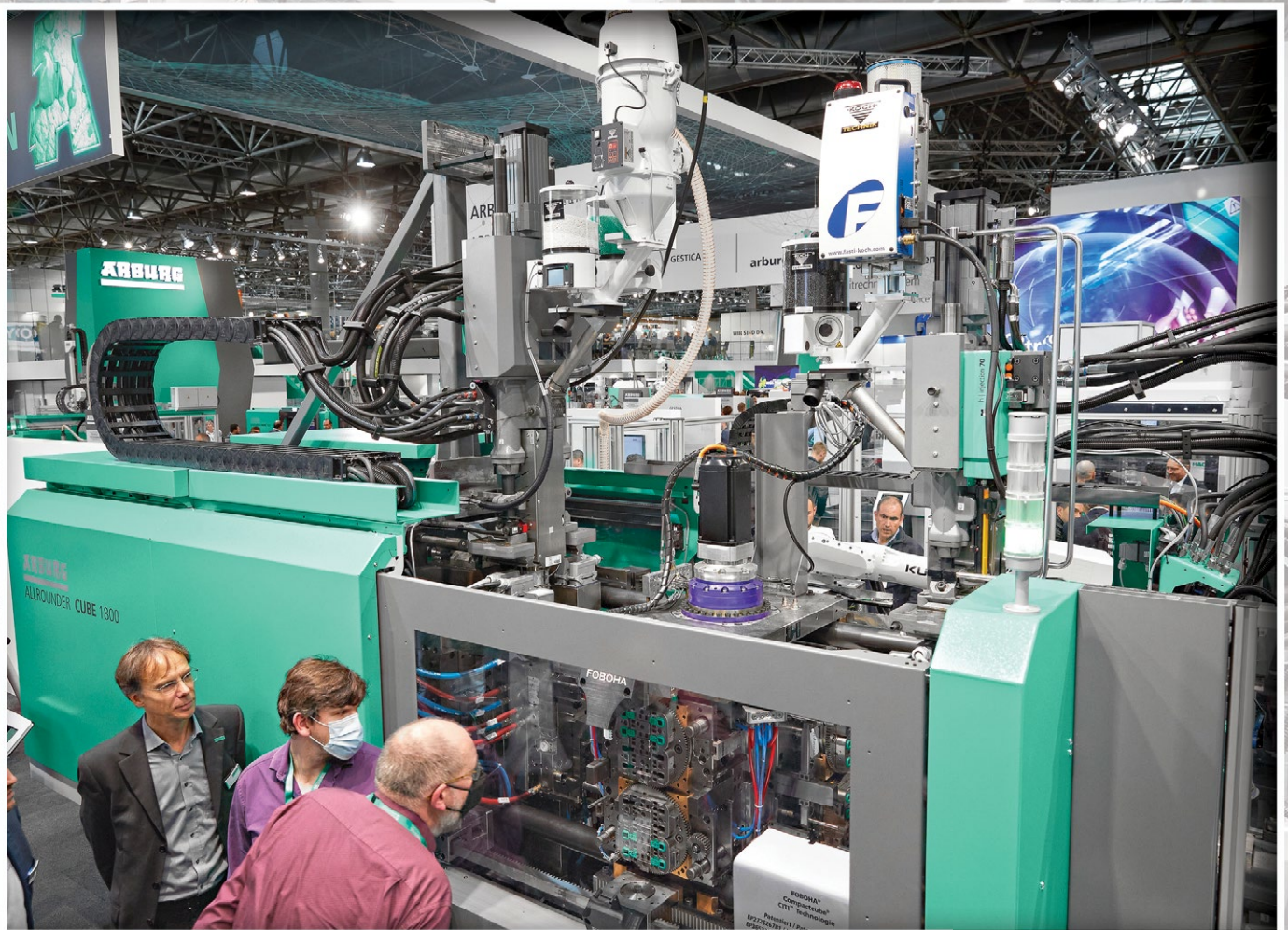


smart_molding

international

4/2022

smart-molding.com

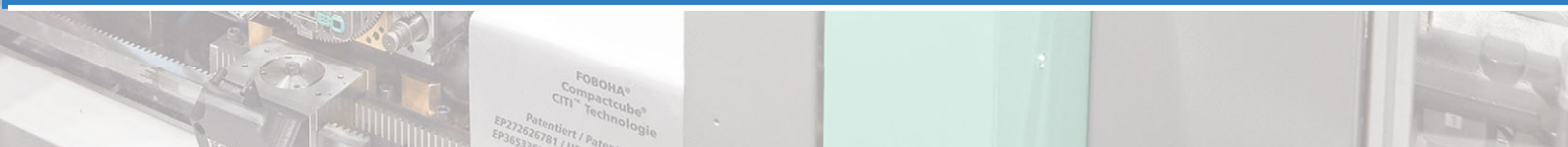


20

Making an impressive showing with "Plan A" at K 2022, the world's leading trade fair

25

Accommodates larger moulds on the same footprint and achieves greater productivity



Get news updates and magazine alerts
 Submit your e-mail to subscribe free
www.smart-molding.com



Both, BOY XS and BOY XXS offer 50% more plasticizing volume

Up to now the maximum plasticizing volume for the machine types mentioned has been 10.2 cm³, but from the middle of this year the two injection molding machines will have a maximum stroke volume of 15.3 cm³ as standard.

An extended screw stroke at a screw diameter of 18 mm and an injection force increased by 25 % makes this possible. Thus, the compact BOY XS (100 kN clamping force / 0.77 m³ footprint) and the BOY XXS (63 kN / 0.59 m³ footprint) have a significantly wider range of injection volumes in comparison to other

machines in this clamping force class. These two BOY injection molding machines do not use the piston plasticizing that is customary for this machine size, but instead rely on a screw plasticizing from 8 to 18 mm according to the "first in first out" principle. Maximum specific injection pressures of up to 3128 bar are available.

The proven design is ideally tailored to the industrial requirements of micro injection molding. In order to achieve a maximum conservation of resources, BOY is pushing for an almost sprueless part production



with cost-effective single-cavity molds. The diversity of the plasticizing units allows the processing of bio-based compounds in addition to the common plastics such as thermoplastic (screw diameter 8mm to 18mm), elastomers (screw diameter 16mm) and silicone/ISA.

Dr. Boy
www.dr-boy.de

To focus entirely on hot runner business

Inglass announces the sale of 100% of INEVO to Luigi Caveri, owner of CST Stampi and Roberto Pagnazzi, Sales Director of the Inglass mould division, since 2015.

INEVO is the new name of the Inglass mould division that started as INCOS in 1987. INCOS, focused since the beginning on injection moulds manufacturing for the car lighting market and the glazing technology.

Maurilio Rizzo, President and Founder of Inglass, states: "The sale of INEVO will allow Inglass to entirely focus on the HPSflow hot runner business, a market that requires continuous innovation and investments in order to satisfy the increasingly demanding needs of the injection moulding industry".

Inglass
www.inglass.it

Luigi Caveri, Coo of INEVO states: "We are proud of this acquisition. INEVO has been chosen due to its deep knowledge of the lighting mould market and its high innovation skills in the production of new components for the smart mobility. At the same time the synergies with CST Stampi, both in design and manufacturing, will allow us to be a perfect partner for all the markets that require cutting-edge technology".

The just signed company transfer represents the completion of the process of total separation between the hot runner systems HPSflow division and the lighting mould division.

WITTmann and FarragTech now under one roof

For more than 25 years, FarragTech GmbH has been active in plant engineering for plastics processing



From left to right: Erhard Fax, WITTmann Material Handling Department Manager; Anne Ferras, Product Manager Compressed Air Drying and Melt Cooling; Michael Wittmann, WITTmann Managing Director.

New products for hot runner and control systems

Messburger presents innovations in the field of hot runner and control systems. Under the PPS product brand, the number of variants of the smartFILL nozzle series has been expanded with a new focus. The range is perfectly complemented by the pneumatic and hydraulic operating units for valve gate nozzles. In control systems, the combination of a CON controller with the proTEMP+ in one cabinet has been made possible.

The newly developed series focuses on melt guidance and ease of maintenance. With the very large variety of nozzle lengths, melt channel diameters and gate geometries, the smartFILL nozzle series is now also available in the large 4557 and the small 4039 versions. The nozzles are available in the variations smartFILL (blow wall), smartFILL Shot (screw inlet) or smartFILL Shot Single

(single application). They are not only suitable for processing technical and filled plastic types, but also for direct gating or gating to a cold runner. The new concept of heating right up to the injection point ensures a homogeneous temperature profile, which in turn guarantees highest component quality.

Compact redesignment
 Compatible with the smartFILL nozzle series, the pneumatic (PP 5363S) and hydraulic (MH 245S) operating units for valve gate nozzles are new in the range. With the pneumatic operating unit, the pin is opened and closed via the clamping plate using compressed air. Even with individual actuation of each nozzle, tight inside dimensions are possible for both units. This makes these operating units particularly suitable for use in conjunction with the 19 and

and it is planned to have the appliances seamlessly integrated into the open concept of WITTmann 4.0 technology.

