengthen us. We want to continue the brand and maintain the pioneering spirit of the KraussMaffei employees. For the future, we plan to be able to offer the entire KraussMaffei product portfolio and the complete range of peripheral equipment from a single source. We will also operate in the market with even more service technicians and thus be able to look after our customers even more intensively."

Luger intends to expand its market presence in the coming years, particularly in Hungary. A modern technical center is to be built there in the greater Budapest area. Furthermore, Luger plans to hire additional Hungarian specialists and to further expand its warehouse capacities.

KraussMaffei
www.kraussmaffei.com

New subsidiary founded in Prague

The Japanese-German injection moulding machine manufacturer Sumitomo (SHI) Demag will be serving the Czech and Slovakian markets from April 1, 2021 through the newly founded sales and service company Sumitomo (SHI) Demag Plastics Machinery Česko spol. s r.o. Headquartered in Prague, David Svoboda has been appointed as managing director of the company.

"Our works agency ESINTE has successfully supported customers in the Czech Republic and Slovakia for many years. Applying our process and application engineering expertise, the new subsidiary will build upon this strong foundation to advise the two markets even more intensively," says Siegfried Köhler, Corporate Sales Director at Sumitomo (SHI) Demag's European headquarters. "We are very pleased to appoint longstanding plastics expert David Svoboda to lead this new subsidiary."

Managing Director Svoboda comments: "Many of our new consultants have worked in plastics processing for years and really understand the specific needs of the local markets. With this combined experience, we can react to the high demand for system solutions and application-specific technologies. Our customers can now benefit directly from the group-wide expertise in key sectors, including medical technology, packaging and automotive.

"Additionally, being close to the customer ensures even faster response times. Having a direct line to development, project planning and production at our German parent company provides direct benefits our customers located in the Czech Republic and Slovakia," Svoboda adds.

David Svoboda is the Managing Director of Sumitomo (SHI) Demag Plastics Machinery Česko spol. s r.o.

In recent years Sumitomo (SHI) Demag has significantly expanded its market presence and increased its market share, particularly in strategic markets. "We regard both the Czech Republic and Slovakia as important growth markets. This is despite the current weakness in the automotive sector," explains Köhler. "Making improvements to processes and further increasing customer satisfaction by advancing our expansion in Eastern Europe is the next logical step. We are proud to announce this strong subsidiary for the Czech Republic and Slovakia, which invests in future-oriented service concepts and intensive application-specific technical advice."

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

New management to head Barnes Molding Solutions

Jessica Poliner has been appointed President of Barnes Molding Solutions, effective January 1, 2021. Ms. Poliner replaces Norbert Scheid, who retired from Barnes Group in December 2020, after a 47-year successful career in the plastics molding industry. Molding Solutions is a strategic business unit within Barnes Group, which consists of highly respected brands Synventive, Thermoplay, männer, FOBOHA, Priamus, and Gammaflux.

With over fifteen years of leadership experience working in global diversified industrial companies, Jessica Poliner has accepted the position of President of Molding Solutions. Ms. Poliner began her career as a lawyer, where she focused primarily on corporate and mergers & acquisitions, along with global integration. She previously served as the General Manager & Vice President for the Marine, Rail, and Air businesses of Thermo King (Ingersoll Rand), as well as held a wide range of leadership roles at Caterpillar. She adds global leadership and cognizance to the role, having lived in the USA, India, Panama, and Belgium in the last decade alone. Building on the reputation of Molding Solutions' premier brands, Ms. Poliner and her leadership team will advance and accelerate the execution of the strategic business unit's growth strategy through investments in R&D, product management, and strategic marketing.

Jessica Poliner has been appointed President of Barnes Molding Solutions

Mr. Scheid joined Barnes Group as Vice President and General Manager, European Operations, Synventive with the acquisition of Synventive in 2012, and most recently served as President, Molding Solutions. Barnes Group extends its sincere thanks to Mr. Scheid for his leadership and support of Molding Solutions and wishes him well in his future endeavors.

männer
www.maenner-group.com

ENGEL founds company for pre-owned machines

The foundation of ENGEL Used Machinery s.r.o. sees injection moulding machine manufacturer and systems solutions provider ENGEL, headquartered in Schwertberg, Austria, extend its portfolio to include pre-owned machines. With ENGEL as their full service provider, customers benefit from comprehensive advice from a single source.

Besides injection moulding machines, the new company also buys back used robots from the ENGEL series, refurbishes the products and puts them back on the market for sale. "In some cases, a second-hand production cell is the only option. We want to offer our customers a high-quality solution for this requirement, too, with ENGEL's customary consulting expertise and outstanding service", says Dr. Christoph Steger, CSO of the ENGEL Group, explaining this strategic decision. The repurchased injection moulding machines and robots are reconditioned in-house. ENGEL has created the capacities required for this at its production plants in Austria and the Czech Republic.

The newly founded company is headquartered in Prague, Czech Republic. "Eastern Europe is the largest and fastest growing market for pre-owned injection moulding machines", says Leopold Praher, General Manager of ENGEL Used Machinery.

Leopold Praher has been with ENGEL for more than 30 years, most recently as Sales Manager Elast/LIM with responsibility for ENGEL's global elastomer and thermoset business. Praher will initially fill both roles in order to prepare the Elast/LIM division, which is strategically important for ENGEL, in the best possible way for an orderly succession.

Leopold Praher has taken over the management of the newly founded ENGEL Used Machinery s.r.o.

ENGEL
www.engelglobal.com

Nordson appoints Jesus Crespo as vice president

Jesus Crespo has recently joined Nordson Corporation as vice president leading the Polymer Processing Systems (PPS) division.

Mr. Crespo brings twenty years of executive experience in industrial management. Most recently he was vice president and general manager of Oshkosh Corporation's OEM concrete mixer truck business, and previously he served as vice president and general manager of the Global Appliance Division of Illinois Tool Works (ITW).

Nordson's PPS products include BKG® pelletizers, melt pumps, and melt filtration systems and EDI® polymer extrusion and fluid coating dies. The PPS division is now part of the Industrial Precision Solutions (IPS) segment of Nordson, formed in 2020 in a corporate business realignment and headed by Gregory P. Merk, executive vice president.

"Jesus has a proven track record of leading division-level transformations that revitalized businesses and drove organic growth," said Mr. Merk. "He will focus our best resources to bring product and service innovations that make our customers more successful."

Jesus Crespo - the new Vice President to lead Polymer Processing Systems

Mr. Crespo's appointment follows the announced retirement of John J. Keane, executive vice president, who is retiring after nearly 30 years with Nordson. Prior to leading PPS, Mr. Keane held leadership roles with the company's industrial coatings, adhesives, and advanced technology businesses. He was appointed an officer of the company in 2002.

"John has brought a tremendous amount of passion and knowledge to Nordson's senior leadership team" said Sundaram Nagarajan, president and CEO of Nordson Corporation. "We are fortunate to have had the benefit of his leadership, dedication, and compassion."

Nordson Corporation
www.nordson.com

WINTEC starts distribution in Europe

WINTEC, a member of the ENGEL group of companies headquartered in Austria, is expanding sales of t-win injection moulding machines to Europe. This step makes the dual-platen large-scale machines available worldwide.

Since 2014, WINTEC in Changzhou, China, has built high-quality injection moulding machines for standard applications. In the six years of its existence, the company has firmly established the brand, first in Asia, later in METAI region (Middle East, Turkey, Africa, India) and, since 2018, on the American markets. By expanding into Europe, the ENGEL Group is consistently developing its two-brand strategy.

Broadest solution expertise from a single source

"We are seeing an increasing demand in Europe for standardised injection moulding machines that are both powerful and quickly available," says Dr. Stefan Engleder, CEO of the ENGEL Group. The drivers of this development are increasing cost pressure on the one hand and changing product trends on the other. For example, product life cycles are becoming shorter in the domestic appliances sector. Standardised injection moulding machines that are quickly available support a short time-to-market here. WINTEC delivers custom-fit solutions for these requirements with an attractive price-performance ratio.

"The ENGEL Group is the only supplier in the world that can offer single-source solutions for the entire spectrum of requirements – from standard single-component injection moulding to technologically sophisticated applications – with reliable products and systems that have been tried and tested over many years," as Dr. Christoph Steger, CSO of the ENGEL Group, emphasises.

European quality produced in China

t-win injection moulding machines are particularly popular for single-component injection moulding that does not require any custom technologies, but places high demands on quality and process consistency. The target industries include domestic appliances, technical moulding and automotive. The machines are delivered pre-configured, which shortens the time for commissioning.

Dr. Stefan Engleder, CEO of ENGEL Group

WINTEC machines are developed in Europe and produced in China. The production plant in Changzhou is integrated with the ENGEL Group's global quality management system. Following expansion of the location, which was completed in the early summer of 2020 and doubled the production floorspace, WINTEC is well equipped to meet the rising global demand.

"Many early adopters are continuing to rely on WINTEC for their further capital expenditure because the high quality, energy efficiency and reliability of the machines offer them competitive advantages," says Steger. "The excellent service is a further important decision-making criterion. Thanks to the ENGEL Group's global reach, our customers in all regions of the world benefit from fast on-site service and a great spare parts supply."

Energy-efficient, reliable and powerful

The hydraulic dual platen machines from the t-win series are available with clamping forces from 4500 to 18000 kN and feature energy-saving servowin servo-hydraulics as standard. The powerful C3 control unit enables intuitive operator guidance, an ergonomic work approach and flexible integration of robots of a wide range of types and brands, especially the viper linear robot series by ENGEL.

t-win demonstration machines with various clamping forces are available in Austria and other European countries.

WINTEC
www.wintec-machines.com

WITTMANN is looking ahead with optimism

In the second half of 2020, the WITTMANN Group has seen a more than positive development in its business in spite of the economic slowdown in the automotive sector and the restrictions due to COVID-19, and this trend is continuing in 2021. This development has paved the way for further investments.

The order intake of the WITTMANN Group has substantially increased, mainly from the second half of 2020 onwards, and reached a new record level in February 2021. An increase has been registered across all markets and sectors of industry. Michael Wittmann, Managing Director and CEO of the WITTMANN Group, states: "Based on the current order backlog and continuing very positive order situation, we are looking forward to a two-digit increase in sales for 2021. From today's point of view, we expect to reach the figure of 2019 once more and maybe even exceed it." In this connection, the availability of parts is a challenge, since the industrial production figures are experiencing a global upturn.

The Group's staffing level of 2,200 associates is currently slightly above that of last year.

Since the end of January 2021, WITTMANN Kunststoffgeräte GmbH in Vienna has now been operating under its new, more international company name WITTMANN Technology GmbH. For WITTMANN's two production facilities in Vienna, a major remodeling of its headquarters in Lichtblaustrasse is planned for 2021, together with an extension of the building in Percostrasse. The latter involves an extension of the R&D departments in the areas of mechatronics and software development. An additional 1,050 m² of office and test lab space will be created.

WITTMANN Technology GmbH, Vienna

The WITTMANN Group is a globally leading manufacturer of injection molding machines, robots and auxiliary equipment for processing a great variety of plasticizable materials – both plastic and non-plastic. The group of companies has its headquarters in Vienna, Austria and consists of two main divisions: WITTMANN BATTENFELD and WITTMANN.

Extension to the existing assembly hall to be constructed in Kottingbrunn

Another noteworthy investment is imminent at WITTMANN BATTENFELD in Kottingbrunn. Here, a fully automatic pallet racking system with about 1,500 pallet bays will be built. For this purpose, the construction of an extension to the existing building to provide about 3,000 m² of additional space will start in May. Completion and commissioning is scheduled for 2023. In addition to the fully automatic pallet racking system, this extension will house a separate storage and order picking area, as well as assembly space for vertical and large machine models and a new electrical workshop. Rainer Weingraber, Managing Director of WITTMANN BATTENFELD GmbH, comments: "This investment will help us to make the production process even more efficient and to continue on our course of growth. It will be a further milestone for the production plant in Kottingbrunn."

The investment projects of the WITTMANN Group planned for the current fiscal year for its subsidiaries concern primarily China, Hungary and Bulgaria. The facilities at these locations are to be further extended.

Michael Wittmann: "With these planned investments we will be optimally prepared for the challenges of the next few years in the areas of development as well as logistics and sales."

WITTMANN Group
www.wittmann-group.com

Stratasys acquires RPS, provider of best-in-class stereolithography 3D printers

Stratasys Ltd., a leader in polymer 3D printing solutions, has recently acquired UK-based RP Support Ltd. (RPS), a provider of industrial stereolithography 3D printers and solutions. RPS' complementary technology further expands Stratasys' polymer suite of solutions across the product life cycle, from concept modeling to manufacturing. Stratasys will leverage its industry-leading go-to-market infrastructure to offer RPS' Neo® line of systems to the global market with an expanded set of applications. Stratasys expects the acquisition to be slightly accretive to revenue and non-GAAP per-share earnings by the end of 2021.

RPS' Neo line of 3D printers feature dynamic laser beam technology that enables build accuracy, feature detail, and low variability across the full extent of a large build platform. As an open resin system, the Neo products provide customers materials with a wide range of properties such as chemical resistance, heat tolerance, flexibility, durability, and optical clarity. Its products can produce large parts up to 800 x 800 x 600 mm, providing a significant build area in a small footprint.

In addition, all Neo systems are Industry 4.0-ready, with Titanium™ control software that includes a camera, network connectivity, support remote diagnostics, and mid-build parameter customization. The printers can automatically email progress reports on jobs. Stratasys plans to integrate its GrabCAD Print workflow software into future versions of the product.

Stratasys is leading the global shift to additive manufacturing with innovative 3D printing solutions for industries such as aerospace, automotive, consumer products and healthcare. Through smart and connected 3D printers, polymer materials, a software ecosystem, and parts on demand, Stratasys solutions deliver competitive advantages at every stage in the product value chain. The world's leading organizations turn to Stratasys to transform product design, bring agility to manufacturing and supply chains, and improve patient care.

"As businesses accelerate their adoption of additive manufacturing, our goal is providing our global customers with the world's best and most complete polymer 3D printing portfolio," said Stratasys CEO Yoav Zeif. "We believe the Neo products are superior relative to other solutions currently available in the market due to an open choice in resins, low service requirements, and reliable and accurate builds with simple day-to-day operation. With access to our strong global channels and our innovative GrabCAD software, we will bring RPS' innovative products to many more manufacturing organizations."

"We developed the Neo line to raise the industry standard for the next generation of large-frame industrial stereolithography 3D printers," said RPS Director David Storey. "I'm looking forward to continuing to develop this best-in-class technology with the Stratasys team as we bring our products to a broadened global audience."

Williams Racing, a British Formula 1 racing team, recently acquired multiple Neo 800 3D printers. "The team's RPS Neo 800 machines ran unmanned over the Christmas break, delivering a huge volume of high-quality parts to our aero test program, a truly astounding achievement," said Williams Racing Operations Director James Colgate. "I wanted to let you know how impressed we have been with our new Neo 3D printers."

Industrial stereolithography systems are well-established in the 3D printing industry for applications such as tooling, investment casting patterns, anatomical modeling, orthodontic clear aligner molds and large design parts. They provide quality surface finish, large build sizes, a fast time to print, and an affordable cost per part. The global addressable sector for industrial stereolithography systems is estimated at approximately $150 million and is expected to continue growing at a rate of approximately 10% per year.

Stratasys
www.stratasys.com

Neo® stereolithography 3D printing range from RPS

ZAHORANSKY Group acquires dialysis division of FLG Medizintechnik GmbH

On January 1st, 2021 the ZAHORANSKY Group acquired the dialysis division of its long-standing partner FLG Automation AG, taking a decisive step in consolidating its position in the field of medical technology.

The complete lines for dialysis filter manufacturing from FLG perfectly complement the available know-how and existing portfolio of ZAHORANSKY concerning machines and installations for medical-technical products, as well as primary pharmaceutical packaging. Here too, ZAHORANSKY offers the "one-stop shopping" experience its customers already know from brush production. In the future, this concept will also cover the installations for the production of dialyzers, the necessary injection molds for all parts, as well as the packaging machines. The ZAHORANSKY range will comprise turnkey production systems for the manufacturing of dialyzers, also covering the quality checks that are indispensable in medical technology. The acquisition of the dialysis division was made possible as part of the succession plan for FLG founder, Lüdger Grünewald.