The company's previous owner Alan Farrag is taking over the compressed air drying and cooling segments as Product Manager, and will incorporate this product line into the WITTmann Group. WITTmann's Managing Director Michael Wittmann is looking forward to the future cooperation. "We extend a very

corial welcome to the FarragTech team in our group of companies. With the small quantity dryers from FarragTech, we are closing a gap in our product portfolio. Our international outreach – combined with the advantages of these technically outstanding products – promises an enormous growth potential for our new product segment."

WITTmann
 Kunststoffgeräte
 www.wittmann-group.com



Development of operating units for valve gate nozzles
 to control the various pin positions hydraulically in staggered modes. For cascaded filling of injection moulded parts with several injection points, valve defects on moulded parts can be avoided this way.

Messburger
 www.messburger.com



smart-molding international _____ 4/2022

VM Verlag GmbH: Krummer Büchel 12,
50676 Cologne, Germany

EDITORS

Konstantin Faticzev (Editor-in-Chief)
editor@smart-molding.com

ADVERTISING SALES

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

ADMINISTRATION

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

Reprints, Translation etc:

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photographic, recording or otherwise, without prior permission of the publisher.

Front page picture:
Arburg



Index of companies in this issue

Arburg.....	17, 20, 38
BCN3D	42
Billion.....	39
BMB	28
BOY	8, 24
Carbon	11
DSM Engineering Materials.....	41
Elmet	36
ENGEL.....	13, 25, 39
Haitian	38
HASCO	14, 37
Hébert Group	16
Henkel	11
HRSflow	38
Husky.....	10
Kistler	48
KraussMaffei.....	13, 34
Messe Dusseldorf.....	18
Meusburger	40
MMC Verstraete	16
Moretto	9
MTS France.....	41
NETSTAL.....	38
NETZSCH.....	46
Nexa3D	15
Oberland MV	33
Pagès Group	16
PulPac.....	16
Renault	41
RM Technologies	41
Roctool	9
SIGMA.....	44
Stork IMM	30
Sumitomo (SHI) Demag.....	7, 26
Tederic.....	39
Weißer + Gießhaber.....	17
Wilmington Machinery.....	31
WITTMANN Group	6, 32, 39
Yizumi	12

CONTENTS

newsfeed

K 2022 – a complete success for the WITTMANN Group	6
Sumitomo (SHI) Demag CEO gives K 2022 positive approval	7
BOY presented smart solutions to the current challenges of the plastics industry	8
Record attendance for Roctool at K-2022 in Germany	9
Moretto new in K2022: precision microdosing	9
Husky exhibited at Gulfood Manufacturing – showcases complete technologies, solutions and services to enable regional packaging producers	10
Carbon announces all-new damping elastomers at Formnext	11
The official opening of YIZUMI new India Gujarat factory	12
KraussMaffei Group completely realigns external corporate financing	13
ENGEL North America with new President	13
Streamrunner® Multicolour – Multi-component injection moulding at a new level	14
Nexa3D announces professional series upgrade for its ultrafast dental 3D printer	15
Collaboration on Molded Fiber Labeling™ for Dry Molded Fiber	16
Milestone: One hundredth Allrounder for Weißer + Grießhaber	17

events

K 2022 – Trade fair results fulfil highest expectations	18
A complete success: Arburg makes an impressive showing with "Plan A" at K 2022, the world's leading trade fair	20

machinery

BOY machine control system in a new format	24
More space for the mould on the same footprint	25
Sumitomo (SHI) Demag staged ultra-short forming 'Med-Cup' process with high-speed extraction	26
BMB focuses on speed, thin-walled production and energy saving	28
"How Stork IMM is helping companies save energy & boost productivity"	30
Wilmington Machinery has recently announced two new machines	31

molding technologies

WITTMANN BATTENFELD has successfully launched its Airmould 4.0 internal gas pressure technology	32
Sales launch at K 2022: KraussMaffei starts sales of precisionMolding and powerMolding in Europe and North America	34

molds and tooling

SMARTcap gets trade fair in Düsseldorf off to impressive start	36
Vario Shot Xgate – New interchangeable needle-valve pre-chamber	37
Oerlikon HRSflow hot runner systems in action: live molding demo at K2022	38
The ideal basis for your injection moulding solution	40

materials

Partnership to create the most lightweight Plug-in hybrid vehicle fuel tank	41
---	----

additive manufacturing

BCN3D provided its 3D printing technology to successfully plan the removal of a big tumor	42
---	----

simulation & software

LSR Molding: Identifying quality problems before they appear	44
--	----

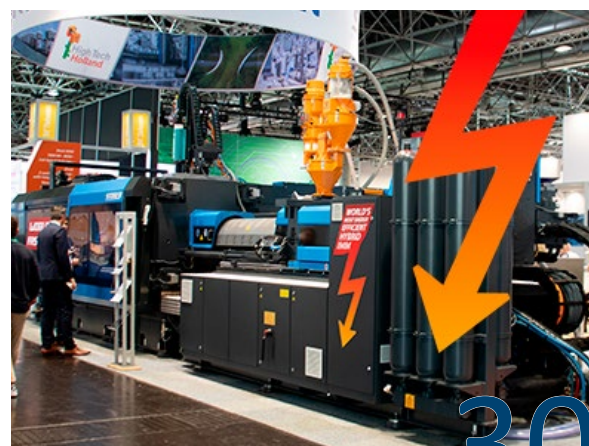
sensors

Continuous process optimization	46
Many factors – one ideal injection molding process	48



8

The currently explosive topic of energy efficiency and the exorbitant rise in energy costs as well as the sustainability of production processes determined a large part of the discussions at the K-trade fair in Düsseldorf. The need to significantly reduce energy consumption in the production of plastic parts. Many companies are currently doing everything to significantly improve their own productivity in the future. With its energy-efficient E-series, BOY offers injection moulding machines in the clamping force range from 63 to 1250 kN.



30

Given the strong demand for energy saving measures, Stork IMM is pleased to present an overview of 10 ways to save up to EUR 450,000 per year in energy costs with your existing Stork IMM. Monitoring and saving energy is one of today's most current and important issues facing companies across the plastics manufacturing industry. The sudden and rapid increase in energy prices, coupled with a continuing need to focus on sustainable operations, is forcing companies around the world to find the right way forward.



11

November 15, Carbon, a leading 3D printing technology company, announced two all-new damping elastomers, EPU 43 and EPU 45. The elastomers add to Carbon’s already impressive portfolio of materials as part of its idea-to-production platform. They offer new opportunities for breakthrough products in impact protection such as padding, gloves, and helmets. EPU 43 is an energy-damping elastomer that is soft while offering promising durability under high-cycle flexing, making it suitable for applications like comfort padding for helmet liners and safety gloves.



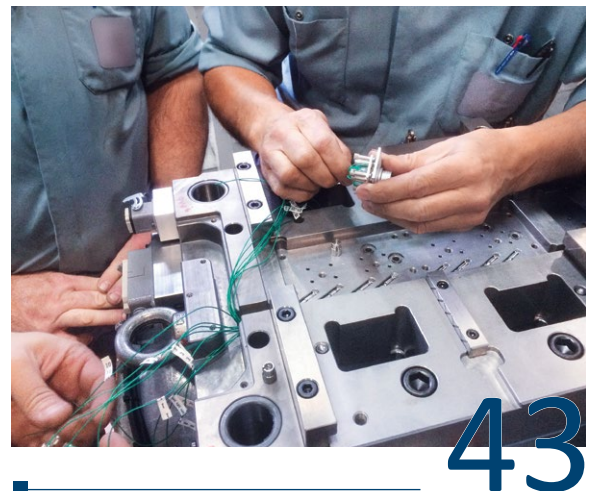
40

Whether standard moulds, sliding core moulds, change moulds or micro moulds – Meusburger offers a comprehensive range of products. Customers benefit not only from many years of experience, but also from production from high-grade steel, heat-treated for stress relief, as well as from fast order processing from request to delivery. With the Meusburger mould bases, customers benefit from a perfectly coordinated product range based on more than 55 years of experience. The diverse range of products come in over 30 material grades.



18

“K in Düsseldorf has once again fulfilled highest expectations. It continues to be the most international, complete and innovative trade fair of the global plastics and rubber industry,” says Erhard Wienkamp, Managing Director at Messe Düsseldorf, delighting at the good results and adding: “The trade fair has impressively demonstrated just how valuable face-to-face networking, chance meetings and physical brand and product experiences are. We are very satisfied to see that K 2022 succeeded in sending out strong signals as an innovation driver of the industry...”



43

Maximum efficiency and minimal scrap – that is injection molder’s ultimate goal. Measuring cavity pressure is an effective way to optimize production processes. To benefit from this technology, manufacturers must both install the sensors and interpret the data correctly – a challenge in itself, as many different factors can affect the part quality. Christian Streili explains why injection molding processes profit from expert knowledge and how Kistler helps its customers to make the most of cavity pressure measurement.

K 2022 – a complete success for the WITTMANN Group

Under the motto “It’s all WITTMANN”, the WITTMANN Group showed at this year’s K fair its novelties in the areas of injection molding machines and process technologies, as well as robots and auxiliary appliances, to a broad international public for the first time in the new, uniform WITTMANN design. The main focus of the program lay on exhibits presenting impressive evidence of the company’s contribution to circular economy, digitization and climate protection.

From the first to the last day of the fair, WITTMANN enjoyed an enormous amount of public interest in its exhibits at both of its trade fair booths, and also at the shared booth in the VDMA Circular Economy Forum.