Ulrich Zahoransky comments as follows: "We have already been cooperating with FLG for many years. Real friendships have developed between our companies over time, also at a personal level. This makes me all the more delighted to have found a solution that works for both parties, creating a classic win-win situation." To ensure a seamless transition period, all requests by FLG customers and interested parties will be forwarded to ZAHORANSKY and answered by the same from January 1st. The lion's share of service and support activities can from now on be assumed through VPN remote services, with ZAHORANSKY benefiting from the support of the team at FLG. Lüdger Grünewald will also be available to the ZAHORANSKY Group in the coming years, as a consultant: "I am already delighted by even more intensive collaboration in future, as well as by the opportunity to put my extensive know-how to great use."

With its global sales and service subsidiaries in the US, India, China, Japan, and Brazil, ZAHORANSKY will also be able to provide competent customer support for these systems on a great number of key markets in the near future. The medical technology activities of the corporate group are bundled in ZAHORANSKY Automation & Molds GmbH in Freiburg.

A success story: Medical technology by ZAHORANSKY

Over the past fifteen years, ZAHORANSKY developed its activities in medical technology – parallel to its traditional line of business, injection molds and machines for brush production. Besides automatic lines for the production of suitable primary packaging, the company above all made a name for itself with machines for the production of staked-needle syringes, plastic syringes with a molded-over needle. The needles are not glued onto the syringe, but rather molded over the syringe in a fully automatic process, benefiting both their stability and material compatibility while allowing for an efficient production process.

With the acquisition of FLG production lines for dialyzers, ZAHORANSKY is now adding great competence to this field of business. The company achieves one of its most significant successes in this field at the beginning of 2020: US company SiO2 placed a major order with ZAHORANSKY at this time of initially 25 million euro for eleven automation lines and six removal units for corona vaccine vials. Over the course of the year, the order was extended to an overall scope of 48 million euro. As part of the US government project "Operation Warp Speed", 300 million corona vaccine doses should be available by the beginning of the year. In spite of extremely short delivery times, ZAHORANSKY managed to meet the order in time and the machines were punctually put into operation with the customer.

ZAHORANSKY Group
www.zahoransky.com

IMSE™ technology reduces greenhouse gas emissions by 35%, plastics use up to 75%

TactoTek, the Finland-based company that develops and licenses in-mold structural electronics (IMSE™) technology, announced today their achievements towards more sustainable electronics manufacturing. An independent lifecycle analysis (LCA) by Finnish research institute, VTT, revealed that an electronics part manufactured using IMSE technology results in 35% lower greenhouse gas (GHG) emissions than a comparable conventional electronics design. In addition, because IMSE combines both mechanical structure and electronic function in a single part, an IMSE part typically uses 50-75% less plastics than a conventional assembly.

The European Union and national legislative requirements globally are driving a shift to more sustainable manufacturing across many industries. Moreover, OEMs and manufacturers in many markets are outpacing regulation in their sustainability and recycling efforts. IMSE supports more sustainable operations without compromising the electronic functionality consumers want.

"Environmental responsibility is a TactoTek core value, both for our own operations and the IMSE technology that we develop and license to global mass manufacturers," stated TactoTek CEO, Jussi Harvela. "IMSE technology enables OEMs to realize their design objectives cost effectively while significantly reducing the environmental impact of electronics throughout their complete lifecycle."

In addition to reducing the use of plastics and GHG generated during manufacturing, IMSE technology utilizes clean, additive processing methods. For example, circuitry and electronics are created with printing processes, rather than toxic chemical etching. TactoTek is also working with recycling leaders to verify the best recycling methods for IMSE parts and to ensure that they are widely available.

"With IMSE there are fewer parts to design, source, manufacture, transport and assemble relative to conventional electronics assemblies," noted Marko Suo-Anttila, SVP Engineering and Operations. "With IMSE we provide our licensees with a solution that provides new design freedom while reducing GHG emissions, using less plastic and eliminating toxic waste streams. This is just the beginning – we are also verifying a new generation of bio-based plastics and other sustainable materials for IMSE use."

TactoTek
www.tactotek.com

Longer lifespan due to clamped toggle pins

Stork IMM has improved their very reliable toggle system further by executing them with clamped toggle pins. Standard for the electrically driven clamping unit, optionally for the hydraulic execution in range from 2500 kN to 11000 kN.

What are toggle pins?

The toggle pins are the cylindrical pins in the toggle system of the machine that function as a pivoting point. To be able to rotate, minimal play is required between pin and bushing. Lubrication between pin and bushing creates a lubricating film to prevent wear.

What are "clamped" toggle pins?

In order to be able to mount the toggle pins, a certain amount of play between the pin and the fixed part of the hinge is required. In our former construction the pin was secured with a key. However, micro movements were possible due to the minimal play. Clamping the toggle pin instead of securing it with a key also secures the pin and furthermore reduces the play to zero.

This has a number of great advantages

- The play in the toggle where the pin does not turn becomes zero. If the play is zero, then no wear can occur. The lifespan of the toggle lever system will extend considerably.
- Play will only occur in one place, namely, where the pin turns in the bushing. The play per pivot point is therefore halved. There are several pivot points in the toggle system, thus significantly reducing the total play. This allows for a more accurate positioning of the movable clamping plate when opening at high speeds, this is especially important with IML and the improvement ensures a more quiet movement.
- The clamping of the pins leads to a stiffer support of the pin, which in turn means that the bearing surface becomes larger, the surface pressure becomes lower and therefore the wear will become less.

Stork IMM
www.storkimm.com

Metallic IML means Milegrin seafood preserves look as good as they taste

Verstraete in mould labels

Founded in 1978, Meridian has spent over 40 years satisfying seafood cravings in Russia. As the largest producer of ready-to-eat fish and seafood products in the Russian market, they know how to give the people what they want. And in 2020, they want gourmet seafood preserves.

Seafood for gourmets

A Russian favourite, seafood preserves are widely available in a variety of styles and price brackets. Even so, connoisseurs were hungry for something more spectacular. Meridian seized this opportunity with Milegrin, a brand designed to deliver unique, ready-to-eat products that satisfy even the most discerning palates. Their premium seafood preserves pack more punch than anything else on the market. Consumers taste the French countryside with selected mussels in oil with Provencal herbs, savour a fiery mouthful of satisfaction with selected mussels in oil with chilli pepper, or enjoy squid straws and tentacles together in brine for a low-calorie protein hit.

'Milegrin is all about offering consumers a first-class experience,' says Anastasia Andrianova, Chief Brand Manager at Meridian. 'We only use top-quality ingredients and our exclusive seafood recipes combine herbs and spices in unique and enchanting ways.'

The term "in mould labelling" is directly derived from the technique: a preprinted polypropylene label is placed in a mould. This mould has the shape of the end product, e.g. the shape of a butter tub. Then the molten PP is added to the mould. It fuses with the label, and while curing, takes the shape of the mould. Result: label and packaging become one.

First impression counts

The next step for Meridian was to enhance Milegrin products with innovative packaging. First impressions count; customers should know they're looking at a premium product from the very first glance. Meridian approached long-time packaging partner Mir Upakovki, looking for something bright and charming, with a sophistication that appeals to high-end consumers. 'Milegrin seafood preserves really are the best of the best. Meridian needed attractive and innovative packaging to reflect the superb calibre of their products,' recounts Boris Tarakanov, Key Account Manager at Mir Upakovki: "we had no doubts that In-Mould-Labeling technology will be the best solution and with our more than 15 years experience at that field, we were confident to find the look-and-feel that will satisfy the request of Meridian".

Premium product

Already familiar with the benefits of in-mould labeling (IML), Mir Upakovki called on Verstraete IML to find the best-performing and best-looking solution. They trialled several IML film options before deciding on a glossy-look film with metallic foil. It was a decision that did not surprise Mikhail Britcyn, Regional Sales Manager at Verstraete IML. 'Metallic IML doesn't just capture attention, it delivers a message,' he states emphatically. 'It says, "This brand is a big deal!" The customer immediately knows they're looking at a premium product.'

Triple profit

It's not just the label that makes the packaging for Milegrin seafood preserves stand out from the rest. A taller-than-usual design gives the containers added elegance; they're literally head and shoulders above everything else on the shelf. And whilst Metallic IML ensures the packaging attracts attention, the transparent lid allows the food itself to shine. It's a unique feature that lets Milegrin's seafood preserves entice the customer directly. Moreover, thanks to IML, both the container and the lid are completely recyclable. This sustainable packaging solution is good for Meridian, good for the customers and ultimately good for the environment. That's a triple-win.

Verstraete IML
www.verstraete-iml.com

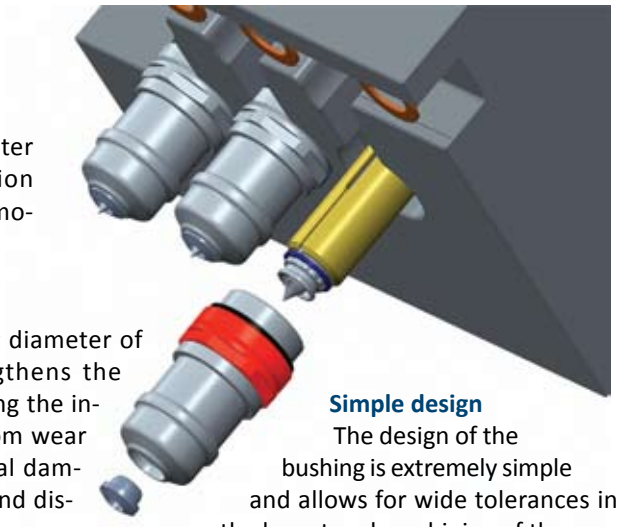
D-Bushing – the ultimate generation of gate bushing

The gate bushing is typically used in hot runner nozzles for preserving the gate point quality and preventing plastics wear in nozzle components. Gate bushings are also used in the event of frequent cavity plate changes. The type of gate bushing is determined based on the resin used and the application. Thermoplay, a business within Barnes Molding Solutions strategic business unit, is pleased to announce the ultimate generation of D-Bushing, which provides added safety, stability, and reliability to the moulding process and less energy consumption.

Double sealing

D-Bushing has been designed for the new Thermoplay TF nozzles and is equipped with a double sealing ring on the external diameter to protect the injection system from any thermoplastics leakage.

Barnes Molding Solutions is a strategic business unit within Barnes Group, which includes highly respected brands in plastic injection molding tooling, hot runners and controls, Synventive, Thermoplay, männer, FOBOHA, Priamus, and Gammaflux. Molding Solutions' comprehensive portfolio of advanced technologies and value-added services delivers premium tool-based solutions where demanding specifications are required by global customers in the plastic injection molding industry across a broad spectrum of applications.



Robust protection

The external sealing diameter of the D-Bushing strengthens the nozzles while preserving the internal components from wear and possible accidental damage during assembly and disassembly operations.

Frequent maintenance

The sealing diameter close to the injection point protects the integrity of the injection system, the tips in particular, allowing easy and safe mounting and disassembling of the cavities as well as frequent changes to the mould version.

High thermal performance

The D-Bushing creates a barrier that increases the nozzle insulation and reduces the thermal dispersion, thus saving energy consumption.

No changes on nozzle pitch

The external fixing ring allows for safe assembly and disassembly operations without causing damage to the bushing and other components. The bushing can be fixed to both the nozzle plate and cavity plate by rotating the nut upward or downward. As a result of this fastening system, the bushing does not increase the minimum pitch due to the nozzle diameter.

Simple design

The design of the bushing is extremely simple and allows for wide tolerances in the layout and machining of the nozzle seating in the mould.

Process reliability

The temperature inside the nozzle is more homogeneous, and the heating is more stable with less thermal dispersion, ensuring a perfect system balance and a reliable moulding process performance.

Fast installation and maintenance

The nut is fixed axially to the nozzle bushing. By turning it clockwise, the bushing is pushed toward the nozzle until there is coupling on the sealing diameter of the tip. When the default torque is applied, the bushing is fixed to the nozzle plate. By unscrewing the ring, the bushing is disassembled. The cable outlet in the middle of the nozzle body allows for replacement of the resistance, thermocouple, and tip without disassembling the injection system.

Thermoplay
www.thermoplay.com

HRSflow's servo-driven hot runner system convinces customers

A steadily growing number of injection molders are being convinced by the precision and reliability of HRSflow's hot runner technology, which has been proving its performance in many industries for years. First introduced at K 2013, their servo-driven valve gate system has since been a powerful driver of growth for this hot runner specialist, making it the world's No. 1 automotive supplier today. Now the number of units sold around the globe has passed the 1000 mark. The wide range of applications includes automotive engineering with lighting, interior, exterior and under-the-hood applications, increasingly also electrically driven vehicles, as well as logistics and environmental, household and gardening.

As part of its continuous development, HRSflow recently launched FLEXflow Evo, a new generation technology that features reduced space requirements (cutouts) in the mold thanks to optimized geometry. In addition, melt pressure and flow rate can be adjusted even more easily thanks to the flexible control system. What has remained unchanged is the perfect part surfaces that can be achieved, even in sensitive applications such as film back-molding.

The use of FLEXflow Evo in cost-reducing family molds provides particular advantages. These are currently attracting great interest because they can be used to produce different parts in a single shot. To outline the potential of the system in live demonstrations, HRSflow has produced what is now the third family mold for the simultaneous production of elements of the interior door trim of motor vehicles. It shows how the filling process can be perfectly balanced and warpage largely controlled despite very different molded part sizes, something that has often been problematic with family molds. At the same time, it demonstrates that the flow rate, which can be set independently and precisely for each cavity, reliably prevents overfeeding and flash formation. HRSflow makes the three demonstrator molds available to customers for trials, material tests and training at the company's headquarters in San Polo di Piave/Italy, at the plant in Hangzhou/China or at the plant in Grand Rapids, Michigan/USA.

Maurizio Bazzo, President of HRSflow, comments: "Today's automotive manufacturing environment is experiencing a transition phase towards a new direction: design complexity, e-car development, lightweighting and digitized driving. At the same time Tier 1 suppliers and OEMs are looking for overall cost saving processes. To obtain the next-generation high quality parts and to reduce scrap rate the market will need increasingly flexible flow control for part molding optimization. HRSflow is ready to face this new challenge."

HRSflow
www.hrsflow.com

Optimism in plastics and rubber machinery industry continues in 2021

Member companies of the VDMA Plastics and Rubber Machinery Association expect good developments in their order intake and sales this year, according to a recent survey.

"The demand for plastics and rubber machinery has changed significantly in all regions in the second half of 2020. The situation in China and Germany is assessed as particularly positive in this regard," explains Ulrich Reifenhäuser, Chairman of the Plastics and Rubber Machinery Association within the VDMA.

"And the expectations for the development of order intake for the currently running first half of 2021 are also consistently optimistic for all regions," he adds.

This is also reflected in the expected sales development. Almost half of the survey participants expect an increasing sales trend for the first half of 2021; for the second half of the year, even more than half of the companies surveyed expect a better sales trend once again.

"No wonder, then, that almost half of the companies surveyed are planning to recruit again in the first half of 2021," explains Thorsten Kühmann, Managing Director of the Plastics and Rubber Machinery Association.

"It seems as if the plastics and rubber machinery industry is at the start of a successful business year. We are looking forward to the next few months with anticipation in the hope that the estimates will also come true," he adds.

Already at the end of 2020, the figures showed a clear turnaround in the plastics and rubber machinery industry. The industry had recovered quickly after the initial challenges posed by the Corona crisis, which was reflected in a significant increase in incoming orders from October onwards. The year closed with a 7 percent increase in orders compared to 2019.

With around 3,300 members, the VDMA is the largest network organisation and an important voice for the mechanical engineering industry in Germany and Europe.

VDMA
www.vdma.org

Bavarian Innovation Prize for Leonhard Kurz

IMD VARIOFORM® process with Functional In-Mold Labeling (IML) convinced the jury with its triad of efficiency, freedom of design and sustainability. This technological solution bundles the four processes of thermoforming, decorating, integrating a sensor, and punching directly in the injection molding tool, in a single processing phase.

Pioneering progress from Fürth: Thin-film expert Leonhard Kurz has been awarded the 3rd main prize of the Bavarian Innovation Prize for the 'IMD VARIOFORM® with Functional In-Mold Labeling (IML)' process. This technological solution bundles the four processes of thermoforming, decorating, integrating a sensor, and punching directly in the injection molding tool in a single processing phase. For the first time, this innovation allows touch sensors to be deformed in three dimensions, injected with plastic and integrated into geometrically sophisticated and decorated components.

Economy in harmony with design freedom and sustainability

The innovative, highly efficient process was developed for the production of plastic parts with extreme 3D geometry, for example, heavily bent, domed or curved shapes. Based on the proven in-mold decoration technology, Kurz was able to effectively combine the previously successive processes of decoration, single-image illumination and capacitive sensor integration into a 3D-shaped HMI component and combine them in a single manufacturing step. Sensors from the Kurz subsidiary PolyIC are used, which are 3D moldable due to their ultra-thin metal-mesh carrier structure and can be flexibly adapted to even the most challenging component shapes.

Thanks to the greatest possible design freedom, there are no limits to the creative process. Individual single-image and endless decorations are possible, as well as partial or large-scale backlighting. The advanced technology can also score points in terms of sustainability: Pure recyclates can be refined so that the end result is equal to new material in terms of aesthetics. The transfer coating and PolyIC sensors also do not limit the recyclability of components.

"Our innovation combines maximum efficiency with maximum design freedom and sustainability - even for small series", emphasizes Martin Hahn, Head of Application, Technology & Innovation Plastic Industries. "Thanks to 'IMD VARIOFORM', household appliances or consumer electronics, for example, can become smart design objects in the future."

One-stop process solution for streamlined production processes

KURZ aims to make even the most complex plastics production processes as integrated, fast, and cost-effective as possible. IMD VARIOFORM® is a great example of this, because this technology allows you to bundle four separate manufacturing steps in a one-stop solution. To achieve this, you need a powerful injection molding machine - and the IMD VARIOFORM® production concept from KURZ with a KURZ IMD

VARIOFORM® coating, KURZ feed unit, and IR heating unit. Kurz can provide you with the entire solution from consulting through installation and commissioning to the start of your serial production and service: all inclusive, so that you can produce attractive products efficiently and economically at an even higher level.

• For the production of three-dimensional plastic parts, the IMD VARIOFORM® substrate with the desired decor runs through the machine as a wafer-thin coating in a roll-to-roll process. A thermoforming system as typical in conventional processes is not needed
• The IMD VARIOFORM® coating is heated directly in the chamber of the injection mold and pressed into the cavity. This gives the plastic part its shape and its characteristic surface design with precise edges
• Subsequently, the blank can be relocated fully automatically in the injection mold and injected with the necessary plastic material
• This step is followed by the use of a special tool technology called close-contour punching, so that the component receives its well-finished outer edges

On the one hand, IMD VARIOFORM® is so compact and process-efficient that it makes it possible to create decisive competitive advantages. On the other hand, this technology from KURZ can also unleash an almost boundless creativity in the development and design of products. This process offers the same freedom of design as the IMD process.

You can freely choose the injection molding material used, the shape, and the punching of plastic parts.

The exemplary concept component with slider function and backlighting shows the extensive design freedom made possible by 'IMD VARIOFORM® with Functional In-Mold Labeling'
(All photos: Kurz)

The surface design can be designed according to individual preferences. This allows designers and product developers to get really creative even at the design stage.

But that's not all: Even recycled material can be decorated with this process in the same aesthetic and sophisticated way as new material. This means an enormous ecological potential for many industries.

IMD VARIOFORM® - Let your new designs be even more ambitious - or crazy

The highlight of IMD VARIOFORM® is the production of components that are made even more extraordinary with three-dimensional shapes and elegant design. In principle, virtually anything is possible when decorating the plastic. In the same tool, a variety of single-image decors and endless designs can be applied. As a result, small series and individual pieces are economically feasible. To make desired design changes, only the IMD VARIOFORM® substrate with decorative coating must be changed in the machine. Here, KURZ offers a wide range of designs, optionally with integrable functions. The combination of design and functionality ensures that your plastic elements with 3D geometry not only look spectacular, but also have integrated functional qualities. You can seduce the eye with an exciting metallization or show off a trendy brushed look or a sophisticated aesthetic in open-pored wood, marble, carbon, concrete, and reflective real chrome. In terms of surface feel, too, many variants are possible. Since even touch sensors can be seamlessly connected to the plastic, the manufactured element can pick up and pass on functional commands by touch or by the user approaching. Partially and fully backlit control surfaces and designs are just as feasible as customized top coats, which protect surfaces and make them extremely durable. ***smi***

Leonhard Kurz
www.leonhard-kurz.com

Established award for Bavarian innovation drivers
In 2020, the Bavarian Innovation Prize was awarded for the fifth time by the Bavarian State Ministry for Economic Affairs, Regional Development and Energy, the Bavarian Chamber of Commerce and Industry and the Bavarian Chambers of Trades and Crafts Association. It honors outstanding innovation drivers of the Bavarian economy.

Simplifying plastic recycling for a sustainable future

Orkla worked with the experts at Verstraete IML to introduce Digimarc barcodes into the packaging of one of their most prominent products. These interactive IML labels open the door to new and improved recycling streams. It makes plastics easy to scan, which means automatic sorting is much more accurate.

Plastic is durable, lightweight and economically efficient. It's an integral part of modern society. However, the amount of plastic waste currently being generated is cause for concern. Moving to a circular economy will see plastic waste greatly reduced through effective recycling systems. But achieving this goal requires a shift in focus: plastics need to be designed to be recycled, right from the get-go. This is where HolyGrail 2.0 comes in. It's a global initiative that encourages manufacturers to switch to packaging with digital watermarks, enabling simpler and more efficient recycling. Orkla, a leading supplier of branded consumer goods in Europe and India, has stepped up to the plate and accepted the challenge.

Orkla's sustainability goals

"We have ambitious sustainability targets by 2025, including sustainable packaging," explains Pavel Komurka, Packaging Innovation and Sustainability Coordinator at Orkla. "Now is the time for exploration, innovation and overhauling our methods of recycling. Not only do we need to reduce the amount of plastic used in packaging - without generating more food waste - we also need to ensure that plastic packaging is not just theoretically recyclable, but actually being recycled. Bringing in Digimarc barcodes is a huge step towards achieving this goal."

The packaging targets Orkla is aiming to hit in the next five years will see all packaging materials designed with sorting and recycling in mind. Plastic packaging will contain at least 50% recycled components, or components from renewable resources. And it will be designed to be easily identified by automatic sorting processes, ensuring as much material as possible is ultimately recycled.

Accepting the value of plastics

Considering the challenges ahead, there is one burning question: why not just get rid of plastics altogether? When looking at plastics from a waste-management perspective, it's easy to forget how much they have assisted the development of modern society - without plastic, modern life would look very different. Plastic packaging has extended the shelf life of many products, and enabled globalization through the ability to transport foods over long distances. "Some communities and regions have come to view plastics as an enemy to fight, but there's no rationality behind this. Plastics have greatly aided the human race and improved our living standards," says Komurka. "Our way of life has become dependent on plastics, which is why it's so important to manage this valuable resource efficiently."

Traffic-light recycling model

To begin the transition to more sustainable packaging, Orkla created an overview of the types of plastics currently being recycled in Europe. They developed a traffic-light model:

Interactive IML labels are IML labels enhanced with a Digimarc Barcode. Interactive IML transforms the package into an intelligent packaging, offering added value in all stages of the packaging journey. This powerful label technology offers great benefits for packaging converters, distributors, brand owners, retailers as well as consumers.

Looks like this

Performs like this

'green' plastics are already collected and recycled in a traditional recycling system, and 'red' plastics are not recyclable. 'Yellow' plastics are theoretically recyclable but not actually being recycled. There are various reasons for this: lack of appropriate recycling streams, not having collection systems in place, difficulty sorting the plastics, or not having an existing market for the recycled components. In identifying 'yellow' plastics, Orkla revealed the products with the greatest potential for improved recyclability.

Green light for yellow plastics

For their next step, they worked with the experts at Verstraete IML to introduce Digimarc barcodes into the packaging of one of their most prominent products. The Interactive IML labels of Verstraete IML - labels printed with a Digimarc barcode - open the door to new and improved recycling streams. It makes plastics easy to scan, which means automatic sorting is much more accurate.

With Digimarc barcodes, 'yellow' plastics are more easily identified, sorted and ultimately, recycled. Thanks to improved recycling streams, more and more 'yellow' plastics will be given the green light and merged into the circular economy.

Further interactive features

The possible applications for Digimarc barcodes go far beyond just sorting. Scanning technology and augmented reality apps have the potential to provide information in an entertaining way. For Orkla, this is one of the most exciting aspects of this technology.

"We are creating ways to actively engage with consumers," explains Komurka. "With Digimarc, we can alter how people view waste. For example, when a bottle is empty, it becomes unwanted - something to be gotten rid of. Now imagine if, instead of just throwing this away, the consumer could scan the bottle with their smartphone and be shown new possibilities. We could present ideas and provide examples, from reuse options to new products created at the end of a recycling stream. We could make this fun; not only amaze them with the technology and information, but provide a story that they, themselves, are a part of. With Digimarc, we're able to explore an exciting new world of opportunities."

Future recycling

Orkla is committed to maximising recycling and managing plastic waste responsibly. However, the future is far from set when it comes to recycling being the only option. "Recycling is currently the best method available, but who's to say this won't change in the future?" muses Komurka. "The history of plastic is very short. Could recycling bring new and unforeseen threats? Perhaps the ultimate answer will be something we haven't even considered yet. Unless we are willing to ask new questions. As times change and new technologies are developed, new options are sure to emerge."

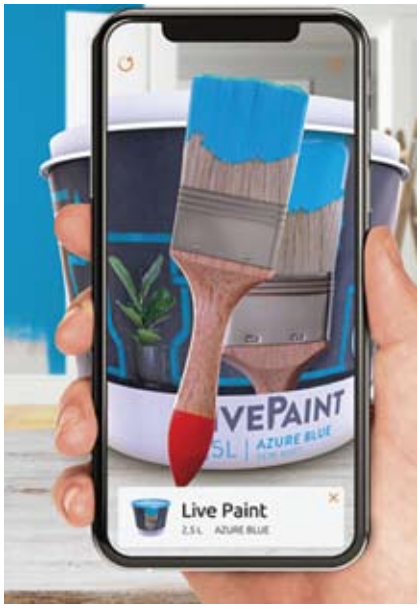
Current status

For now, Orkla is focused on contributing to HolyGrail 2.0 with the implementation and further proliferation of Digimarc barcodes. The first step in this process is to test the waters by introducing interactive IML across a wide range of packaging materials. "We couldn't be more pleased with the co-operation and service offered by Verstraete IML. Not only does the new packaging improve recyclability, but it looks fantastic," reflects Komurka.

Following the market release of these products, Orkla will move towards the next phase in optimising recycling: overhauling the waste stream. Nobody may know what that future of plastic looks like just yet, but with Digimarc barcodes and a thirst for innovation, Orkla is paving the way to new possibilities. *smi*

Verstraete IML
www.verstraete-iml.com

Pictures: Verstraete IML



HolyGrail2.0: moving to the next stage with Arburg

Work on innovative technologies for a closed-loop economy is forging ahead in collaboration with prestigious partners: more than 85 companies and organisations from every stage of the value chain are involved in the project.

With its arburgGREENworld programme, Arburg is demonstrating its commitment to the circular economy and resource conservation. Work on innovative technologies for a closed-loop economy is forging ahead in collaboration with prestigious partners. These innovations include the "HolyGrail2.0" project for separating plastic packaging into homogenous types via digital watermarks. The project has recently moved to the next phase and since September 2020 is being taken forward under the auspices of the European Brands Association AIM. More than 85 companies and organisations from every stage of the value chain are involved in the project. Of these, Arburg is the only manufacturer of injection moulding machines.

"As early as the pilot project phase of HolyGrail, we were able to demonstrate the fantastic potential of the digital watermark technology based on the example of IML containers made from mono-material," explains Bertram Stern, Packaging and Circular Economy Manager at Arburg. "It is now all about rolling out the project across Europe with the aim of using this technology for the homogenous sorting and separation of plastic packaging on a large scale as well as to facilitate smart and cost-effective recycling."

Initiative combining the know-how of more than 85 partners

Arburg is involved in various working groups as part of the Europe – wide project, which was launched in September 2020 and is due to be completed in the summer of 2022. The AIM is coordinating activities from its headquarters in Brussels, in compliance with current EU legislation. "Lively discussions with associations and prestigious partners including Beiersdorf, Dow, Henkel, Nestle and Sick are creating significant momentum. By working together we will succeed in moving HolyGrail2.0 forward effectively," says Bertram Stern with confidence. Once a packaging concept has been developed, the semi-industrial test phase is scheduled to start in the spring of 2021. The EU legislation foresees that by 2030 all plastic packaging across Europe will be reusable, easily recyclable or compostable. The target reprocessing and recycling rate is 60 per cent.

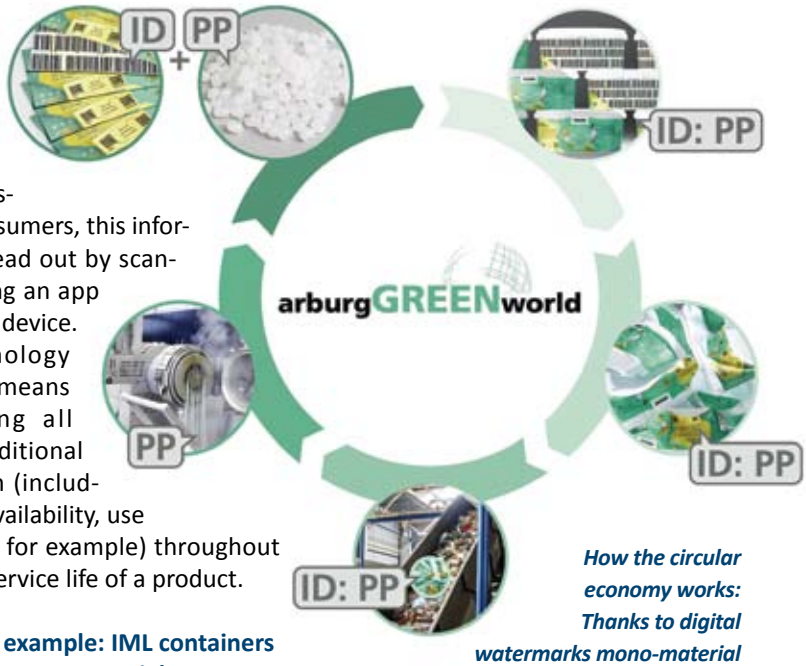
Intelligent sorting with a digital watermark

Efficient and high-quality recycling relies on plastic waste being collected appropriately and separated in the most effective way. Furthermore, all industrial processes forming part of

The German family-owned company Arburg is one of the world's leading manufacturers of plastic processing machines. The product portfolio encompasses Allrounder injection moulding machines with clamping forces of between 125 and 6,500 kN, the Freeformer for industrial additive manufacturing, plus robotic systems, customer and industry-specific turnkey solutions, and further peripheral equipment. Arburg has its own organisations at 35 locations in 26 different countries and, together with its trading partners, is present in more than 100 countries. This creates an international sales and service network that allows the company to provide first-class customer support on the ground. Production takes place exclusively at the parent company in Lossburg, Germany.

the materials cycle must be digitised and interlinked. This is exactly where the HolyGrail2.0 initiative for digital watermarks on packagings comes in.

The digital watermarks are codes the size of postage stamps which are applied directly to the surface of a product or to its label but are not visible to end users and consumers. The individual tile patterns are created through micro-topological variations in the carrier material and multiplied to create a graph which resembles a mosaic. They create a "digital passport" of which a fragment is enough to call up information about the manufacturer, for example, or about the materials processed and whether or not the packaging is suitable for food. High-resolution cameras built into sorting equipment read out the information from the digital passport. At supermarket checkouts or for end users and consumers, this information is read out by scanners or using an app on a mobile device. This technology provides a means of querying all kinds of additional information (including about availability, use or disposal, for example) throughout the entire service life of a product.