Rainer Weingraber, Managing Director of WITTMANN BATTENFELD, comments: “The K 2022 was a complete success. The response of the public to our exhibits was excellent. In the area of machines, special interest was shown in our trade fair highlight, an EcoPower driven by direct current from solar energy, and in the



WITTMANN BATTENFELD booth

options for processing alternative materials which we demonstrated on several exhibits.”

Michael Wittmann, CEO of the WITTMANN Group, expresses great satisfaction with the results of the fair as well: “At this K fair we were also able to present to visitors numerous novelties in all areas of auxiliaries and

automation, and we were impressed by the response from interested parties. We can say without reservation that this year’s K fair was a complete success for the entire WITTMANN Group.”

WITTMANN Group
www.wittmann-group.com

WITTMANN Technology booth (all photos: WITTMANN Group)

ErgoRobot – Primus 14, driven by muscle power



Sumitomo (SHI) Demag CEO gives K 2022 positive approval

Gerd Liebig, CEO of Sumitomo (SHI) Demag, concludes that K 2022 was overall a positive exhibition. Although the number of visitors to the world's leading trade fair dropped by 21 percent compared to 2019, there was an increase in the volume of visitors to the German-Japanese mechanical engineering firm's booth.

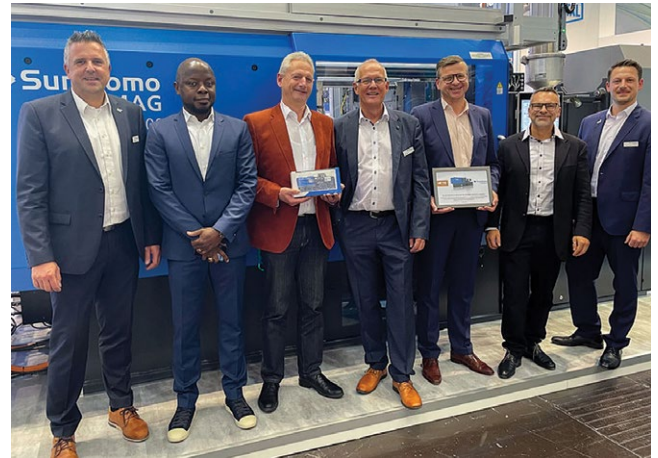
Additionally, the CEO claims that the quality of visitors was significantly higher. Liebig explains: "We attribute this increase in quality to our team registering a 20 percent rise in the number of purchase decisions. K 2022 was a big step towards normality. Because visits were scheduled well in advance, it enabled our team to plan and dedicate much more time to supporting the top purchasing decision-makers, all of whom came."

The CEO cites rapidly escalating energy prices for the significant interest shown towards all-electric injection moulding machines, along with the comprehensive display of Sumitomo (SHI) Demag exhibits, as being the rationale for these pleasing developments. "The introduction of the new all-electric high-speed injection moulding machine PAC-E was a big attraction, playing to our strengths. Additionally, visitors showed great interest in our in-house automation SAM robotic series, plus smart solutions myConnect and myAssist," states Liebig.

We recorded a high proportion of decision-making contacts, while the ratio of the purported 'running audience' visiting at the weekend and overall appeared relatively low. "The volume of visitors from Asia - especially China and Russia - meant that it was much more manageable," says the CEO.

"Customers are increasingly seeking long term stable partners for the future and are interested in attractive in-

Group photo Sumitomo (SHI) Demag at K 2022
(all photos: Sumitomo (SHI) Demag)



Sumitomo (SHI) Demag hands over 80,000th all-electric machine to customer at K 2022

dustry solutions," he sums up. Referencing the future status of trade fair events, fears that visitor numbers could further decline, coupled with weak project prospects, was refuted by Liebig. If anything, those that visited were serious decision-makers. Another benefit of this more manageable footfall was the noticeable improvements in transportation logistics, he notes.

Sharing his observations of the user industries, Liebig drew another distinction. "Even though economic uncertainties currently dominate, projects in electronics are currently very strong. Also running at a good level are the packaging, medical technology and consumer goods sectors. In contrast, the automotive sector remains rather weak." Despite the dramatic mood and enormous uncertainty, Liebig would not be drawn into the threatening scenario forecast before K 2022 regarding the poor propensity to invest. "Although the mood was somewhat cautious, there are new projects still out there," he affirms

The effect on trade fair events feared by the resurgent corona pandemic were also absent. "The number of infections was manageable - for our stand staff it was around four percent," Liebig reports. With daily testing, the company had the situation under full control.

Another special highlight at K 2022 was handing over the company's 80,000th fully-electric IntElect injection moulding machine to Tyco Electronics. A partnership previously characterised by ups and downs, all consistently resolved and viewed as the best learning experience, the now very satisfied customer accepted its new machine in the amiable atmosphere of the show, says the CEO.

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

BOY presented smart solutions to the current challenges of the plastics industry

The currently explosive topic of energy efficiency and the exorbitant rise in energy costs as well as the sustainability of production processes determined a large part of the discussions at the K-trade fair in Düsseldorf. The need to significantly reduce energy consumption in the production of plastic parts by using more efficient machines was omnipresent. Many companies are currently doing everything to significantly improve their own productivity in the future. With its energy-efficient E-series, BOY offers injection moulding machines in the clamping force range from 63 to 1250 kN.

At K 2022, the range of the E-series was extended with the new BOY XS E, an even more efficient solution. The trade fair premiere impressed visitors with its compact dimensions (footprint 0.87 m²), the effi-

cient servo-drive and two selectable clamping-platen- configurations. A height adjustment of the injection unit for decentralised gating is optionally available. According to BOY, the interest of the users in the new BOY XS E was significantly higher than originally expected.

With a higher CPU-power, a larger working memory and a high-resolution screen, BOY gets ready for increasing demands with the ALPHA 6. The connection to a host computer system according to EM77 is part of the interface package. The same applies to the WLAN-stick, which allows an uncomplicated integration into the company network. The condition of the BOY injection moulding machine can be monitored with the company network via a smartphone and the BOY status app. The optionally available BOY- Moulding-Assist supports the operator directly at the machine. Based on the comparison of different

"The current situation with the high energy costs makes the change to more efficient machines much more attractive, even necessary from an economic point of view and ecologically sensible. The investments in new machines are paying off much faster for the users than before" is the statement of Alfred Schiffer, Managing Partner at BOY.

error images with a company-internal database, solution strategies are offered to the user and the results are then returned into the database.

The newly developed BOY-cooling-water-distribution with digital flow measurement (in future standard for all BOY injection moulding machines) attracted the visitors' interest.

With best performance classifications up to 9+ (0.31 kWh per kilogram of material processed according to Euromap 60.1), BOY injection moulding machines offer efficient solutions to absorb the increased energy costs. In addition, every kWh saved prevents the generation of CO₂ emissions. Every kWh that is not consumed means 0.366 kg less CO₂ pollution. Thus, in the three-shift operation of a BOY E-series injection moulding machine, several tonnes of CO₂ emissions can be saved annually compared to machines with older drive technologies.

During the eight days of the trade fair, the machine manufacturer located in Neustadt-Fernthal once again registered many visitors at its booth. These trade visitors did not want to miss the chance to take part in the presentations of new machines and automations, future-oriented technologies and the increasing digitalisation possibilities in the plastics industry.

Photo: BOY



BOY
www.dr-boy.de

Record attendance for Roctool at K-2022 in Germany

Every three years, the K-show in Dusseldorf, brings the plastics world together for 8 full days. Roctool, perfectly positioned for this 2022 edition, recorded a large number of visitors at its stand. More than 1,200 visitors in total!

Among these visitors, more than 60 nationalities with a strong presence from Germany, Italy, France and the United States. Many Asian countries were also well presented.

An impressive number of brands came to meet with Roctool on their stand: more than 110 brands were recognised by the Roctool team and more than 150 mold manufacturers.

Roctool was able to meet with many prospects, customers, and partners, who were particularly appreciative of the two live molding demonstrations, but also interested in the presentation of Roctool's Eco-Molding initiative, combining innovative textures, recycled materials and Roctool's rapid heat and cool technology. During this intense 8-day exhibition, more than 10 different industries entered into discussions on the Roctool stand: Automotive, Medical, Electronics, Consumer goods and Beauty products among others. Roctool's technology and Eco-Molding initiative has received very positive feedback from the industry, thanks in particular to the live demonstrations which prove the exceptional replication and



Roctool team (photo: Roctool)

quality of the mold surface, and the high molding performance while achieving ambitious eco-responsibility objectives. Since the end of the show, a number of discussions are already underway for the potential launch of new short and medium term projects.