How the circular economy works: Thanks to digital watermarks mono-material products made from PP, for example, can be separated homogenously and returned to the circular economy as recyclates

Application example: IML containers made from mono-material

Arburg has been working intensively for some time now to gain experience of the technology based on digital watermarks. In the pilot phase of HolyGrail, the packaging version of a hybrid Allrounder 820 H was able to produce pairs of IML containers made from bio-based PP in a cycle time of 5.8 seconds. An IML automation system inserted the associated PP labels from partner company Verstraete and removed the finished parts at the same time. The labels contained the digital watermarks. Information about the contents of the mono-material packaging as well as the use and disposal of the product could be queried via the corresponding app.

As Allrounder injection moulding machines are generally suitable for processing recyclates from household waste (PCR) or industry (PIR), Arburg has already presented and demonstrated a number of examples of possible ways of returning plastics to the circular economy once they have been separated securely into homogenous types. The challenge now is to find ways of upscaling this technology. ***smi***

Arburg
www.arburg.com

Digital watermarks: A "digital passport" which is invisible to end users and consumers (left) is generated by writing information directly to the plastic or associated IML label (shown on the right) (All photos: Arburg)

Campetella's real Open House

Trade visitors were given an opportunity to explore economic IML solutions and new developments presented in an industrially realistic way. (The first part of this article was published in the smart molding international #1-2021)

All photos: Campetella

CRC's OH – expectations fulfilled?

In closer definition, Campetella offered considerably more application examples, products and information during the Open House than a large FAKUMA booth or virtual show would have been able to: "Anyone who visited us during these times must have already taken a very strong interest in automation solutions", says Marco Marconi, Sales Area Manager. The registrations were correspondingly qualified and clear - based upon their own invitations and supported by the media. No comparison with the 2014 Open House and around 500 visitors in three days. The OH 2020 inspired not only customers and partners (alphabetical order: ARBURG, BAZIGOS, D. SOUIRIS, Gammaflux, mevisco, MORETTO, SIMON, viappiani), but also experts from universities: "We were able to advance an important project with the University of Ancona, MACHINE LEARNING, energetically," says the Sales Manager, "the interest of the trade visitors, also in the digitalisation solutions, was very high, as expected. So far, around 250 visitors have been our guests. They came from Italy (70%), Austria, Germany, the Netherlands, Great Britain, France, Greece, Palestine and Nigeria. We welcomed representatives of the general packaging industry, food packaging and medical, who - driven by the boom in their sectors - are now increasingly looking for automation partners. Until mid-November we are still expecting important key account customers from Italy and Germany. This will raise the total number to around 370". The multi-media company presentation with discussion was "by far" well attended. The subsequent guided tours were led by the responsible CRC area representatives and sales managers in small groups - supported by the technicians and engineers on site at the robots and IML systems.

Feedback and comments have been highly encouraging, "especially from first-time visitors , who expressed their compliments on CRC's strong investment in new technology, clear and straightforward engineering, as well as production and administration processes with the benefits of lean production, lean management and Kaizen," confirms Marconi.

Exhibits - Future now?

"We have presented everything Campetella has to offer, we are like a glass house today," says Marco, "new

robot developments, especially the ultra-productive Double Concept series, future-oriented control concepts, industry 4.0 compliant solutions. Machine Learning, for example, will have a great future," the Sales Manager admits. Robots and all other plant components are monitored by specific algorithms. Predictability of what will happen in the plant, how long it will optimally produce under the given conditions and/or when a component - by means of forecasting messages - has to be replaced. These are some of the elements of precaution and machine analysis. In the future and right now, a customer can use the online portal to see how the plant works, including acceleration curves, vibrations, paths, temperatures, cycles and other characteristics. He can thus move freely around the system virtually via augmented reality, looking through the VR headset, "... for example to order modification or replacement components ... add to shopping basket!

Trade fair budgets - savings?

"In simple terms, the total cost we had budgeted for the 2020 exhibitions, including FAMUKA, a seven-figure Euro amount, has been 're-labelled' to a large extent into factory modernization, acquisition of new equipment and the product and system developments mentioned above," says Marco Marconi. With regard to "FAKUMA Virtual", the company is making final preparations and trial runs for an introduction of a freely definable virtual company tour, as well as a text and image presentation of the entire automation range.

"It's remarkable that one of the two IML systems was sold in the first few days of our open house exhibition. It is a cheese tubs labelling application. The system will meet the customer's requirements after minor modifications to the standardized components," says Marco Marconi.

Campetella's IML technology is modularly upgradeable to handle 16 cavities: "Basically, CRC stands primarily for fully automatic, robot-supported labelling, decoration, handling, completion and value-addition of any product from any industry. Everything comes from a single source, CRC, with identical programming standards, in the form of simple engineering solutions with high-tech content for the maximum achievable performance ratios. This credo is our constant guide," reveals the Sales Manager.

Autonomous mobile robot support

Campetella – quo vadis?

"We are getting used to the Corona restrictions. Everyone wears masks all the time, maintaining distance. This does not really interfere with our work. The optimistic point is that our order books are full until April 2021, triggered by the fact that we have been working very hard in the markets in recent years and have established or reinforced our service centers. Examples in Germany are the new Peter Nellen agency, in Hamburg, to serve the strong packaging market in Northern Germany and the expanded capacities of KT Sakkas in Aurachtal, Franconia/Bavaria, and other new/expanding subsidiaries or agencies in other regions such as Hunter/USA as well as Cristian Lopez Alvarez, key account manager for Mexico," says Marco. He doesn't really want to commit himself to whether plastics trade fairs in 2021 - PLAST Milano, NPE, etc., and finally FAKUMA 21 - are a topic for Campetella: "We can always react quickly. In any case, our Campetella Calling Open House 2020 will pay off, and the next one as well".

Main contract areas?

Giacomo Svampa, Continuous Improvement Engineer, who also has a voice in the Strategic Market Development Division, explains: "For example, with the CRC Customer Portal, an analysis and trouble-shooting technology in detail, we will soon have an important tool in our hands for keeping the production line in operation without downtime. All parts are coded and can be immediately identified for various purposes. Plus many tutorial animations based on "Creo" and „Indy 40" to configure systems, give instructions for disassembly and assembly of components such as EOAT and IML tooling. This is a bonus when generating business in the area of labelling and handling small food packaging such as capsules and cups". In his view, Corona has changed consumer behaviour where people are increasingly prepar-

The 4th and 5th generations of the Campetella family dynasty

ing food at home again. For example, the consumption of margarine has grown significantly and so has the need for packaging. "However, the segment of large containers for restaurants has been shrinking. On the other hand, the order volume for labelling buckets for liquid and free-flowing products (e.g. for DIY stores) has remained stable. We recently received an enquiry of this kind from a US company that was previously unknown to us. We sent him an offer and a video of how we would handle it. And the next day we had his order on the table". The situation-related boom in enquiries from the medical primary packaging sector is also remarkable. "Here, we want to mobilize increased efforts in order to sustainably cover the demand for automation from the European regions (primarily Italy, Germany and Russia) and oversea (USA)," states G. Svampa. According to him, Campetella's production capacity under current conditions is 25 to 30 standardised top-entry robots plus special systems based on the design-to-order principle. The turnover is also based on this principle - 30% Italy, 30% other Europe, 30% North America, 10% other markets.

"We expect that the completely new Double Concept series has a good future because of its outstanding performance," forecasts Giacomo. Core components (drives etc.) of the proven Concept system are being employed here. The intensive use of carbon fibre components in the moving parts of the robots provides more lightness and rigidity. The system has been specially developed for the removal, stacking, packaging and logistics of products (72 x 2 = 144 cavities) in very high batch sizes. Also noteworthy is an extremely fast robot whose cycle time amounts to 3.9 seconds despite its size.

The next steps lead back to reality, the centre of the Open House.

The new developments are constantly being tested in the field of vehicle competition. Carlo Campetella (the former head of the company) has been active in motor sports for many years and has used materials and new designs conceived for lightweight construction, performance, precision, durability and speed. What could have been more obvious than to successively incorporate these advantages into robot designs from the 1990s onwards (start of the Campetella Robotic Center)? Visitors to the in-house exhibition will find ground-breaking results in the Cartesian, side-entry robots, Scara solutions, super-fast sprue and part pickers, as well as control systems and IoT interface concepts (relating to practically every make of plastics processing machine) on display.

Two core exhibits

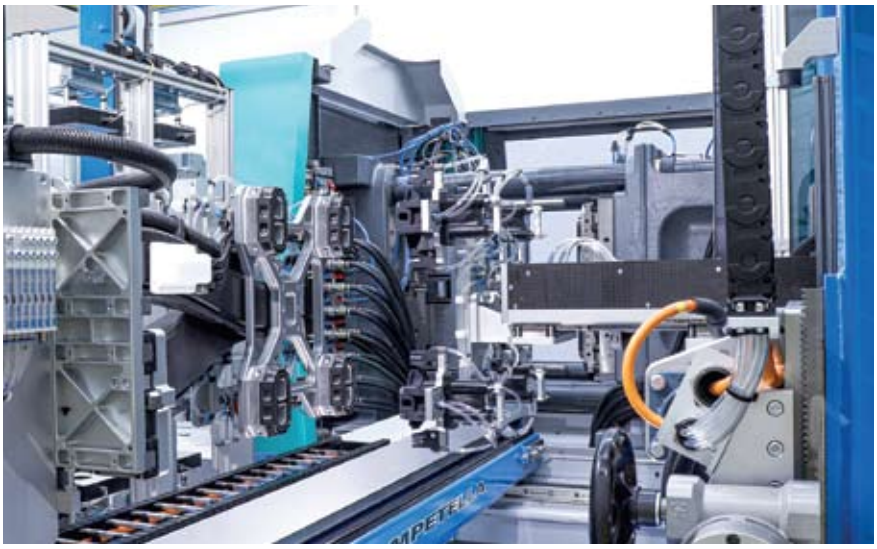
Two core exhibits with the comprehensive potential of the latest auto-

IML – yoghurt cups

mation technology can be seen in an extension behind the assembly hall in industrially realistic operation. They label yoghurt cups or fresh cheese tubs with maximum speed and precision.

An X-Series Mini-MODULA compact side-entry robot from Campetella is used for IML (In-Mould-Labelling) of plastic yoghurt cups made of polypropylene (PP). The robot is equipped with a quick and compact horizontal arm, responsible for very fast label inserting and product take-out operations. A tilting axis guarantees a hygienic process which ends with the cups being stacked upside down with their openings on the conveyor belt. An additional advantage of the Mini-MODULA is its extremely small footprint. As if that was not enough, it cooperates with the new X-Series CO1 Cartesian robot. Its electric servo axis is the right hand to move the stacks of cups from the conveyor to a storage box. An Omron AMR (autonomous mobile robot) takes care of transporting the boxes to the finished goods warehouse. Full to the warehouse ... empty back to the belt! The entire system is a four-cavity application with a total cycle time of no more than 2.45 seconds. The IMM interlock time is 0.48 seconds only. The two Campetella robots work hand in hand, thereby serving an Arburg Allrounder 570 H hybrid injection moulding machine (an IMM with a clamping force of 1800 kN) and the inherent four-cavity mould from Simon, France, respectively. The renowned Italian label manufacturer Viappiani is responsible for the "L" in the IML. Cup coefficients: height = 43 mm, diameter top = 73 mm, weight = 4 grams.

IML – cream cheese tubs



The integrated system

The utilization of the labelling dummies (produced in the new 3D printing centre) is a decisive criterion for the process speed. They hold the labels by the fact that the pins, which are charged with 12,000 volts, polarize (magnetize) the plastic foil labels and thus position them accurately. Once they reach the cavity far less than a second later, the labels are stabilized by compressed air to ensure a perfect fit before being back-moulded with the plastic material to form the cup or tub.

An X-Series MODULA high-speed side-entry robot from Campetella is the top solution for labelling plastic cheese spread tubs in Bazigos' four-cavity mould. Four Mevisco cameras monitor the product quality inline and continuously. A very fast label feeder with servo drive is used on the robot, which manages the 5-sided Viappiani labels. Here again, the tilting axis performs hygienic upside down stacking of the tubs on the conveyor belt. With its high payload reachability an X-Series SPIN3 Scara* robot grips the labelled stacks and quickly deposits them in a transport box. Finally, another Omron AMR is in charge of storing the boxes filled with cheese spread tubs in the warehouse. The entire automation system is used in and on an Arburg 630 H hybrid injection moulding machine (IMM) with a clamping force of 2300 kN. Labelling takes place within a 3.25-second cycle and/or an IMM interlock time of only 0.9 seconds. The polypropylene (PP) raw material treatment is carried out by Moretto ancillary equipment together with the centralized cooling systems for the event. Product parameters: length = 132 mm, width = 89 mm, height = 33 mm, weight = 7.55 grams.

Performance at Pole Position

"We have spent the past months bringing new robot developments to series production readiness," explains Elia Campetella, who is currently in charge of the family company, "The focus is on precision, speed, versatility, reliability, application-specific programmability and safety." "Safety First!", adds Marco Marconi, "this is an indispensable part of the 45 Campetella Calling days: 40 registered guests per day, obligatory masks, social distancing, reserved seats and more - to protect our guests and our own teams." ***smi***

Campetella
www.campetella.com

SalzburgMilch offers a reusable option to single-use plastic lids

Photo: SalzburgMilch

For dairy-lovers, being able to grab a spoonful of creamy goodness from the fridge at any time is one of life's greatest pleasures. And when purchasing your favourite yoghurt or pudding, the largest tub is the most appealing and economical choice. Whether you're grabbing a sneaky spoonful, or serving up a larger amount, it's unlikely you'll be eating 500 g of dairy in one go. A snap-on lid is an absolute necessity.

Up until now, all 500 g tubs of SalzburgMilch premium yoghurts, pudding and sour cream have come with fitted with disposable plastic lids. Although they perform the job just fine, these lids generate several tons of plastic waste every year. Taking a huge step towards a sustainable future, SalzburgMilch have recently offered a special promotion. Instead of each 500 g tub coming with a plastic lid of its own, they were topped with high-quality, dishwasher safe, and environmentally friendly reusable lids. The promotional lids look fantastic thanks to in-mold labelling (IML). This means their customers continue to enjoy the same delicious products whenever they like, while generating less waste and contributing to a greener world. 'We wanted to offer our customers an environmentally friendly and hassle-free alternative. The reusable lids don't just function well, they look amazing!' says Prok. Florian Schwap, Marketing Manager at SalzburgMilch. 'With their own lid conveniently on hand, it's easy for customers to keep their dairy products fresh at home. There's no need for each tub to come with its own disposable lid.'

Custom-fit, complete solution

To bring their vision into reality, SalzburgMilch approached Greiner Packaging – a worldwide packaging company with 60 years of experience. Greiner Packaging specialises in resealable packaging options that extend the shelf life of food while enabling it to be handled in a safe and secure way. There are some important factors to consider when designing a reusable lid. Firstly, it needs to be a perfect fit, meaning the seal must be secure so the food is kept fresh. Secondly, it needs to be easy to clean. Greiner Packaging's multi-use lids are structurally stable, dishwasher safe and maintain their integrity wash after wash. 'Our multi-use lids can be used over and over again,' explains Thomas Knoll, Key Account Manager at Greiner Packaging. 'They're made from polypropylene (PP) using injection molding and decorated with IML. This combination ensures they're dishwasher-safe, and when they eventually need to be disposed of, they're completely recyclable. Less plastic is used overall and more of it is kept in circulation.'

Dishwasher-safe IML labels on the lids

Achieving the perfect label is no easy feat. 'Greiner Packaging pushed us to our limits,' reflects Peter Mertens, regional Sales Manager for Central and Eastern Europe at Verstraete IML. 'They asked us to design IML labels to suit dishwasher-safe lids in both white and super-clear versions. Technologically, this meant aiming extremely high! But we worked together to pull it off. And quite quickly. The product went to market only months after the first idea was floated.'

SalzburgMilch are absolutely delighted with the finished product. Having just launched the promotion in Austria, they've received fantastic feedback from regular customers. 'The lids fit perfectly, and our customers are quite willing to make this change. People are very aware that we need to reduce the amount of plastic we use. Reusable lids offer a wonderful and simple way to contribute to a greener future. The path is now paved for similar sustainable initiatives in the future. And the beautiful design of the lids is like the cherry on top!' says Prok. Florian Schwap, Marketing Manager at SalzburgMilch. **smi**

Greiner Packaging
www.greiner-gpi.com

Picture: ENGEL

ENGEL e-speed series expanded

Powerful, dynamic, sustainable: Designed for continuous high performance in the packaging industry, ENGEL e-speed injection moulding machines are the most energy efficient and clean hybrid machines in the market.

The new e-speed 280/70 with a clamping force of 2800 kN is equipped with an interactive IML (in-mould-labelling) solution, which ENGEL is implementing in cooperation with partners Brink (Harskamp, Netherlands) and Verstraete in mould labels (Maldegem, Belgium).

The new size sees ENGEL further optimise its particularly economical hybrid machine, which combines an electric clamping unit with a hydraulic injection unit. From now on, the complete series, covering clamping forces from 2800 to 6500 kN, will be designed with the performance upgrade. The inline injection unit with its electric plasticising drive, which has been tried and tested over many years, achieves even faster injection performance in the new generation of e-speed machines. It is designed for injection speeds of between 800 and 1200 mm per second. At the same time, the ejector performance has been enhanced. The e speed machines are now equipped with hydraulic ejectors as standard. Electric ejectors are available as an option.

The machine bed and mould mounting platens have also been geared even more closely to the requirements of thin-wall packaging and the use of moulds with a high number of cavities. Thanks to the new features, the ENGEL e-speed machines optimally meet the trend towards further reductions in wall thickness and even shorter cycle times.

Minimum energy consumption in continuous high-speed operation

Excellent energy efficiency continues to be one of the e-speed series' unique selling points. In order to achieve extreme energy-efficiency in high-speed operation, the machines are equipped with an innovative energy recovery system from a clamping force of 3800 kN. This system absorbs the braking energy from the platen movements and releases the stored energy back to the motor as required – 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.

Interactive IML promotes circular economy

Both the mould and the high-speed automation for in-mould labelling of the 1-litre yoghurt containers are implemented by Brink. The interactive labels are supplied by Verstraete in mould labels. They are based on technology by Digimarc (Beaverton, OR, USA). Much like a QR code, Digimarc codes can be scanned with any smartphone camera. The big advantage compared to QR codes is that they invisibly cover the entire label surface. The camera can scan any point. And the codes no longer 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. Interactive IML packaging is fully recyclable.

Together with its partners, ENGEL is committed to the sustainable production of plastic packaging and the establishment of a global circular economy. Thin-wall technology, energy efficiency and recycling are key factors in achieving this. ***smi***

ENGEL
www.engelglobal.com

EasyPick, the smart toothpick

Photos: KraussMaffei, TePe

That delicious salami becomes annoying when a piece gets stuck between your teeth. But even if you don't feel anything there, you should be cleaning between your teeth to prevent tooth decay. But what should you use? Wood toothpicks are hard, thick and prone to breaking. Dental floss is thin and flexible, but inconvenient to use. The EasyPick from TePe combines the advantages of each method. It is produced on a CXL 160 SilcoSet from KraussMaffei.

Silicone is the ideal material for oral hygiene applications. It is flexible, free of plasticizers, biocompatible and rugged. Liquid silicone rubber (LSR) makes it possible to map structures that are fine enough to penetrate even the tightest spaces, while also being soft and thus gentler on the gums than the bristles of small brushes.

TePe, a Swedish family-owned company, makes use of these features for its product known as EasyPick, the innovative 21st century toothpick. TePe has been specialized in the field of oral health since its founding in 1965 and currently ships its products to over 60 countries. The core competencies of design, development and production (including 50 injection molding machines) are located entirely in Malmö. This gives the company control over the entire value chain. Including its seven international subsidiaries, TePe has 370 employees and its annual earnings are approximately 80 million euros.

Challenging two-component part made of PBT and LSR

TePe has been taking advantage of KraussMaffei's silicone expertise for the EasyPick since 2015. The two-component part consists of a white base body made of PBT (weight: 15 grams) with a conical tip overmolded with just under four grams of colored silicon. Orange indicates size S and blue indicates size M. EasyPicks always come in sets of six, connected via thin break-off points. This makes it easy to detach one for use.

The manufacturing itself uses the transfer method: The lower, cooled mold-half includes the thermoplastic component. After the mold opens, an LRX linear robot removes these molded articles and places them in the (hot) silicone half. In this process, the thin PBT pins are centered, but free in the cavity, allowing them to be encapsulated uniformly from all sides – at wall thicknesses of just 200 µm, manufacturing with maximum precision is essential. The silicone that is used is a self-adhesive formulation suitable for food contact and with reduced volatile silicone content. In addition, the material is mechanically anchored – after all, the two components of the EasyPick have to stay firmly bonded together, even during vigorous use.

Customized system solution from a single source

KraussMaffei provided the complete production systems, including the SilcoSet equipment, automation, mixing and metering unit and packaging line. TePe's Product Developer Alexander Dingizian recalls the project start well, saying: "The machine setup was correct from the beginning, and we could get our production up and running quickly. We were particularly impressed by the startup of the LSR components. After just three shots in semi-automatic mode, we were able to launch fully automated production."

For the CXL 160 machines used, the all-electric second unit is attached on

Advantages of the SilcoSet technology:

- Safe, stable processing of low-viscosity material thanks to absolute platen parallelism
- Exact shot weight consistency even with 256 cavities
- Consistently high component quality and thus minimum scrap thanks to APC plus
- Absolute transparency throughout the process thanks to digital solutions
- Easy changeover from thermoplastic processing to silicone processing

An insight into manufacturing at TePe

the non-operator side in an L-connection. The CX has a large daylight, even in standard models. Based on the modular design, the daylight has been enlarged by an additional 200 millimeters. This also provides easy access to the non-operator side, despite the L-injection unit. The mold clamping platens have also been widened and the maximum mold installation height has been likewise expanded. The parts removal takes place after separating the sprue in the lengthwise direction downstream of the machine. However, thanks to the cantilever clamping unit, it would also be possible to attach a conveyor belt below the clamping unit bed.

Ready for production quickly: The CX system at TePe

Minimal standard deviation for part weight

By the time the low-viscosity LSR flows into the evacuated cavity, the corresponding dye pigments have been added to it earlier in the mixing block. This is always a tricky matter in the reactive process, if for no other reason than that the silicone individual components are generally also subject to significant batch fluctuations. If too much dye is added, decreased viscosity of the material – which is already like water – is the result, and along with it the possibility of overmolding.

With APC plus, every part is a good part

For a two-component part made of thermoplastic and silicone – for which even the counter-rotating temperature control in the plasticizing unit and mold is complex – the APC plus machine function from KraussMaffei provides particular benefits. Based on the measured melt viscosity and stored material parameters, such as compression, it controls the shot weight in each and every cycle. This is done by adapting the changeover point and the holding pressure level. For silicones that expand in the cavity, the focus is on the changeover point. APC plus makes even the thermoplastic preforms extremely weight-constant, providing the basis for perfect multicomponent articles.

APC plus for non-thermoplastics then controls the challenging silicone process. The finer the structures to be mapped, the tighter the tolerance band that can be selected. Once machine, mold and peripherals have been tuned to each other optimally, the user generates a reference shot (or multiple shots) and stores it in the mold data record.

The TePe EasyPick shows how useful the bond of thermoplastic and silicone can be. Rugged support element and soft layer that is gentle on the gums: With the KraussMaffei SilcoSet, nothing gets in the way of a brilliant smile. ***smi***

KraussMaffei
www.kraussmaffei.com

WITTMANN BATTENFELD reorganizes its sales network

WITTMANN BATTENFELD has intensified the cooperation between its Sales and Application Engineering departments so that it can offer customized and industry-specific solutions worldwide faster and in a more targeted way than before. To this end, special focal areas of application technology have been defined and appropriate reorganization measures taken.

In fact, six fields have been selected to receive special attention over the next two years, without neglecting other areas where the company has also been active. These six fields are medical technology, micro injection molding, packaging technology, elastomer engineering, multi-component injection molding and light-weight design. Wolfgang Roth, Head of Application Engineering at WITTMANN BATTENFELD, will be in charge of directing the product experts jointly with Valentina Faloci, Head of Sales in Kottingbrunn. Valentina Faloci is confident that this type of organization will bring the company a major step forward. "We can make use of our specialists' knowledge and many years of experience to offer our customers expert advice and optimal support in their growth and the further development of their products", Faloci comments.

In addition to his executive function, Wolfgang Roth is simultaneously the expert responsible for the silicone injection molding sector, i.e. elastomer engineering. Here, WITTMANN BATTENFELD supports its customers in micro injection molding of LSR parts all the way to producing large-volume parts with single- or multi-component technology, and offers them in cooperation with selected partners the necessary technologies for fully automatic production without downstream finishing.

CELLMOULD® is a process developed to manufacture structured foam parts through direct gas injection with physical foaming agents

Gerald Plöchl will be responsible for the MEDICAL sector. WITTMANN BATTENFELD has developed a portfolio of machines specially adapted for medical technology, which meets highest standards of safety, clean room compatibility and precision. This range

The AIRMOULD® process offers its users major advantages in terms of better surface finish and higher dimensional stability

fulfills in every respect the medical sector's requirement for complete documentation and traceability of the production process.

Marco Moser is the company's specialist for light-weight technology. With the AIRMOULD® gas injection technology and CELLMOULD® structured foam technology, both developed by WITTMANN BATTENFELD, it is possible to make molded parts with cavities or with a foam structure. Both these technologies can be used to reduce part weights and thus save material costs.

Martin Philipp Pichler is the micro injection molding expert promoting the integration of various different technologies. He develops and improves solutions for micro part applications in the plastics industry. Extremely small plastic parts are frequently produced with injection molding machines which, due to their size, consume too large quantities of resources and energy. Machines not optimized for the production of micro parts have a negative effect on process time, cost and parts quality. The MicroPower machines from WITTMANN BATTENFELD as well as their automation and auxiliary components have been specially designed for manufacturing micro parts and consequently offer maximum precision, high quality standards and cost-efficiency for this product range.

Valentina Faloci and Wolfgang Roth see great potential in the new sales structure

Another focal point of application engineering is COMBIMOULD multi-component technology, promoted by Edmund Kirsch. COMBIMOULD technology has proved its effectiveness in low-cost production of robust and at the same time visually attractive parts made of several different plastic materials.

COMBIMOULD is the name of WITTMANN BATTENFELD's multi-component injection molding technology. In this process, a basic part is produced in the first injection molding station, to which plastic components in different colors or made of different materials are subsequently added in a cyclical sequence in one or more injection molding stations. By combining the various material attributes with each other, a composite part of superior quality in terms of both visual attractiveness and functionality is created. This material bonding technology can be used to produce individual parts and integrated components where individual parts are joined together by assembly injection molding. Depending on the parts geometry in each case, this requires different process variants.

Multi-component molding technology offers a way to produce multifunctional parts from two or more plastic materials with different attributes and/or in different colors (Pictures: WITTMANN)

A new focal area is the sector Packaging, Thin-wall and Custom Closures. Richard Schnabel has assumed responsibility for this sector. Schnabel supports processors in this area with a range of sophisticated injection molding technology and turnkey solutions for efficient, clean production of packaging articles of every form, color and size.

Field sales staff in daily contact with customers on site have access to the expertise of the product specialists, too. "We are confident that by this realignment through pooling our technical expertise and long-term experience in the selected focal areas, we will be able to offer our existing and potential customers an even better support than we have done in the past", says Valentina Faloci. ***smi***

WITTMANN BATTENFELD
www.wittmann-group.com

RockWell forms new window well product line with Commercial Molds

Unique compression mold build and robotic handling system delivered by Michigan company.

Established in 2004, RockWell Window Wells of Springville, Utah provides advanced technology window wells that are fast gaining popularity in the country, thanks to their exceptional quality, wear life, attractiveness and versatility. The company also continues to expand its product line to fit the needs of homeowners and contractors across the U.S. and Canada with various types of basement window coverings and window well ladders. RockWell window wells are built from high-strength composite materials, rather than conventional metal wells and coverings. Their products are rust proof, temperature resistant and won't collapse under backfill pressure. Furthermore, new egress window well models from RockWell feature built-in steps that allow easy-escape access during emergencies and all wells can be mounted directly to the foundation wall. The window wells are sold through various wholesale distributors to contractors and builders.

RockWell needed a mold maker who could produce large molds at an economical price for its new Denali line of window wells, so they reached out to Commercial Tool Group (CTG) at a recent Amerimold show in Novi, Michigan.

Commercial Tool Group, located near Grand Rapids in Comstock Park, Michigan, is a family-owned company with several divisions. Commercial Tool & Die (CTD) was founded in 1953 by Al Bouwman. With a wide range of large-scale CNC machining capabilities, CTD can accommodate customer needs for single-mold or multi-mold packages. CG Automation & Fixture (CGAF) has over 185 years of combined experience in the design and manufacture of down-line equipment, fixtures, gauges, applique form tools, trim dies and trim presses, as well as advanced materials handling systems and robotic articulation. CTG continues to invest in the latest large, accurate CNC machining and CAD/CAM technologies.

Vaughn Cook, the President and founder of RockWell, called Commercial, looking for assistance for production of a new line of egress window wells. He met with Scott Chase, Commercial Tool & Die Engineering and Sales Manager at the Amerimold event. They discussed the project, which involved forming composite material into unique window well products under the brand name Denali, as a lightweight yet rugged alternative to heavy metal window wells that often rust and corrode in use. Cook wanted to work with a mold maker who had large CNC mills for massive molds and that was familiar with composite technology. After a series of CAD reviews and working prototypes, Commercial Tool Group made large production molds from aluminum.

A robotic articulation system for loading and unloading was also designed and provided by Commercial to work in tandem with the molds during production.

The mold sections begin as large aluminum billets and the machining is done on a Zimmermann portal milling machine at Commercial's plant. Scott Chase mentioned that the typical finished mold measures an impressive 66" wide x 109" long x 60" tall. He added that the molds utilize a thermal imaging camera in process to monitor temperature variation.

Commercial also produced three prove-out molds during the development process on this project. The

Denali window wells from RockWell are lightweight and attractive, plus they won't rust or corrode as metal wells do

Molds made by Commercial allow the composite materials to be heated and formed

molds were designed using Siemens NX CAD/CAM/CAE software and they are among the largest production molds ever made by Commercial, according to Scott Chase. The entire project took just over a year, from the initial contacts to the production of the first mold for use at RockWell.

When picking a partner company for this critical project, RockWell President Vaughn Cook chose Commercial Tool Group, as he notes, "…because of their integrity and commitment to being open with all of the issues, as well as the company's transparency and honesty. One-stop shopping was also such a huge benefit, as we were able to communicate through one company to get all the work done. CTG is a true turnkey partner to us."

Lightweight and easy-to-install Denali wells are available through various building supply and home center outlets across America (Pictures: Commercial Tool Group)

This Commercial system benefits its customer in various ways, as the system is more automated, permitting the company to produce greater volumes of product with higher consistency and traceability. Furthermore, it is much easier for RockWell to access all the information they need from one company as opposed to coordinating with three or four different ones, as Cook noted. This seamless flow minimizes errors, which reduces production lead time and keeps costs down. Without the collaboration between RockWell and Commercial, Cook believes that there would be delays in scheduling, higher costs and lesser quality of workmanship on the finished products being produced at his company.

Vaughn Cook praised Commercial during the implementation and runout, saying, "It's wonderful to work with and have support from a single source, leading up to and during the implementation of processes." Commercial made adjustments to the software programs and processes on-site at the RockWell facility. "These products would have been impossible to fabricate without Commercial's automated systems, as the cost and safety risks would have been too high, in our calculations," said Cook.

RockWell uses Solidworks for engineering design work, while Commercial Tool Group uses the easily interfaced Siemens NX suite of CAD/CAM/CAE. The two companies seamlessly exchanged conversion files.

Regarding issues encountered by RockWell, Cook mentioned there were some early challenges but Commercial had been supportive in making sure everything was working well at each stage of the process. He was very happy with assistance received from Scott Chase and other employees at Commercial. Cook mentioned he would often be present at RockWell's meetings with Commercial, making sure the process was running smoothly and that RockWell requirements were satisfied. Cook emphasized that many Commercial team members would travel to his production facility frequently to manage commissioning of the entire system during this project. According to Cook, they were "highly dedicated and committed to hitting our scheduled deadlines, which were very tight."