Roctool

<https://www.roctool.com>

Moretto new in K2022: precision microdosing

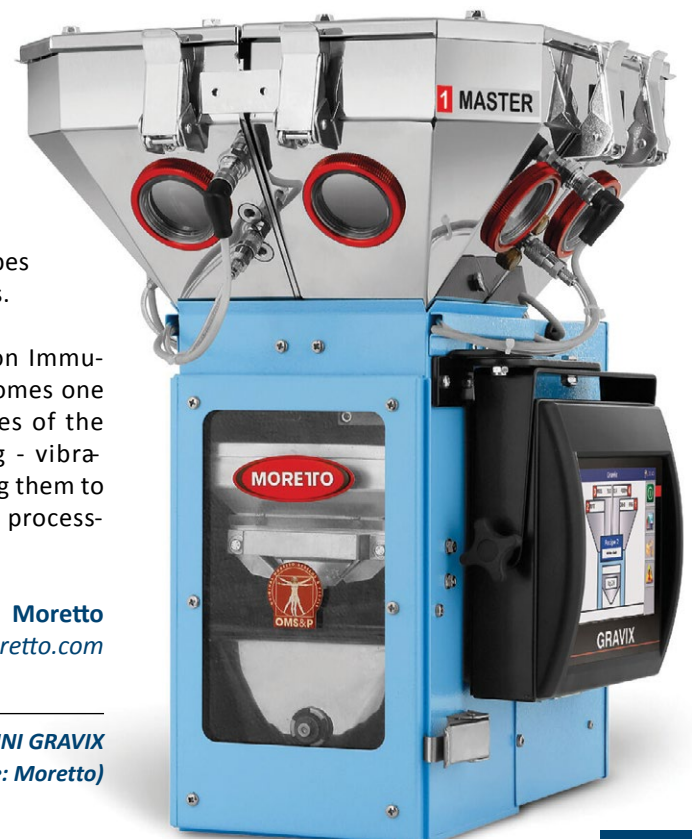
Expanded the range of dosing units of the DGM Gravix series, an unparalleled machine that stands out for high precision levels and production flexibility.

The new DGM MINI GRAVIX, specifically designed for microdosing applications, encloses all the constructive and technological background of the Gravix series. It satisfies the needs of all plastics processors who have to dose very small percentages of material. The innovative hopper design optimises a consistent mass flow for steady dosing and highest accuracy in any conditions.

The double eyelid shutter capable of opening and closing in 25 milliseconds combined with the Rotopulse

technology and the free-weighting hopper make these feeders unsurpassed for all types of dosing situations.

The VIS (Vibration Immunity System) overcomes one of the critical issues of the gravimetric dosing - vibrations - thus enabling them to be installed on the processing machines.



Moretto

www.moretto.com

*The new DGM MINI GRAVIX
(picture: Moretto)*



Picture: Husky

Husky exhibited at Gulfood Manufacturing – showcases complete technologies, solutions and services to enable regional packaging producers

Husky Technologies™, a pioneering technology provider enabling the delivery of essential needs to the global community, was exhibiting at Gulfood Manufacturing 2022 in Dubai, UAE from November 8-11. Husky's booth in HALL 2 was showcasing the company's latest technologies, solutions and services engineered to enable regional food and beverage packaging producers to achieve world-class levels of growth, sustainability, flexibility, differentiation, and stability.

"Husky works closely with our customers in the Middle East and Africa to gain a true appreciation for the unique manufacturing challenges they face as a result of changing market conditions and consumer demands," said Wassim Labban, Husky's Vice President, Rigid Packaging, EEMEIA, SEA, ANZ. "We've seen that these challenges require regional food and beverage packaging producers to take a more holistic approach to manufacturing that is beyond hardware. At Gulfood Manufacturing, we are presenting how our complete solutions enable producers to build more resilient, stable, cost-effective operations while

consistently delivering the highest quality, most sustainable packaging."

At Gulfood Manufacturing, Husky was debuting HyPET Complete™. As the industry's only complete, end-to-end, connected production solution, HyPET Complete™ was developed to address ongoing challenges of food and beverage packaging producers, ranging from rising energy and material costs, to supply chain fluctuations, to skilled labor shortages, to demands to be more sustainable. Modelled to transform variability into stability throughout every stage of PET preform production, HyPET Complete™ enables producers to build more stable manufacturing models that are less affected by such dynamic external factors.

Advantage+Elite™ proactive, predictive, transparent remote monitoring solution. Designed to enable producers to navigate through today's most prevalent challenges, HyPET Complete™ is particularly relevant to producers who are looking for more energy efficient manufacturing processes and packaging materials, such as PET, to offset fluctuating costs.

Dedicated to continuous innovation, HyPET Complete™ is supported by Husky's latest generation platform of proven HyPET™ systems, which are tailored for the production of rPET to include a purpose-built drying solution, optimized energy management, enhanced melt control, automated mold cleaning, integrated part quality inspection, and more.

About Husky

Since 1953, Husky Technologies™ has been pioneering technologies that enable the delivery of essential needs to the global community with industry-leading expertise and service. A global leader, Husky is powered by teams of exceptional people in more than 40 locations with valued customers who operate in over 140 countries. By focusing on sustainably sourced feedstocks, material reuse and the exclusive use of medical-grade polymers, Husky continues to be committed to enabling the circular economy now and into the future.

Husky
www.husky.co

Carbon announces all-new damping elastomers at Formnext

November 15, Carbon, a leading 3D printing technology company, announced two all-new damping elastomers, EPU 43 and EPU 45. The elastomers add to Carbon's already impressive portfolio of materials as part of its idea-to-production platform. They offer new opportunities for breakthrough products in impact protection such as padding, gloves, and helmets.

EPU 43 is an energy-damping elastomer that is soft while offering promising durability under high-cycle flexing, making it suitable for applications like comfort padding for helmet liners and safety gloves. EPU 45 achieves the highest level of damping performance and printability within the Carbon portfolio, making it the choice for many high-performance applications including sports padding and seating.

"EPU 43 and EPU 45 are the future of impact protection, providing the benefits of performance, comfort, and durability that come with Carbon's elastomers," said Jason Rolland, SVP of Materials at Carbon. "EPU 43 and

45 further exemplify our commitment to providing a robust and complete idea-to-production platform."

Carbon's new, dual-cure, damping elastomers offer new opportunities and solutions for a number of impact protection needs, including:

- **Damping performance:** EPU 45 is a strain-rate-sensitive material that stiffens to absorb energy at higher impact rates, enabling the design of highly breathable lattice geometries tuned for comfort at low-impact speeds and energy absorption at high-impact speeds. EPU 43 offers moderate stiffness, good damping, and excellent durability through flexing cycles in a variety of temperature and humidity environments.

- **Durability and comfort:** EPU 45 has the toughness and recovery needed to survive repeated, high-energy impacts in a variety of environments. EPU 43 has moderate stiffness that enables softer and more conforming lattice structures.

- **Production Throughput:** EPU 45 has the highest green strength of Carbon's elastomers, allowing the widest range of part shapes and lattice geometries to be printed with a high yield. EPU 43 prints with moderate green strength, allowing for a broad set of production shapes with high yield.

- **Proven-in-production:** Products utilizing EPU 45 will be on the market soon and EPU 43 has been proven with well-known products like Hard Head Veterans and the CCM Hockey helmet.

Both elastomers are available now in North America, Europe, and China. Starting in 19L package sizes with high-volume production workflows, EPU 45 will also be



*CCM gloves
(all pictures source: Carbon)*

available in 5L samples to support mid-volume production workflows.

Carbon and Henkel also made a joint announcement on the expansion of their strategic partnership to offer new resins for Carbon's idea-to-production platform.

About Carbon

Carbon is a 3D printing technology company helping businesses to develop better products and bring them to market in less time. The Carbon DLS™ process combines versatile printers, advanced software, and best-in-class materials to deliver functional parts with end-use performance and aesthetics, helping engineers and designers to create products that outperform expectations. From prototyping and low-volume production to production-at-scale, global organizations use the Carbon process to create a wide range of functional end-use parts and print them reliably wherever and whenever they need them through Carbon's production network partners. Carbon is a venture-backed company headquartered in Redwood City, CA.

Carbon
www.carbon3d.com



CCM Hockey helmet

The official opening of YIZUMI new India Gujarat factory

On October 7, the opening ceremony of YIZUMI new India Gujarat factory was held in Ahmedabad, Gujarat, India. A great number of people came to attend this grand ceremony, including Indian government leaders, industry experts, customer representatives, friendly Chinese companies in India, and employees of new India factory.

YIZUMI purchased a piece of land in India to build its own modern factory in the middle of 2019 and the construction started in March of 2021. After around 40 months of preparation and construction, the first phase of the factory was officially put into operation in October 2022. The total floor area of the factory exceeds 20,000 m².

It is reported that the new India factory is designed and built as a modern manufacturing factory with full reference to the standards of YIZUMI's headquarters. The factory has the capacity to better meet the needs of Indian market with some particular functions such as customization and development of non-standard requirements, parts manufacturing, complete machine assembly and commissioning, as well as customer service and training.

With the support of the new India factory, a professional team of Chinese and Indian engineers will provide Indian customers with faster product delivery, higher quality products, and better after-sales service. Its successful completion also demonstrates YIZUMI's strong determination of long-term development in Indian market.

In this regard, Mr. Zhang Tao, the deputy managing director of Guangdong Yizumi Precision Machinery Co., Ltd. and general manager of the injection molding machine division said, "As an important production base and customer service platform built by YIZUMI outside of China, the new India factory will provide high quality products and comprehensive services to Indian customers, enhance YIZUMI's overall competitiveness in the Indian market, and radiate to the surrounding countries and regions, driving



All photos: YIZUMI

the expansion of YIZUMI's injection molding machines in South Asia, Central Asia, and Africa."

India has become the largest single overseas market for YIZUMI

With the landing of its globalization strategy, YIZUMI is changing the landscape in the global equipment manufacturing field. YIZUMI's overseas market continues to grow steadily, accounting for more than 20% of its annual sales. As the operation in overseas markets gradually reveals its potential, YIZUMI India factory is playing an increasingly important role.

Attracted by the huge growth potential of Indian market, YIZUMI has taken aggressive action to develop and made self-adjustment to better meet Indian market demands. Since 2017, YIZUMI has been manufacturing and selling injection molding machines in India in a leased facility. With its outstanding product quality and cost advantages, YIZUMI has quickly established a good reputation in the Indian market. The factory has been developing new customers while receiving many additional orders from existing customers.

As of September 2022, the number of injection molding machines manufactured and sold by YIZUMI India factory has reached 1,500 units, making India the largest single overseas market for YIZUMI.

With the business expansion of YIZUMI India factory in recent years, the capacity of the leased factory has been unable to meet the rapidly growing market demand, even constraining the growth of YIZUMI in India. Given its global strategic layout, YIZUMI acquired land in Gujarat, India to build its own modern factory.

Talking about why YIZUMI chose India to build a factory, Mr. Zhang Tao explained, "It is primarily based on the strong confidence in the continued growth of the Indian market. We also strive to take YIZUMI's business to the next level by seeking more close and in-depth cooperation with the upstream and downstream local industry chains in India, so as to understand the needs of customers in various industries and provide targeted localized solutions and high-quality services."

YIZUMI

www.yizumi.com

KraussMaffei Group completely realigns external corporate financing

The KraussMaffei Group, one of the world's leading suppliers of cutting-edge technology, digital applications for plastics processing, and recycling techniques, has successfully restructured its external corporate financing. As a result, the financing conditions were significantly improved.

Chief Financial Officer Jörg Bremer explains: "The successful refinancing at more favorable conditions and improved credit terms guarantee our company a stable financial foundation for the coming years. This enables KraussMaffei to focus on the future - for example, through further investments in our new and state-of-the-art locations in Parsdorf and Laatzen."

The total external financing amounts to around 500 million euros and comprises three instruments: a multi-year term loan to secure liquidity - particularly for the high investment requirements of the new Parsdorf and Laatzen sites - and a revolving credit line that can be drawn down flexibly



*KraussMaffei Chief Financial Officer
Jörg Bremer (photo: KraussMaffei)*

to cover peaks when needed. In addition, a bilateral credit line has been concluded with several long-standing partners from European banks for the trade finance business. These credit lines cover in particular the necessary guarantees for the increasing demand for KraussMaffei products and the associated growth, especially abroad.

The previous financing of the KraussMaffei Group with a total of 14 participating banks has been re-

placed by the improved refinancing structure. This further consolidates the long-term security for the company in an overall challenging market environment.

KraussMaffei
www.kraussmaffe.com

ENGEL North America with new President

On 17 October 2022, Vanessa Malena, previously Chief Operations Officer (COO) of ENGEL Machinery Inc. in York, Pennsylvania, took over



as President of the North American headquarters of the Austrian injection moulding machine manufacturer and system solutions supplier ENGEL.

Vanessa Malena started at ENGEL North America in 2017 as Key Account Manager and then moved into a Regional Vice President of Sales role. She was appointed to the management board in 2021 as COO responsible for After Sales Support, Engineering, Purchasing and Automation. As President, she will head the management team of ENGEL Machinery Inc. beginning in mid-October and will continue to strategically develop the subsidiary. She took over from Mark

Vanessa Malena is President of ENGEL Machinery Inc. in York, Pennsylvania, USA as of 17 October 2022 (photo: ENGEL)

Sankovitch, who will remain Regional President of ENGEL in North America.

"We are delighted to be able to fill this important position from our own ranks," emphasised Stefan Engleder, CEO of the ENGEL Group. "Vanessa Malena is a proven expert in the injection moulding industry. With her planned change, we are ensuring a seamless transition for both employees and our customers."

Vanessa Malena studied mechanical engineering and has held responsible positions in plastics machinery sales for almost 30 years.

With the orderly handover by Mark Sankovitch to Vanessa Malena, ENGEL is taking the next step for further growth in the important North American market.

ENGEL
www.engelglobal.com

Streamrunner® Multicolour – Multi-component injection moulding at a new level

With the additively manufactured HASCO Streamrunner®, a new age has begun in the world of hot runner technology. Developed with state-of-the-art technologies, this product creates new possibilities for mouldmakers and injection moulders.

Design freedom in new dimensions

The Streamrunner® is an additively manufactured hot runner with maximum design freedom. With this technology the flow channels can be optimally designed in rheological terms by completely avoiding sharp edges and areas with poor throughflow properties. This gentle passage of the melt leads to considerably lower shear rates and consequently to better quality of the injection-moulded parts. Colour changes can also be carried out faster through the flow-optimised design because the material can be guided via large deflection radii.

Multi-component injection moulding at a new level

Through the free three-dimensional design of the runners, completely new possibilities are also created in multi-component injection moulding. Different plastic components or colours can be spread over a very small space and the runners can be intertwined. This allows product designers to overcome existing restrictions in the design of plastic mouldings and to utilise new design options.

Compact and efficient

Because the hot runner gets by without separate diverting elements, very small nozzle gaps can be

achieved. Depending on the chosen nozzle size, cavity-to-cavity distances (pitch) from 18 mm can be deployed. The manifold height can also be made 20-30 mm lower than with conventional manifold blocks.

As with all other hot runner systems from HASCO hot runner, the Streamrunner® can be adapted individually for the respective application not only as regards the form and size. If desired, it is also available as a fully wired modular system or as a completely assembled hot half with precisely coordinated control technology.

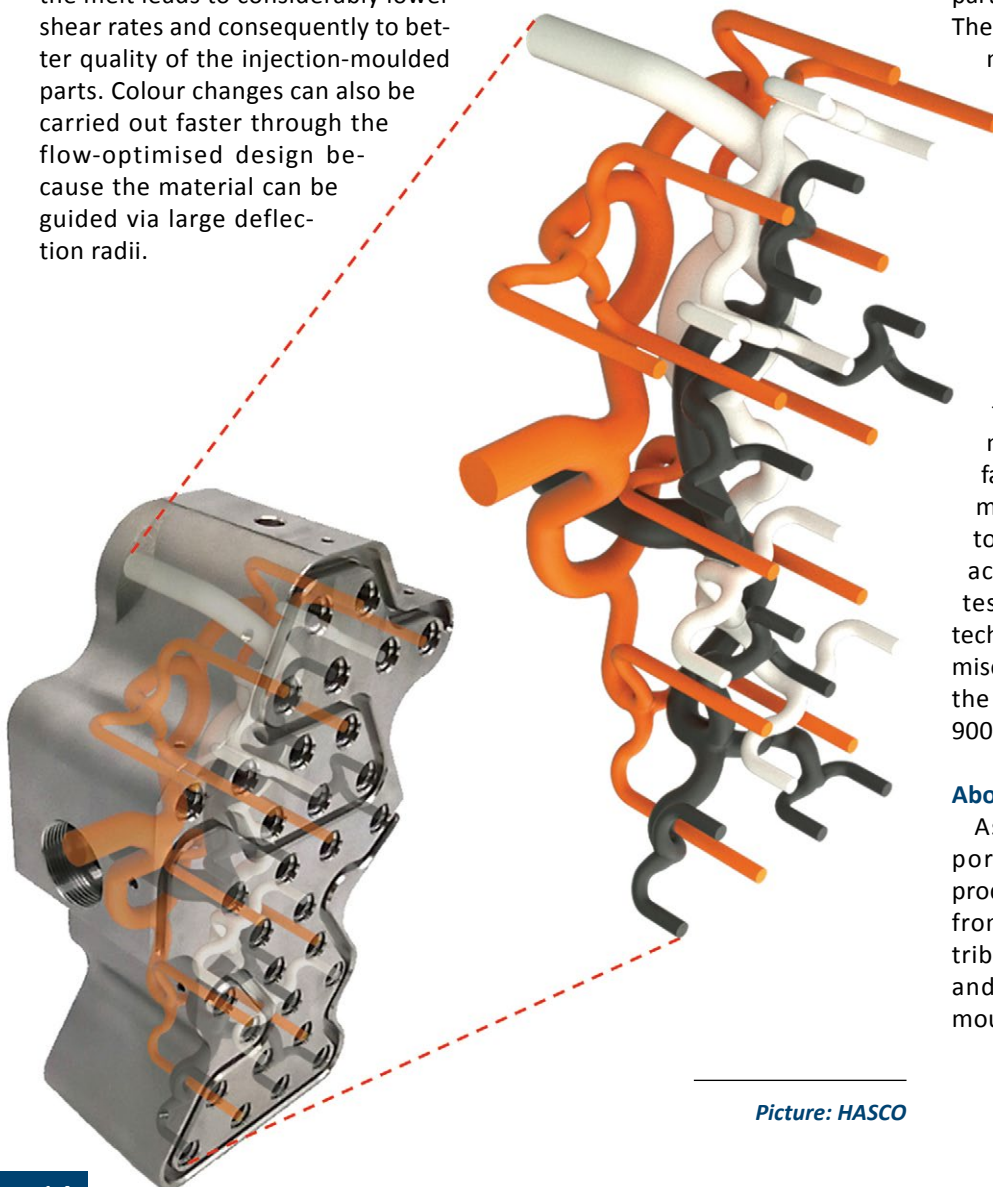
Through the use of the Streamrunner®, injection-moulded parts can be produced cost-effectively. The compact design requires smaller mould sizes and thus smaller injection moulding machines for production. In addition, the low mass of the manifold block reduces energy consumption, thus achieving an additional cost saving.