"Although this was RockWell's first project with Commercial, it certainly won't be our last," Vaughn Cook concludes, adding he is certain his company will once again partner with CTG because of the high technical skill set of the personnel and the great people that he met. "It was a perfect match for our success with this new Denali line, which is already gaining popularity in the market." ***smi***

Commercial Tool Group
www.commercialtoolgroup.com

Husky introduces the UltraShotTM Injection System

A breakthrough injection molding technology designed to increase overall part design freedom and speed-to-market with unmatched scale and quality.

Picture: Husky

Husky Injection Molding Systems, Ltd., a leading industrial technology provider to the plastics processing community, is proud to announce the release of the UltraShotTM Injection System. This innovative, next generation melt delivery and control system eliminates the deficiencies of traditional injection molding processes and creates unique value and opportunity for producers by making it possible to mold the perfect part at scale, with unmatched quality.

Higher Cavitation Scalability with Faster Speed-to-Market

The UltraShotTM Injection System's advanced injection control technology enables risk-free scalability with flawless part capability. Identical system behavior for each injection circuit provides process condition consistency with cavitation scaling. A predictable process from pilot to high cavitation – scalable to 128 cavities, enables producers to maximize cavitation without negative performance on balance or shot-to-shot variation. Brand owners can accelerate from prototype to high cavitation production qualification, thus greatly increasing speed-to-market.

Part Design Flexibility and Freedom – Mold the Unmoldable

The UltraShotTM Injection System enables brand owners to produce unconstrained, highly functional and validated parts, economically, where conventional injection molding processes cannot. This revolutionary cavity filling control and process optimization overcomes traditional constraints of pressure, L/T and difficult-to-mold resins. This enables part lightweighting for resin and process time savings and provides resin selection flexibility. Ultimately, this means greater part design freedom, opening up endless possibilities for brand owners looking to take plastic part designs to the next level.

Preserve Resin Properties

Compared to conventional hot runners, melt in the UltraShotTM Injection System experiences fewer high-pressure injection cycles, thus preserving the original resin properties. This leads to lower mold-in stress and better mechanical and optical properties in the molded part. With this technology, you get the best physical properties for your molded part.

Process Control

Powered by the Altanium® Mold Controller, the UltraShotTM Injection System provides highly advanced process monitoring and control for injection molding. The Altanium process control provides repeatability and traceability for part dimension consistency, perfect balance and a more stable process. Providing digital analysis creates a measurable discipline around the molding process and gives customers full control and trend analysis of various processes resulting in improved, lower risk operations.

Breakthrough Technology

The melt delivery system is the "heart" of the injection molding process and is essential to mold cell performance. The UltraShotTM Injection System masters part filling in a way that provides part design freedom, while reducing risk and improving part quality and speed of mold qualification. With "Husky Inside", producers ensure that the center of their system performs optimally, every shot. It offers unmatched OEE and increased productivity, at a reduced footprint, resulting in lowest total part production cost. It is the perfect fit for medical, technical packaging and consumer electronic part producers looking to scale up, implement more efficient process control, address competitive marketplaces, and reduce risk, scrap, waste and cost. *smi*

Husky
www.husky.co

The winning combination to keep the injection process under control

What are the main process anomalies that commonly affect injection molders and how to detect them?

Try to imagine the most complex part ever: it is a delicate trade-off of polymer selection, processing, part design and mold design. Several elements could affect the injection process, from the issues related to the Injection Molding Machine to the molding material, but how to detect them? Thanks to the combination of the right technologies, defects on the molded parts can be prevented ensuring higher quality output in less time.

One of the main causes of process variability could be related to the Injection Molding Machine for example: if the Injection Molding Machine components - such as the screw, the barrel and the check ring – show signs of wear, the injection process could vary significantly. The result is that the inconstancy produced during the injection/packing phase or the material dosage could cause few defects on the molded parts.

HRSflow, part of the worldwide company INglass Group, designs and manufactures hot runner systems for a wide range of applications in the plastic injection molding industry.
In the Automotive industry four megatrends are disrupting the entire landscape: connectivity, autonomous driving, electrification and ride-sharing. HRSflow can strongly support this transformation with IMD, FIM and ICM solutions combined with our FLEXflow Evo Technology: the servo driven valve gate system that changed the injection molding world.

Another element that often affects the injection process is the viscosity variation of the molding material. The causes of these anomalies? Few times was observed that different batches of plastic material could behave slightly differently during the injection process. In addition, an eventual percentage of recycled material could be one of the causes of process variability.

How to detect these problems, avoiding process drift? Thanks to pressure sensors, you can get a direct feedback of process constancy by monitoring the real polymer status in the cavity. Moreover, you can highlight if some irregular cycles occur, in order to determine which cycle lies outside of a specified tolerance range. Thanks to pressure sensors you are able to define if the process is gradually going to drift, or rather, when several cycles are getting far from the ideal process.

Using mold based sensors allows for valve gates to be triggered from mold born events and not based on screw position or time. This allows the process to adapt to actual conditions.

The winning combination of pressure sensors and FLEXflow Evo – the electrically driven valve gate system – allows to get a precise control over the whole injection process helping to detect the problems related to the molding material and the injection molding machine.

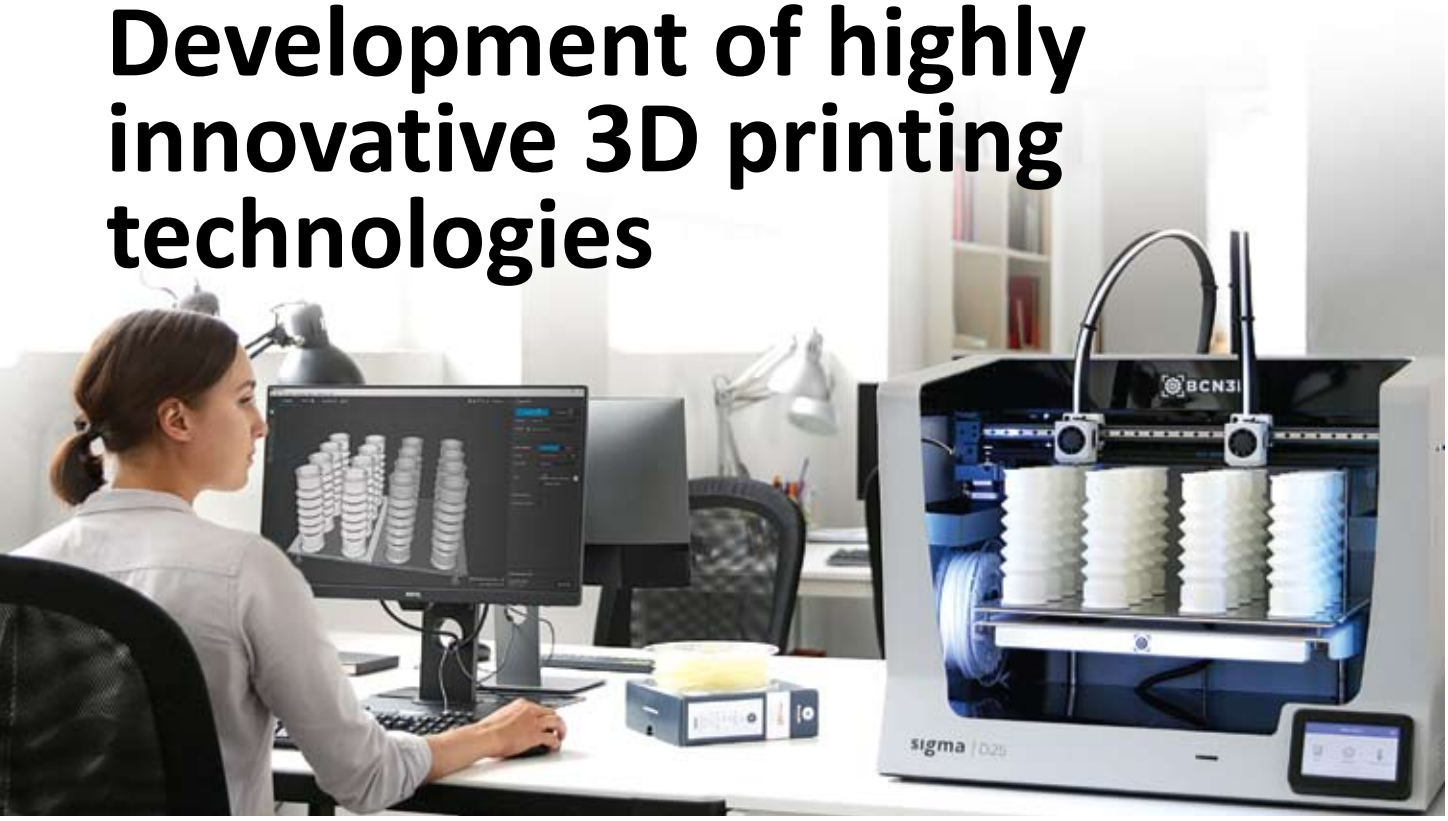
Picture: HRSflow

The servo driven valve gate technology is designed for the independent adjustment of each valve pin with precise control of stroke and force during opening and closing phases. This solution assures accurate, easy to operate, flexible control of pressures and flow rates at each individual gate providing far superior flexibility and minimizing the process variability.

Pressure sensors together with FLEXflow Evo allow to highlight the polymer status in the mold cavity by delaying or bringing forward the opening/closing phase. This successful combination ensures not only the maximum process reliability and repeatability but also a uniform quality with a minimal scrap. ***smi***

HRSflow
www.hrsflow.com

Development of highly innovative 3D printing technologies



BCN3D Sigma D25 printer printing elastic tubes for the industrial sector

Barcelona Three Dimensional Printers Technologies (BCN3D) is one of the leading manufacturers and distributors of 3D printing solutions in the world. Its advanced technology, together with its great potential as a company, has meant that this SME has recently managed to raise 2.8 million in a round led by the CDTI and an investment fund from the Mondragón industrial group.

BCN3D was born in the CIM-UPC technology center, linked to the Polytechnic University of Catalonia, with the aim of developing various manufacturing techniques, including 3D Printing.

Xavier Martinez Faneca, CEO of the company, assures us that innovation has been, since its inception, a determining factor for the growth of this SME: "In 2012 we started a small business unit dedicated to selling small 3D printing machines. Later, we generated our own product and began to sell all over the world. This commercial success encouraged us to establish, five years later, Barcelona Three Dimensional Printers as a technology company in a truly innovative sector. Our goal is to help users so that they can materialize their ideas by providing an easy-to-use platform".

Competitive advantages

There are numerous advantages that this printing system provides. In addition to its versatility and speed, it reduces costs throughout the process.

"Our printers are characterized by being robust, efficient, versatile and adaptable to each demand because, above all, they must satisfy the needs of individuals and companies that want to obtain very different objects and products. In addition, they have a very intuitive user interface and software that facilitate the needs of each client and make us competitive in the market".

In recent years BCN3D has expanded its portfolio of printers to adapt to the designs and products demanded in sectors as diverse as manufacturing, education, healthcare, industrial design and construction, among others.

"I would like to emphasize that we work with open source files which makes it possible for us to print files of a very diverse nature. Furthermore, 3D printing turns conceptual ideas into functional prototypes in a few days and at a lower cost".

"In recent years the emergence of new technologies related to 3D printing has been spectacular. However, the next step will be that of small productions. In other words, companies that need to produce short series of products can use 3D printing to streamline their production systems and not depend on suppliers that, sometimes, come from other countries. If this is achieved, we will be able to witness a real revolution where relatively small companies will be able to have a greater production capacity, in a very short

time, and position their products in a similar way to large corporations".

In the industrial manufacturing sector, this technique facilitates the production of high precision tools, fixtures and accessories in a short time using technical materials very similar to parts manufactured with traditional manufacturing methods.

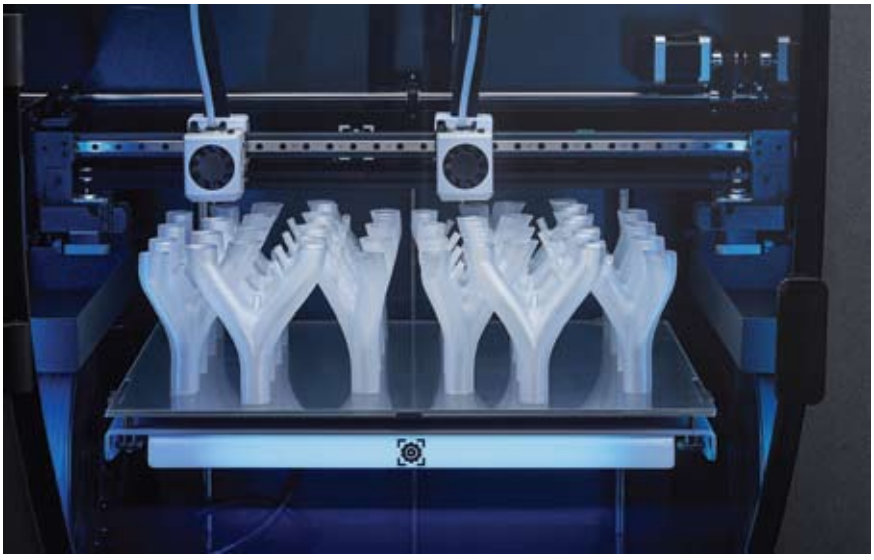
In the field of healthcare, 3D printing is also revolutionizing modern medicine by making it possible to recreate replicas of organs and bones of the body with great precision.

In the current health crisis caused by the pandemic, BCN3D has selflessly produced and distributed more than 4,200 units of protective equipment, including 3D printed visors that have been adopted by a wide range of health professionals in more than 50 medical centers throughout Europe.

"Undoubtedly, the additive manufacturing we use and our 3D printing equipment have allowed us to offer different technical solutions that have been decisive when it comes to manufacturing masks and protective equipment for medical centers and hospitals."

IDEX technology

"Of the different technologies that we have developed, I would like to highlight the so-called IDEX, which has undoubtedly been one of the most important milestones for us. The use of two independent heads and a mirror mode double the production and, therefore, significantly increase the productivity".



BCN3D Epsilon W27 printer manufacturing parts for hospital respirators in duplication mode

"We are currently focused on making the most of the plastic materials we use. In this sense, the first product that we have launched is the Smart Cabinet which, thanks to the CDTI investment, we have achieved a notable advance that makes the printers work with plastic materials optimally and can preserve the desired humidity conditions in this Smart Cabinet. If we want to diversify the use of plastic so that it is used in numerous sectors, and not only the industrial one, it is essential that the technology we use facilitates, as much as possible, the manufacturing process for those users who lack extensive technical training."

BCN3D printers to prototype footwear design (Pictures: BCN3D)

The CDTI invests in the capital of BCN3D

Last year, the CDTI, through the INNVIERTE program, and the Mondragón industrial group invested 2.8 million in the capital of BCN3D. This will make it possible to consolidate the range of its products and facilitate the development of this SME, currently in the expansion phase, which already exports to more than 60 countries.

The CDTI

The CDTI is the body of the General State Administration that supports knowledge-based innovation, advising and offering public aid for innovation through subsidies or partially reimbursable aid. The CDTI also internationalizes the R&D and innovation business projects of Spanish companies and entities and manages Spanish participation in international R&D organizations, such as Horizonte2020 and Eureka, and in the Science and Space industries. Additionally, through the Innvierte Economía Sostenible initiative, it supports and facilitates the capitalization of technology companies. ***smi***

BCN3D
www.bcn3d.com

New Ultramid® Advanced grades for low-weight and high-performance parts

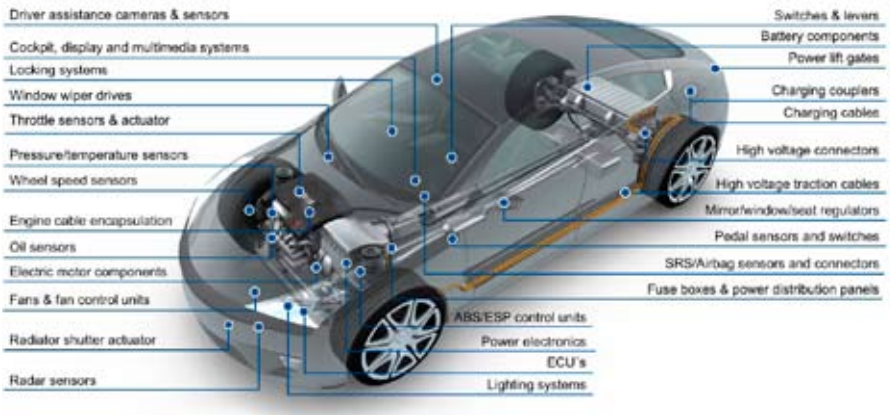
Carbon-fiber reinforced polyphthalamides with outstanding mechanical properties for the replacement of aluminum and magnesium in structural automotive applications, consumer electronics and loaded industrial equipment.