Top quality – additively manufactured

HASCO keeps a close watch on the rapid developments being made in the field of additive manufacturing and constantly updates the manufacture of the Streamrunner® to take the latest innovations into account. New developments are tested in-house in the company's technical centre and constantly optimised. HASCO hot runner guarantees the highest quality standards to ISO 9001.

About HASCO

As a fullservice provider with a portfolio of more than 100,000 products, HASCO supplies everything from a single source and thus contributes to increasing the efficiency and economic viability of modern mouldmaking.



Picture: HASCO

HASCO
www.hasco.com

Nexa3D announces professional series upgrade for its ultrafast dental 3D printer

Nexa3D, the maker of ultrafast polymer 3D printers for industrial and dental applications, has recently announced the immediate availability of its new Professional Series upgrade for its NXD 200 dental 3D printer. Based on Nexa3D's ultrafast LSPc™ technology, the Pro Series delivers higher productivity and model accuracy with greater print success. The Pro Series opens the materials aperture to accommodate a broader range of dental materials, including KeyOrtho IBT™ and KeySplint Hard, both manufactured by Keystone Industries.

The company plans to showcase the new NXD 200Pro ultrafast dental 3D printer at Lab Day East, the largest dental laboratory event in the Northeast, taking place on Oct 1, 2022 in Tarrytown, NY. The company will highlight the power of increased throughput, expanded dental resin portfolio, and higher production yields made possible by the latest Pro Series release.

"We are thrilled to release this significant upgrade to our NXD 200 Dental 3D printer," said Jim Zarzour, Head of Dental Solutions at Nexa3D. "We recognize the pressing need for higher productivity and lower operating costs that dental labs are faced with, and that is exactly why we enhanced the NXD 200 printer in order to deliver even better throughput with greater reliability, accuracy and repeatability. Additionally, the new Pro Series opens the materials portfolio of the NXD platform to accommodate new dental materials that are tailored for ultrafast printing of dental parts.

The NXD 200Pro is an industry-leading production platform for same-day production of orthodontic models, surgical guides, splints, impression trays, and nightguards. The printer is powered by the company's proprietary Lubricant Sublayer Photo-curing (LSPc) technology and patented structured light matrix that delivers up to 20x productivity gains over other SLA and DLP 3D printers. It's the ideal solution for high throughput dental lab applications given its large 8.5L build volume measuring 275 x 155 x 200mm.

Designed specifically for dental labs, the NXD 200Pro offers world-class dental model manufacturing capabilities at ultrafast speeds with validated Keystone performance dental resins. The NXD 200Pro offers high throughput to keep dental operations productive, capable of producing up to 20 flat 3D-printed dental models in less than 30 minutes. "At Key Dental Technologies, precision and high quality define our aligners, MyClearALIGN!, and Nexa3D's dental 3D printing solutions enable us to deliver our product with incredible speed, high definition, and affordability," said Christina Montiel, Laboratory Technician at Key Dental Technologies.

Nexa3D's growing dental customer base includes large and small dental laboratories as well as dental practices looking to increase their 3D printing throughput with ease and affordability.

Coupled with the Pro Series upgrade are enhancements to NexaX software, including features like auto stacking, improved automatic part nesting, and cupping avoidance. Additionally, the new Settings Profile Manager supports the entire workflow by combining validation, customization, re-usability, and shareability to create a powerful and adaptive tool for any application, Nexa3D printer model, or resin type.

Nexa3D

www.nexa3d.com



NXD 200Pro (picture: Nexa3D)

Collaboration on Molded Fiber Labeling™ for Dry Molded Fiber

PulPac licensee Hébert Group together with MCC Verstraete, Pagès Group and PulPac is in a process of commercializing Molded Fiber Labeling™ for dry molded fiber products – taking a lead in sustainable fiber-based packaging with high-quality decoration.

Hébert Group is setting up production with PulPac Modula to supply the company’s clients - key FMCG brands, with Dry Molded Fiber products. Hébert Group was an early adaptor of IML, now a widely used technology for high-quality graphic labels on plastic packaging.

Together with PulPac, MCC Verstraete and Pagès Group, Hébert Group is now developing MFL™ for dry molded fiber products and the parties aim to bring the pioneering concept to market.

MFL™ provides maximum print quality and precise printing, easy-to-modify graphics, and single-material packaging. All very competitive advantages, as packaging is expected to play an increasingly important role in branding and promotion, demanding highly customized or personalized campaigns. The glue-free MFL™ labels used for Dry Molded Fiber applications are fiber-based, fully recyclable ensuring that the final MFL™



packaging is fully compatible with the paper recycling stream and biodegradable. The label is fused with the product in-line as it is molded.

Julien Hébert, Technical and Sales Director, Hébert Group said “We strongly believe in Dry Molded Fiber as the future solution for fiber-based packaging. Having worked with IML for more than 35 years we have perfected the technology. Combining it with Dry Molded Fiber was a given. The results we’ve achieved together in the lab are very promising and I am looking forward to bringing this game-changer to the market.”

"We have a stated and long-lasting commitment to be at the forefront of sustainable development. Adapting our know-how in IML products and services to Dry Molded Fiber allows us to offer a high quality and sustainable decoration method for dry fiber molded parts, in line with our sustainability strategy stating that the final packaging should be recyclable, reusable or compostable." Nico Van de Walle, Product & Circular Economy Manager at MCC Verstraete

Romain Hervé, Business Development Director at Pagès Group comments “As a leader in automation

Picture source: MCC Verstraete

solutions driven by innovation, we are proud to contribute with our extensive experience of IML for the plastics industry and engineer it into this transformative solution for Dry Molded Fiber packaging.”

Sanna Fager, Chief Commercial Officer, PulPac said “Packaging has never been more important to a brand. Sustainability is a must, and by adding in-mold labeling to Dry Molded Fiber we leverage possibilities for brand-owners to connect with customers, communicate brand and values – making Dry Molded Fiber products even more competitive.”

About MCC Verstraete

MCC Verstraete, a MCC label company, has over 30 years of experience in offset-printing IML labels. In-depth understanding of materials, innovation and sustainability has made MCC Verstraete a world leader, producing over 60 million labels every single day for numerous segments within the packaging industry.

MCC Verstraete
www.verstraete.mcclabel.com

Dry Molded Fiber, invented and patented by PulPac, is a manufacturing technology designed for the circular economy. It leverages globally available, affordable, and renewable cellulose fibers to produce high performance fiber-based packaging and single-use products with highly competitive unit economics. Dry Molded Fiber also saves significant amounts of valuable water resources and energy, resulting in up to 80% lower CO₂ footprint compared to alternatives. The process is up to ten times as efficient as conventional fiber molding invented over 100 years ago.



Milestone: One hundredth Allrounder for Weißer + Grießhaber

Weißer + Grießhaber GmbH, based in Mönchweiler, Germany, specialises in high-precision, small plastic parts manufactured in large quantities and with a high degree of automation. The family-owned company has been relying on Arburg injection moulding technology for over 50 years. In October 2022, a very special event in the decades-long, successful cooperation took place: the ceremonial handover of the company's hundredth Allrounder.

"Arburg covers the entire technology spectrum with its precise and reliable Allrounder injection moulding machines and also offers very high service quality," said Reinhard Fauser, Managing Director of Weißer + Grießhaber. He also cited Arburg's innovative strength and technical advice as well as the stability and dependability of a family-owned company as additional reasons for the successful partnership spanning more than five decades.

Two-component Allrounder for gear teeth and transmission parts

Reinhard Fauser came to Lossburg to receive the milestone machine to-

gether with Tobias Trippel, Head of Equipment Construction + Industrial Engineering, Kai Hartelt, Equipment Planning and Frank Wiedmaier, Head of Purchasing.

"We look forward to continuing our collaboration with Arburg and working together to solve challenging problems in the field of injection moulding in the future," said Reinhard Fauser as he took delivery of the electric two-component Allrounder 520 A with a clamping force of 1,500 kN and injection units in sizes 290 and 70. The machine is equipped with OPC UA interfaces, enabling it to communicate with all peripheral equipment and PDA/MDA systems. The new Allrounder will be used to produce gear teeth and transmission parts for prestigious automotive suppliers.

Over a billion parts per year

Weißer + Grießhaber is a family-owned business that was founded in 1969 – the same year that its successful cooperation with Arburg began when it purchased its first Allrounder. Today, the company's machine fleet features Allrounders from various series covering a range of clamping forces from 250

Delighted by the ceremonial delivery of the hundredth Allrounder: Reinhard Fauser (3rd from right), Managing Director of Weißer + Grießhaber, with Frank Wiedmaier (3rd from left), Tobias Trippel (4th from left) and Kai Hartelt (2nd from right) together with their Arburg counterparts Martin Mühlen (right), Area Sales Manager, Christoph Wild (left), Sales Consultant, and Jana Herrmann, Sales Germany (photo: Arburg)

to 5,000 kN. The machines are used to produce over one billion parts per year, with the majority (around 60 per cent) going to the automotive industry. More than 50 per cent of these parts are exported.

The company has a broad product portfolio covering gear teeth and transmission technology, hybrid and multi-component technology, micro-filters and thin-wall technology, lenses and optical parts, as well as assembly and automation technology. Weißer + Grießhaber has a workforce of 310 employees and generated turnover of 55 million euros in 2021 with series production and in-house mould and equipment construction.

Arburg
www.arburg.com



K 2022 – Trade fair results fulfil highest expectations

Innovation driver for the global plastics and rubber industry. Multitude of concrete solutions, machines and products for the transformation towards a circular economy.

The joy of the plastics and rubber industry at finally being able to exchange ideas in person on a global level again after three years characterised K 2022 Düsseldorf and ensured an excellent mood among the 3,037 exhibitors. The companies reported extraordinarily good leads and a marked willingness to invest among trade visitors, mentioning promising new customer relations and the conclusion of numerous, in part, spontaneous business deals.

“K in Düsseldorf has once again fulfilled highest expectations. It continues to be the most international, complete and innovative trade fair of the global plastics and rubber industry,” says

Erhard Wienkamp, Managing Director at Messe Düsseldorf, delighting at the good results and adding: “The trade fair has impressively demonstrated just how valuable face-to-face networking, chance meetings and physical brand and product experiences are. We are very satisfied to see that K 2022 succeeded in sending out strong signals as an innovation driver of the industry and that our exhibitors did business with a high number of international customers with great decision-making powers.”

176,000 trade visitors from all continents travelled to their most relevant sectoral event in Düsseldorf. At over 70% the proportion of international

Photo: Messe Düsseldorf

guests at K 2022 remained at a constantly high level.

The verdict from Ulrich Reifenhäuser, Chairman of the Exhibitor Advisory Board at K 2022, is also very positive: “After hardly any trade fairs could take place worldwide also on a national level over the past three years, K 2022 was all the more eagerly anticipated as the world’s No. 1 trade fair of the plastics and rubber industry and succeeded in providing fresh impetus in all sectors of our industry. The many, in part, unexpected concrete contract negotiations held at the trade fair speak for themselves!”

The current unpredictability and uncertainty of events does make for a tight situation in the sector overall, but this did not do any harm to exhibitor commitment and visitor interest, quite

on the opposite: “Especially now in turbulent times and where the plastics industry is undergoing transformation towards the circular economy K 2022 was the ideal place to jointly and actively chart the course for the future,” sums up Ulrich Reifenhäuser.

It was especially the wealth of new technology developments that raw materials producers, machine manufacturers and plastics processors presented for implementing the circular economy, resource conservation and climate protection that thrilled the trade visitors. Commenting on this Ulrich Reifenhäuser says: “It can be clearly felt that all companies have embraced the need to take on social responsibility and think about plastics in a sustainable way from the beginning of the process chain. The variety of solutions, machinery and products for transformation towards a circular economy presented at K 2022 was incredible.”

The trade visitors at this year’s K travelled from 157 nations to the Rhine. Next to Germany, those European countries strongly represented on the visitors’ part included the Netherlands, Italy, Turkey, France, Belgium, Poland and Spain. With 42% of visitors coming from overseas, the reach of K is as high as usual among the international trade audience. While visitors from the East Asian region, in particular, were less well represented than at K three years ago due to the currently more difficult conditions in those countries on account of quarantine regulations, numerous visitors from the USA, Brazil and India were welcomed at K 2022.

For around two thirds of all visitors polled machinery and plant construction ranked first in terms of interest. 57% and, hence 5% more than at K 2019, said they were interested in raw and auxiliary materials, with recyclates and bioplastics being particularly popular. For 28% semi-finished products and technical parts made of plastics and rubber were the main reason for coming (multiple responses possible). Over 70% of all visitors come from top and middle management.

Top marks were given by visitors to K 2022 for the completeness of its ranges and its mapping of the entire

supply chain. 98% of all professionals stated they had fully achieved the goals associated with their visit.

During the eight trade fair days it became clear that this year’s K was right on target with its selection of hot topics, circular economy, climate protection and digitalisation. In terms of investment intentions, machinery and equipment for processing and recycling stood out at 43%. The focus was particularly on sustainability, but also on circular economy and energy/resource efficiency in production. Around 40% of decision-makers said they were looking into the topic of decarbonisation.

The K specials, which also focused on the three hot topics, were also very well received. The official special show, ‘Plastics Shape the Future’, focused on the economic, social and ecological challenges and potential solutions around the K guiding topics in high-calibre discussions and lectures, and this show was well attended throughout. The Circular Economy Forum, where the VDMA and 13 of its member companies impressively demonstrated the importance of technology in the implementation of the circular economy in the plastics industry, scored points with the

international audience with live demonstrations and a great deal of well-founded knowledge as well as detailed information on the topic.

At this year’s K in Düsseldorf, there was also a lot of discussion about the global production language, OPC UA. This standard allows the processing parameters of the machinery and equipment involved to be coordinated more precisely and in a more targeted manner. This, in turn, is considered an important prerequisite for optimised circular management. 40 companies from eight countries participated in an OPC UA demonstration project at the trade fair.

At the Science Campus both exhibitors and visitors at K 2022 were provided with a condensed overview of scientific activities and findings in the plastics and rubber sector. Numerous universities, institutes and funding bodies offered opportunities for direct dialogue here.

The offer of the Plastics Training Initiative (KAI) was used by many pupils, trainees and students to gather information on the job profiles and career opportunities in the plastics industry.

The next K Düsseldorf will be held from 8 to 15 October 2025. **smi**

Photo: VM Verlag

Messe Düsseldorf
www.k-online.com





Full house: Arburg trade fair stand 13A13 was the place to be at K 2022 (all photos: Arburg)

A complete success: Arburg makes an impressive showing with "Plan A" at K 2022, the world's leading trade fair

"There is only a Plan A": Arburg clearly hit the bull's eye with this message at the world's leading trade fair, K 2022, in Düsseldorf, Germany – inspiring countless trade fair visitors in the process. A total of around 30 machine exhibits on its main stand, in the arburgGREENworld pavilion in the VDMA Circular Economy Forum, and on partners' stands showcased sophisticated applications and technologies in injection moulding, additive manufacturing and automation. Sustainability, digitalisation and resilience were the topics that took centre stage.

"We experienced a huge footfall at our main stand 13A13 and the arburgGREENworld pavilion in the VDMA Circular Economy Forum. We are very much satisfied with the quantity, quality and internationality of the visitors, especially in view of

the current conditions," said Juliane Hehl, Managing Partner responsible for Marketing and Business Development, summing up the company's successful trade fair appearance. "At K, we gave an impressive demonstration of where the journey is headed."

Innovative solutions for resource conservation

"As a machine manufacturer, we are vigorously pursuing a strategy towards greater resource efficiency, CO₂ reduction and circular economy. This is an important issue for our customers worldwide, and one that we are



bringing to life," said Gerhard Böhm, Arburg Managing Director Sales and Service. Among the items on show was a demonstration of how PIR and PCR recyclates can be processed into high-quality products with the help of hardware and software together with the new "aXw Control RecyclatePilot" and other smart controller functions. One such product was a tool case in Arburg design, probably one of the most coveted give-aways at the entire trade fair.

Visitors to the arburgGREENworld pavilion were able to gain an impressive insight into how Arburg, with its "Plan A", is playing its part in solving a global problem affecting society as a whole. It was there that Arburg trainees not only "rocked" the pavilion but also held numerous discussions on the future of plastics as a recyclable material – with young visitors in particular. Talks were also held with experts from science and industry. And an electric Allrounder produced "Greenline" anchors from Fischer using plastic based on castor oil.

High-end injection moulding technology

At its main stand 13A13, Arburg presented a wide range of sophisticated applications and innovative technologies from its entire portfolio: injection moulding machines, additive manufacturing, automation, plus internally developed control systems, drive trains and digital products and services. "We offer our customers everything they need not only to work in an energy- and production-efficient way in these challenging times, but also to strengthen resilience in the long term," explained Guido Frohnhaus, Arburg Managing Director Technology & Engineering.

One highlight in terms of injection moulding and mould technology was an automated three-component Allrounder Cube 1800, which produced a functional component from PP, TPE and POM using an 8+8+8-cavity cube mould including new index turning technology from Arburg's partner Foboha. The challenging assembly process took place in the gripper of the associated six-axis robot.

Arburg shed a focused light on the multifaceted issue of sustainable plastic parts production at the arburgGREENworld pavilion in the VDMA Circular Economy Forum

Another application that attracted a lot of interest was an all-electric packaging application. As an alternative to thermoforming, an Allrounder 720 A with a new 1300 electric injection unit and in the new "Ultimate" performance variant produced thin-walled IML cups with a wall thickness of only 0.37 millimetres using the injection compression moulding process, achieving an injection speed of up to 400 millimetres per second.

Together with its mould partner Braunform, Arburg used a two-component Allrounder More 1600 to demonstrate how time and costs can be saved by integrating functions, with Luer connectors made of PP and TPE as an example. Capping and unscrewing took



place directly in the mould. Handling was carried out by a Yaskawa six-axis robot, which Arburg will add to its automation range from spring 2023 as it becomes a system integrator.