BASF is now expanding its polyphthalamide (PPA) portfolio of Ultramid® Advanced with carbon-fiber reinforced grades with fillings of 20, 30 and 40 percent. The benefits of these new materials: They make for extremely lightweight parts, can safely replace aluminum and magnesium without loss in stiffness and strength and are electrically conductive. The new grades combine these properties with the advantages of Ultramid® Advanced N (PA9T) which makes them unique among carbon-fiber reinforced PPAs already available in the market: high dimensional stability due to low water uptake, excellent chemical and hydrolysis resistance, high strength and modulus. The new carbon-fiber (CF) reinforced grades can be used to manufacture automotive structural parts for body, chassis and powertrain, for pumps, fans, gears and compressors in industrial applications as well as for stable and ultra-lightweight components in consumer electronics. With this offering, BASF complements its PPA portfolio of more than 50 grades already available on the market.

The mechanical performance of the new carbon-fiber reinforced PPA grades can be tuned by the choice and the content of the carbon fiber as well as by the additive technology. Ultramid® Advanced N3HC8 with 40% carbon fiber filling shows a better strength and modulus at 80°C (conditioned) than magnesium or aluminum. "Our new PPA compounds with carbon fibers are the ideal metal replacement", says Michael Pilarski from PPA business management at BASF. "And this not only from a material property point of view. Lately, we have seen safety issues at magnesium producers in different countries, which makes the supply rather unpredictable. Producing parts out of magnesium or aluminum also requires additional post-processing and tooling which increases system costs. Given the opportunities for 25 to 30% weight reduction with our new PPA grades, we can offer a safe, cost-efficient and high-performance alternative for parts traditionally manufactured from metal."

Combining these new materials with BASF's simulation software Ultrasim® to correctly model part behavior and optimize mold geometry, the Ultramid® Advanced CF grades can thus contribute to functional integration and weight reduction in different industries: the range of cars with e-drive or fuel cell engines can be increased by weight reduction of structural or powertrain parts; lightweight, thin precision structures in consumer electronics benefit from the high stiffness and strength, the excellent dimensional stability as well as the extremely low weight and the good processability of the new PPA materials; heavy, highly loaded and long-lasting industrial equipment like pumps and compressors can be easily produced because of the good dimensional stability as well as the high chemical, heat and abrasion resistance of the new CF grades.

The carbon-fiber reinforced PPA compounds also show a lower weight and higher tensile modulus than glass-fiber reinforced polyamides (PA) with similar reinforcements. PPA grades reinforced with 20 wt% carbon fibers are about 20 wt% lighter than PA6 or



Engineering Plastics and Polyurethanes by BASF can be used for many electric and electronics car parts (All the pictures: BASF)

PA66 filled with 50% glass fibers. The tensile strength of a 20% carbon fiber reinforced Ultramid® Advanced compound is either better or equivalent to a glass fiber reinforced polyamide filled with 50% while showing better processability. Ultramid® Advanced N3HC8 e.g. is very stable after ageing at high temperatures: It retains nearly 100% of its tensile modulus after heat aging at 120°C for 5,000h or at 150°C for 3,000 hours.

About Ultramid® Advanced

BASF's polyphthalamide portfolio is based on the four polymers Ultramid® Advanced N (PA9T), Ultramid® Advanced T1000 (PA6T/6I), Ultramid® Advanced T2000 (PA6T/66) and the long-standing Ultramid® T KR (PA6T/6). They open the door to the next generation of lightweight, high-performance plastic components in many different sectors including the automotive industry, electronics and electric devices, mechanical engineering and consumer goods. The PPA portfolio is available globally and complemented by BASF's Ultrasim® simulation tool and extensive experience in application development. It includes more than 50 compounded grades for injection molding and extrusion, products with or without flame retardants. The compounds are available in different colors, from colorless to laser-markable black, with short-glass, long-glass or carbon fiber reinforcement, and with various heat stabilizers. smi

BASF
www.basf.com

Advancing green credentials amidst shift to electric power

Talisman Plastics has installed a new electric vehicle charging point at its Malvern plant

Talisman Plastics have accelerated plans to make their injection moulding plant more environmentally friendly, and for scoping more projects to replace heavy components with lighter, stronger plastic parts, particularly for the automotive sector.

Talisman already works with many OEMs currently advancing plans to electrify their product range, and the UK Government's announcement that new sales of petrol and diesel vehicles will be banned earlier than planned, in 2030, has expedited the process for many manufacturers. Talisman Plastics supports various partners in the automotive industry looking to save weight in their vehicles by engineering parts traditionally made from steel or aluminium in a specialist lightweight plastic, that retains the same strength as the original material.

Martin Hefford, technical sales manager at Talisman Plastics, said: "The reduction in weight leads to fewer CO_2 emissions, meaning drivers can save tax, and that manufacturers' fleet averages align with mandated targets. All of these small changes can really have a positive effect on the emissions of vehicles as we move towards more take up of battery electric vehicles, and the drive towards net zero, which the UK Government has targeted by 2050."

The company is already familiar with producing components for various makes and models such as illuminated treadplates, script badging, and pedal and bumper fixtures.

Hefford said: "Talisman Plastics use a wide range of engineering materials commonly used for metal replacement, including aromatic amides, polyphenylene sulphide, poly ether and aryl ether ketones."

The changes in materials used in vehicle construction do not have an adverse effect on the ability to recycle old cars. Jaguar Land Rover vehicles are designed to be 85% recyclable and 95% recoverable at the point of dismantling, and the introduction of further plastic components to the makeup of cars across the industry means that more parts can be recycled.

Moving away from conventional use of aluminium and steel in vehicle production towards plastic does not have any negative impact on the safety to the vehicle's occupants either, says Hefford. "Modern vehicles with more plastic being used within the car's design still have to pass the same stringent safety tests. The parts we manufacture must confirm to our customers drawings, managed by our quality team ensuring the relevant PPAP accreditations are gained."

Talisman has installed electric vehicle charging points at its premises in Malvern, committing to its program of environmental awareness, which has so far this year included the launch of Enviroloc, the first security seal made from recycled polypropylene, and continued investment in newer injection moulding machines while also decommissioning relatively inefficient, older machines.

The newer machines combined with cloud-based operation facilitates 24-hour production, meaning more work can be carried out while keeping overall energy consumption down. Further initiatives are under way to reduce energy consumption and be mindful of the environmental impact of the Malvern plant. smi

Talisman Plastics
www.talismanplastics.co.uk

The new Enviroloc, made from a 100% recycled base polymer (Pictures: Talisman Plastics)

Future cars need new materials today

Picture: Solvay

Composites help meet automotive industry challenges, including environmental ones.

Many would argue that the future of automotive is in zero emission, self-driving cars. If that is indeed the case, then this means two things for the industry today: cars need to get lighter to become more energy efficient, and their design needs to evolve in order to accommodate new uses and requirements. "Most self-driving car designs will need to take into account very different vehicle dynamics and passenger experiences than today's vehicles," explains Carmelo Lo Faro, president of Solvay's Composite Materials business unit. "On top of the need to be lightweight, these designs will incorporate organic geometries and the simple assembly of parts, which are very difficult to manufacture with traditional metals."

To answer both of these challenges, automakers need materials that are lighter than metal while being just as durable. They need materials that allow complex and innovative designs and that are easy to make and assemble cost-effectively. Sounds like an impossible combination of properties? Hardly: SolvaLite™, a family of thermoset composites specifically developed by Solvay for high volume automotive applications, fits all these criteria.

Not only are SolvaLite™ composites 40% lighter than metal, making cars more energy-efficient and offsetting the heavy battery systems of electric vehicles; and not only do they have the kind of mechanical performance needed to manufacture the very structure of the car, they also offer a fast curing process, which means you can make one part every minute. And oh yeah, they also have a tailored tack so that robots can easily manipulate them in automated manufacturing chains.

What may seem like technical details actually make all the difference. Because of these properties, car manufacturers can use SolvaLite™ for very high volumes, paving the way for composite parts to become more cost-effective and mainstream than ever before. For new parts, new applications and in very large volumes, these materials can push the boundaries of metal replacement, and that comes with a host of environmental benefits.

It's for this reason that SolvaLite™ was recently recognized by the Solar Impulse Foundation and labeled as one of its 1,000 Solutions to Change the World. In fact, this is the eighth Solvay product to receive this label. The Foundation's experts took a close look at what this material could do to reduce the environmental impact of the automotive industry in very concrete ways. For example, a 100 kg reduction in the weight of a car can lower its emissions by as much as 2,000 kg of CO_2 over its entire lifetime. (Lowering vehicle weight means other car components such as engine and transmission can also be reduced in capacity, size and weight, so it's a virtuous circle).

SolvaLite™ can do that, but its impact also reaches beyond making cars lighter. As a fast-curing material, it reduces energy consumption during the manufacturing process, and the fact that it enables quicker manufacturing is another source of energy savings. As a result, the Foundation estimates that 50 million cars made out of this material could amount to 100 billion kg of CO_2 saved. **smi**

Solvay
www.solvay.com

Super high-flow TPEs enable sustainable solutions for large scale mouldings

Dryflex HiF is a family of very high melt-flow and scratch resistant TPS-SEBS materials recently launched by polymer compounding group HEXPOL TPE. The grades open possibilities to produce large scale parts via injection moulding, including automotive interior surfaces, trims and skins.

Speaking of the development Dr. Thomas Köppl, group product manager HEXPOL TPE commented; "There are several processing methods and materials on the market that allow production of automotive interior surfaces such as instrument panels and door trims. However, these processes can be costly, and the materials are not recyclable. OEMs are looking to improve their sustainability practices while also managing system costs. This is why we developed Dryflex HiF TPE."

TPE materials are already widely used in automotive interiors, for example in mats, grips and sealings. However, until recently, TPEs have not been viable for large scale trim because these applications have much higher specifications regarding abrasion behaviour, processability and heat resistance. The new Dryflex HiF TPE grades fulfil these requirements and are injection mouldable, making them an interesting alternative to PU coating, PVC slush moulding or TPO foil processes.

In a production trial, 1.1 mm thin skins for the soft surface of a complete instrument panel were moulded and back-foamed with PU, demonstrating that even very large, thin parts can be produced via injection moulding due to the high flowability of the Dryflex HiF TPE.

Testing demonstrates that Dryflex HiF TPEs pass the stringent lightfastness and heat resistance requirements for instrument panels (for example 120°C for 1000 hours). A low-gloss, matt surface with no visible weld lines is achievable as well as the moulding of different leather grains. Surface performance is confirmed by the testing of Erichsen scratch resistance and Crock abrasion.

Injection moulding TPE is a faster process and consumes less energy than materials traditionally used in these applications. For example, producing a skin via PVC slush moulding can take 5 to 6 minutes whereas an injection moulded TPE skin can take around 80 seconds. The lower density of Dryflex HiF TPEs (0.9 g/cm3) can decrease part weight, helping OEMs to meet light-weighting and CO2 emissions targets. Additionally, TPE materials are recyclable in processing, which all supports the market need for sustainable manufacturing.

Dryflex HiF TPEs can be used in multi-component applications with direct overmoulding to polypropylene. Compared to existing TPU or PU-RIM processes, which often use PC/ABS as the rigid component, the material's ability to adhere to PP can deliver further cost and weight reduction in 2K processes.

Dryflex HiF TPE skin and PP carrier backfoamed with PU (Pictures: HEXPOL TPE)

Dr. Köppl concluded: "In developing these materials we worked in close collaboration with Kraton Corporation, based on Kraton IMSS™ technology, Dryflex HiF TPEs deliver a combination of high-performance, soft-touch appeal, processing optimisation and recyclability. They are part of our growing portfolio of materials bringing new possibilities to the automotive industry". smi

HEXPOL TPE
www.hexpol.com

Covestro develops modular innovative design for future vehicle lighting concept

An innovative headlamp concept from Covestro for the vehicle lighting of the future requires significantly fewer individual parts than conventional solutions and reduces assembly steps, space requirements, costs and weight.

Covestro has developed an innovative automotive headlight concept for the vehicle lighting of tomorrow. The visionary approach is based on different types of the polycarbonate Makrolon® and addresses the high demands in terms of functionality and aesthetics. Compared with conventional solutions, the new modular design makes do with fewer individual components and reduces assembly steps, space requirements and costs. In total, the headlight prototype may drop over 1.5 kilograms of weight, which contributes to reduced emissions and greater vehicle range.

The development is another example of Covestro's ambition to become fully circular. This also includes developing products and applications that make the recycling process easier. Thanks to the modular design of the headlight and a focus on a single plastic material type, the amount of work required for separating, sorting and storing materials in recycling streams is reduced. Apart from pure polycarbonate and a blend with acrylonitrile butadiene styrene (ABS), the headlight uses only a scratch-resistant coating for the outer lens cover and metalization on the reflectors.

Advanced technologies and reduced complexity

"We work together with car manufacturers and their suppliers and harness our global resources to implement advanced technologies. Examples are heat sinks that are integral to the housing, LEDs, multi-shot molding, in-mold-electronics, sensor integration and more," explains Jim Lorenzo, Application Development Engineer at Covestro LLC. "This also includes designing parts and molds that provide the right balance between functionality, aesthetics and cost efficiency." While traditional automotive headlights have a complex design and usually consist of dozens of components and screws, the design of this modular concept is reduced to a reflector with housing, a collimator lens, a bezel and an outer lens cover.

The LED modules for low and high beam and the corresponding reflectors are made of the thermally conductive polycarbonate Makrolon® TC8030 and the dimensionally stable type Makrolon® DS801, respectively. The production process combines multi-component injection molding with mold-in-place design. Thanks to these materials and the efficient production technology, the manufacturer can eliminate the additional cost and weight of heat sinks, attachments and other components.

Integrated heat management

In addition to light sources, the vehicle headlights of the future will also integrate technologies such as LiDAR, radar and cameras. This will require the use of thermally conductive materials, in order to dissipate the heat generated by the electronics and light sources. For this purpose, Makrolon® TC8030 integrates heat management directly into the housing of the new headlight concept.

The bezel made of different grades of Makrolon® polycarbonates is produced in a three-shot molding process. It hides the advanced driver assistance systems and consolidates the daytime running lights, turn-signals and pedestrian safety lighting into one part. The sensors are hidden behind a LiDAR-transparent panel. The bezel blends cutting-edge performance and aesthetics, including a "dead front", seamless appearance, a high gloss finish enhanced with laser-etched effects and diffused backlighting for improved safety and high recognition value. ***smi***

Covestro
www.covestro.com

Expanded line of KyronMAX® structural thermoplastic compounds

KyronMAX® PPA is used to replace steel in an electric vehicle bracket (Picture: MCAM)

The world's strongest injection moldable product line of structural thermoplastic materials using advanced carbon fiber technology adds new formulas reaching 60,000 psi tensile strength.

Mitsubishi Chemical Advanced Materials (MCAM) has recently announced the expanded product line of its KyronMAX® structural thermoplastic materials with new resin formulations to meet the requirements of applications in the medical, oil & gas, aerospace, automotive, and recreation market segments. The KyronMAX line of structural thermoplastic compounds incorporate MCAM's short carbon fiber technology, offering its customers the strongest moldable polymers available for metal replacement applications.

"While we began with a line of high-temperature engineering thermoplastics we have migrated to include the general purpose polymers as well, including polypropylene, nylon and polycarbonate," says Dave Wilkinson, Technology Director for MCAM. "We're agnostic in terms of the material we use. If the customer requires nylon 6/6, we can give them a nylon 6/6 that is stronger than anything on the market. If they need a polycarbonate, we can give them one that's stronger than any other material. We're not trying to force one or two solutions on our customers. We want to produce what our customers require, so we now offer a broad product portfolio."

The KyronMAX line is based around structural compounds which are the strongest compounds for the injection molding process in the world. KyronMAX compounds can be used to replace steel in a structural component. As MCAM continued innovating and developing its broad product range, the company broke a barrier in the industry, offering materials with 60,000 psi (414 MPa) tensile strength.

"We keep moving the technology bar higher to give our customers a lot of options when they want to replace metals with polymers," explains Wilkinson. "Additionally our materials are designed to be user-friendly and easily injection moldable."

Metal replacement, particularly in automotive components, has become a part of OEMs lightweighting and sustainability programs, Wilkinson says. "We've done studies on the savings of using KyronMAX compounds to replace metal. When you start taking weight out of the material you get a massive CO2 reduction because you don't need as much fuel to power the vehicle." Additionally, KyronMAX technology enables very complex parts to be injection molded and retain the strength and mechanical performance of metal, with all the added benefits.

MCAM's North American Research & Development Technology Center combined what were formerly four facilities into a single, newly-built facility comprised of 100,000 square feet (9,290 square meters) where the company develops cutting edge materials in a vertically integrated operation. "We take in raw carbon fiber on a spool and do everything under one roof including chopping, compounding, molding and machining," says Wilkinson. "We sell anywhere along the supply chain whether our customers need the raw materials shipped to their molder's or require molded parts from their molds which they ship to us."

MCAM's technology center has 12 injection molding machines ranging from 20 to 700 tons to accommodate customers' parts requirements. MCAM has technical centers around the world, which allows the company to transfer customers' molds to other MCAM facilities globally. smi

MCAM
www.mcam.com

Medical devices with TPE's soft-touch advantage

KRAIBURG TPE, a recognized global leader in superior TPE compounds, provides the THERMOLAST® M TPE compounds for a soft-touch feel and surface in medical device applications.

With accuracy and precision, medical devices, whether used in a home or in a healthcare setting, are expected to provide effective outcomes for a patient. The design of the instruments must, thus, be ergonomically driven to enable dexterity, control and comfort when handling the instruments.

A soft-touch surface promotes ease of use, and better control and grip, especially in hand-held or single-use medical devices. For self-administering in the home, a soft-touch surface can ensure proper and easy handling of medical devices for effective drug delivery and error-free performance.

Today, thermoplastic elastomers (TPEs) are widely used for a soft-touch surface and feel. Moreover, the varied mechanical properties of TPEs in medical device applications, such as ease of coloration, flexibility and purity, contribute to the aesthetic appearance and high usability of the products.

For manufacturers, TPEs are the perfect choice of materials, owing to their easy processing, for example, via injection molding or extrusion process.

KRAIBURG TPE, a global TPE manufacturer of a wide range of thermoplastic elastomer products and custom solutions for multiple industries, offers high quality and custom-engineered THERMOLAST® M compounds that conform to the soft-touch requirements of medical device applications.

Taking a safe approach

For soft-touch surfaces in medical device applications, KRAIBURG TPE offers the THERMOLAST® M MC/AD/PA series of compounds that are sterilizable by using methods such as EtO gas, γ-gamma ray treatment (2 x 35 kGy) and β-ray (electron beam) treatment (2 x 35 kGy). The THERMOLAST® M series is also free of latex, PVC and phthalates, allowing it to be used for medical devices.

The THERMOLAST® M has been specially formulated for applications requiring medical approvals and conforms to standards such as ISO 10993-5 (Cytotoxicity) and ISO 10993-10 (Intracutaneous irritation).

The MC/AD/PA compounds have excellent adhesion to various polyamides such as PA6 and PA12, allowing for use in applications requiring soft-touch grips, sealing, flexible connectors, switches, and mats in the medical devices industry. The compounds can also be applied in handles, buttons and closures that require soft-touch surfaces for medical devices.

The compounds can be colored in various options using Pantone and RAL as a color reference, allowing for differentiation of end products.

Approved to exacting standards

KRAIBURG TPE's THERMOLAST® M MC/tl series is certified to standards such as ISO 10993-10 (Intracutaneous irritation), ISO 10993-5 (Cytotoxicity), ISO 10993-4 (Hemolysis), ISO 10993-11 (Acute systemic toxicity) and VDI 2017.

It comes in natural colors and can be colored in many ways. It has excellent adhesion to PP and PE, allowing it to be applied on mouthpieces and as a soft-touch element on medical devices.

The MC/tl series has optimized compression set and has excellent abrasion resistance, for applications that require high contact and friction such as handles and grips on medical devices and sealings on respiratory masks. *smi*

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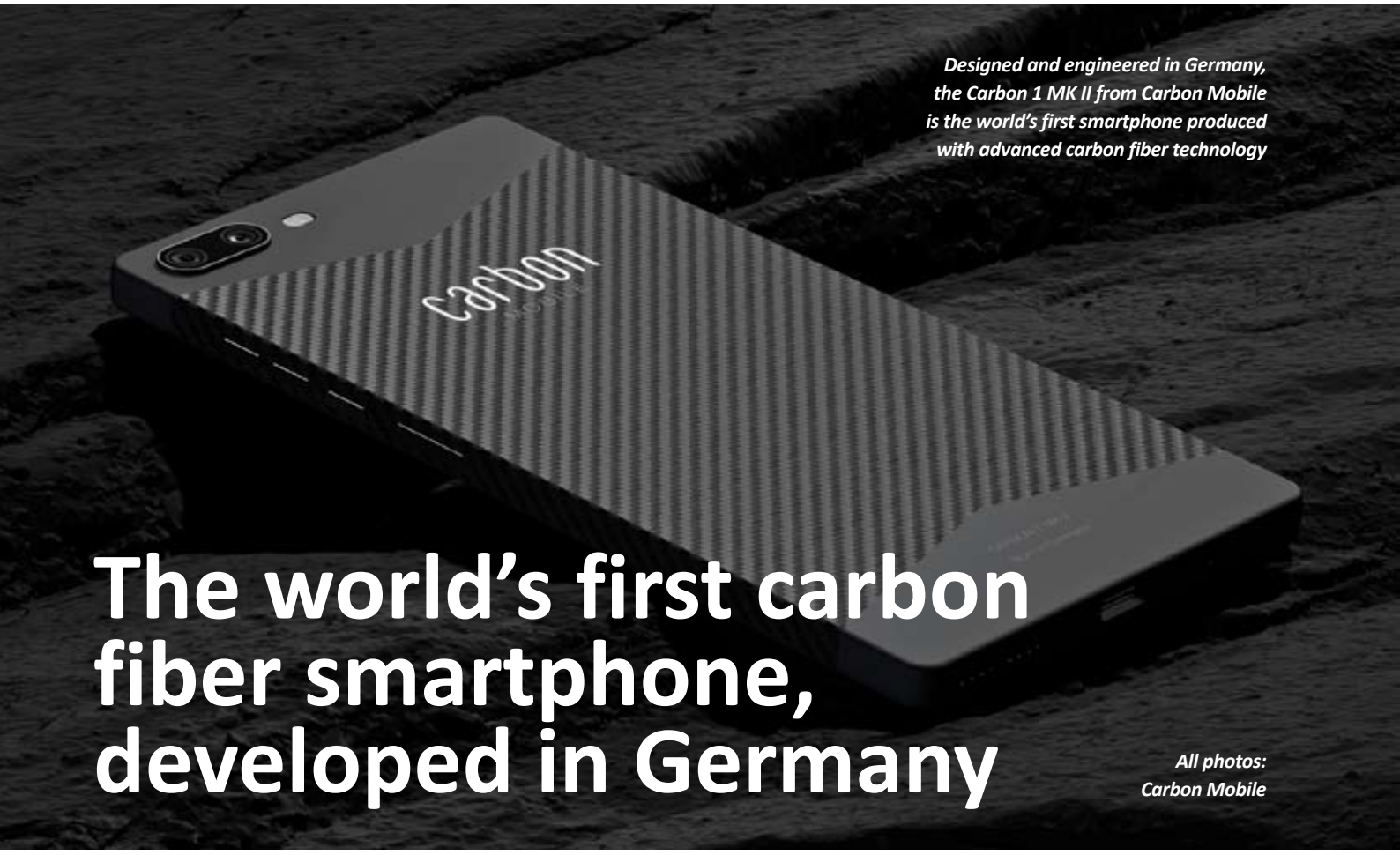

Designed and engineered in Germany, the Carbon 1 MK II from Carbon Mobile is the world's first smartphone produced with advanced carbon fiber technology

The world's first carbon fiber smartphone, developed in Germany

All photos: Carbon Mobile

HyRECM Technology unlocks the potential for carbon based composites in connected devices.

A smartphone that sets new standards for lightness, slim design and sustainability is making its debut on the market this March: the Carbon 1 MK II from Berlin-based start-up Carbon Mobile. "Designed and engineered in Germany, the Carbon 1 MK II reignites miniaturization and drives sustainability in connected devices by replacing plastics and aluminum with advanced composite materials for the first time", says Firas Khalifeh, CEO of Carbon Mobile. The base material for the production of the housing is a thermoplastic composite from the LANXESS Tepex dynalite product range. It is reinforced with fabrics of incredibly fine 1K continuous carbon fiber filaments. "Our composite material, which we developed for extremely lightweight components subjected to considerable mechanical stress, does more than just allow exceptionally thin wall thicknesses. In fact, with its high degree of strength and rigidity, it also helps to make the housing very robust for day-to-day use," explains Philipp Genders, Tepex expert in application development at LANXESS. "In addition, the matte-black carbon-fibers give the smartphone a truly high-tech look."

HyRECM Technology – overcoming physical hurdles

Despite their advanced properties for producing robust yet lightweight structures, carbon fibers behave in an electromagnetic shielding manner. This means that they block radio signals, forming a Faraday cage that rather than allowing signals to pass through, instead disperses them around the outer body of the device. Connected devices with carbon fiber, for this reason have been viewed as an impossibility by the tech industry.

Following four years of research and development, Carbon Mobile's engineers have developed a revolutionary process to unlock carbon fiber's potential for connected devices. The patented HyRECM (Hybrid Radio Enabled Composite Material) technology fuses carbon fibers together with a comple-

LANXESS is a leading specialty chemicals company with sales of EUR 6.1 billion in 2020. The company currently has about 14,300 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.

The housing is designed as a monocoque, or "single shell". As a result, it makes optimized use of the extreme rigidity of the reinforced carbon fiber body

mentary composite material capable of RF signal permeation. To further boost the devices connectivity, a unique 3D-printed conductive ink is integrated into the carbon fiber structure. The result is the first “radio enabled” carbon fiber based material. Applied for the first time in the Carbon 1 MK II, the new technology produces a robust carbon fiber-based housing structure that is not only incredibly thin and light, but also made from less than five percent plastic.

Eric Chan from processing partner Modern Composites Ltd said, "LANXESS and their Tepex materials made the perfect partner in the development of HyRECM Technology. Being able to work with a superior material from Germany ensures the best application possible of this revolutionary technology from launch."

Lighter than a bag of potato chips

Following the same construction principle as the load-bearing chassis of a Formula 1 car, the housing is designed as a monocoque, or "single shell". As a result, it makes optimized use of the extreme rigidity of carbon fiber reinforced plastic (CFRP). This contributes significantly to the thin wall thicknesses and low weight of the smartphone and also enables miniaturization. That is because there is no bulky reinforcement taking up space on the inside of the housing. According to Khalifeh, "Our cutting-edge monocoque design enables a device that weighs only 125 grams, a third lighter than conventional smartphones. At just 6.3 millimeters, it is also 25 percent thinner as well."

Working toward a world with less electronic waste

Carbon Mobile is committed to sustainable principles. The new smartphone uses only recyclable materials wherever possible. "We want to deliver our contribution to cutting electronic waste and improving sustainability around the world," says Khalifeh. The composite material used for the housing can also easily be recycled and repurposed for new uses. "Like all products in the Tepex dynalite product line, it can be shredded and then processed on standard injection-molding machines to make high-quality components, either by itself or mixed with suitable new material," explains Genders. To extend the service life of the smartphone, all its components are designed to be easily replaceable for repair purpose, which also prevents electronic waste from being created.

About CARBON MOBILE

CARBON MOBILE GmbH is a German technology company with a big vision: to be the new European alternative with a diverse portfolio in consumer electronics. In doing so, CARBON MOBILE aims to shake up a sluggish and saturated market that is hungry for innovation and to trigger a rethink towards sustainable production. *smi*

LANXESS
www.lanxess.com

exhibitions calendar

Chinaplas
13-16 April 2021
Shenzhen, 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.

Plastpol
25-28 May 2021
Kielce, Poland
www.targikielce.pl/en/plastpol

Plastpol is one of the largest exhibitions in Poland and Eastern Europe dedicated to the plastics industry. It features all areas of plastics processing beginning with the first stages of plastic production and finishing with its disposal and recycling. Among the exhibits are plastics processing machines, moulds as well as a wide variety of plastics, recycling technologies and IT solutions.

Rosmould
15-17 June 2021
Moscow, Russia
www.rosmould.ru

Rosmould is an international exhibition on manufacturing solutions of the next generation organized by Messe Frankfurt RUS. Exhibition covers such groups as design and product development, additive technologies, moulds, die moulds, stamps, materials, machinery and tooling.

Equiplast
14-18 September 2021
Barcelona, Spain
www.equiplast.com

Equiplast is a specialized trade fair in the field of plastic manufacturing. It is a meeting ground for manufacturers from Europe and South America. Equiplast shows technical and technological innovations and advancements - the next generation of plastic and rubber solutions.

Interplas
28-30 September
Birmingham, UK
www.interplasuk.com

Interplas is the UK's largest plastics exhibition and the only UK event to cover all of the manufacturing processes, technologies and services within the plastics industry. Held triennially Interplas showcases hundreds of exhibitors, the event features a wide range of technologies including injection moulding, rotational moulding, extrusion, blow moulding, thermoforming, vacuum forming, film extrusion, recycling, materials and design.

Taipei Plas
28 September -
02 October 2021
Taipei, Taiwan
www.taipeiplas.com.tw

Taipei Plas is a biennal international exhibition for plastics and rubber technology. You can see every facet of production, meet company representatives and industry professionals from across Asia and check out the vast array of breakthrough processing machinery, parts, finished products and materials.

FAKUMA
12-16 October 2021
Friedrichshafen, Germany
www.fakuma-messe.de

Fakuma is a prominent meeting place for the industry, with international charisma. It holds second place in the overall ranking of international trade fairs for plastics. Fakuma offers a top-class, comprehensive range covering all aspects of injection moulding technology as well as extrusion and thermoforming, in which it holds a leading position. The range of provision at Fakuma is rounded off by forward-looking forums, workshops and special shows.

PLÁSTICO BRASIL
08-12 November 2021
São Paulo, Brasil
www.plasticobrasil.com.br

Plástico Brasil has confirmed its position as the largest event in the sector in Latin America. Focused on networking and generating business opportunities, along with promotion of content and knowledge, the show brings together the latest technologies and trends in machinery, equipment, resins and solutions for plastics manufacturers all over Latin America.

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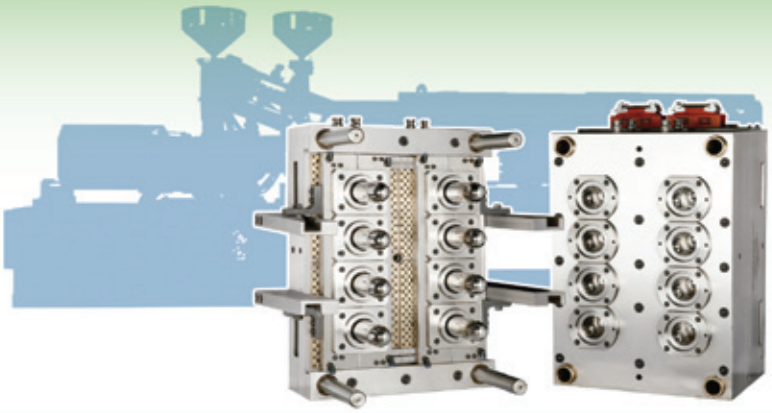

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