On show as an example of particularly compact automation without additional floor space was an interlinked turnkey system based around a

vertical Allrounder 375 V, which produced a bicycle tool called a "tyre lever" from PIR recycle. Handling and "ready-to-use" assembly were carried out by a suspended six-axis robot. The Arburg Turnkey Control Module (ATCM) ensured 100 percent traceability in this application.

An example of the future of digital production cells was the "smart" turnkey system based around a hybrid Allrounder 630 H. The injection moulding machine produced blood tubes from PET and communicated with the mould, hot runner controller, material dryer and automation via the Gestica control system and OPC UA. The "Moldlife Sense" computer system integrated into the 32-cavity mould provided by Arburg's partner Hack, also enabled monitoring across the complete life cycle.

Digital Center – All-round digitalisation

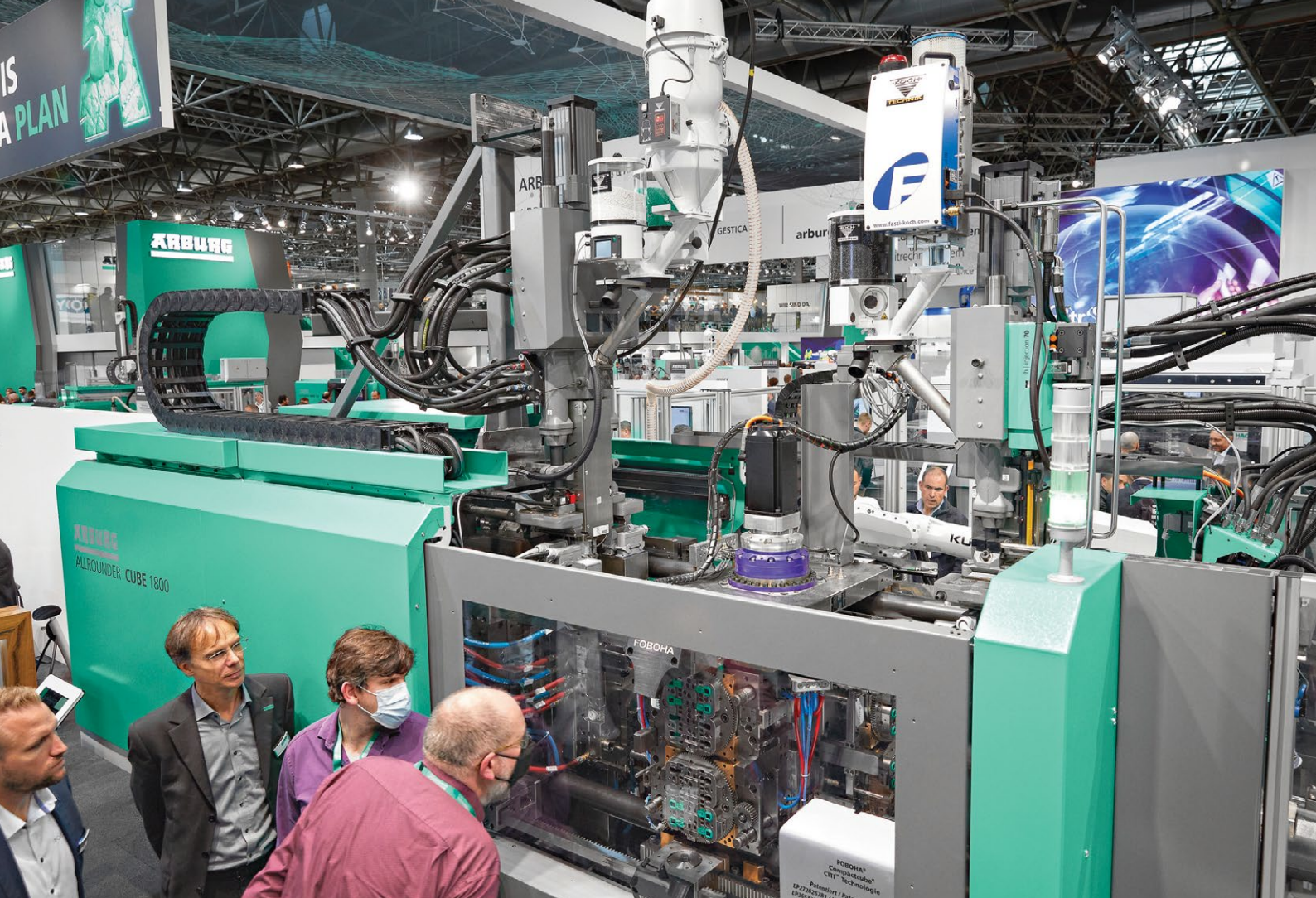
In the "Digital Center" exhibition area, Arburg gave a very hands-on demonstration of digital products and

Guaranteed to turn heads and probably the most sought-after plastic product at K 2022 was the premium tool case in Arburg design, manufactured on a turnkey system based around a hybrid Allrounder 1120 H

services for the injection moulding world. In addition to the Arburg host computer system and Remote Service ALS, a large number of features for the arburgXworld customer portal were presented. New to the MachineCenter app is the digital product passport, for example, which indicates the carbon footprint of each machine's manufacture. Another new feature is a machine comparison tool in the MachineFinder app, which has been expanded to include equipment options.

Visitors could see for themselves just how much transparency the MachineTerminal app offers. Each exhibit was equipped with an iPad, which could be used to access information such as current production figures.





New developments in additive manufacturing

The Freeformer 750-3X celebrated its world premiere at K 2022. The latest machine for Arburg Plastic Freeforming (APF) is systematically designed to meet the requirements of the industry. Compared to the previous model, the part carrier is around 2.5 times larger – with the same external dimensions. The APF process is also around seven times faster and more economical.

Another exhibit, a high-temperature Freeformer 300-3X, demonstrated the production of complex components from original material Ultem 9085 and a new break-away support material. The additive manufacturing portfolio was supplemented with two exhibits from Arburg's sister company innovatiQ, including the new TiQ2 for entry into filament-based industrial 3D printing.

About Arburg

German family-owned company Arburg is one of the world's leading manufacturers of plastic processing machines. Its product portfolio encom-

passes Allrounder injection moulding machines with clamping forces of between 125 and 6,500 kN, the Freeformer for industrial additive manufacturing and robotic systems, customer and industry-specific turnkey solutions and further peripheral equipment.

Arburg is a pioneer in the plastics industry when it comes to production efficiency, digitalisation and sustainability. The "arburgXworld" program comprises all digital products and services and is also the name of the customer portal. The company's strategies regarding the efficient use of resources and circular economy, as well as all related aspects and activities, are outlined in the "arburgGREENworld" program.

Arburg's central aim is for customers to be able to produce their plastic products, from one-off parts to large-volume batches, in optimum quality at minimum unit costs. The target groups include, for example, the automotive and packaging industries, communication and entertainment electronics, medical technology and the white goods sector.

An automated three-component Allrounder Cube 1800 produced a functional component from PP, TPE and POM using a cube mould from partner Foboha – including assembly injection moulding and capping directly in the gripper

An international sales and service network ensures first-class customer support at a local level: Arburg has its own organisations at 34 locations in 25 different countries and, together with its trading partners, is represented in more than 100 countries. Its machines are produced at the company's German headquarters in Lossburg. Of a total of roughly 3,600 employees, around 3,000 work in Germany. About 600 further employees work in Arburg's organisations around the world. Arburg has triple certification, in accordance with ISO 9001 (quality), ISO 14001 (environment) and ISO 50001 (energy). **smi**

Arburg
www.arburg.com

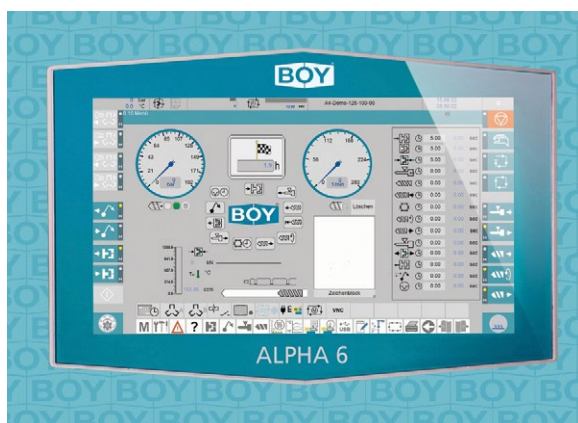
BOY machine control system in a new format

Due to the modified and slightly wider screen format, the new ALPHA 6 offers customers an additional input (widget)-area, that can be individually configured with prefabricated modules. By clicking on an object from this library set values can be freely defined and edited at any time, and the actual values determined by the control system can be displayed.

At the K 2022 plastics and rubber trade fair in Düsseldorf, some of the exhibits of the machine manufacturer BOY were presented with a new visualisation of the machine control. The ALPHA 6 - the designated successor to the still current Procan ALPHA 4 control system - is immediately recognisable by its 16:9 screen format. The TFT-colour display of the ALPHA 6 has a Full-HD resolution with 1920 x 1080 pixels (px) and operates with the Multitouch PCT-technology (projected capacitive). The display of the symbols has been changed to a design that is particularly comfortable for the eyes. Special focus has been placed on soft colours and a structured symbolism.

Due to the modified and slightly wider screen format, the ALPHA 6 offers its users an additional input (widget)-area, that can be individually configured with prefabricated modules as it is the

Display of ALPHA 6



case in a modular system. By clicking on an object from this library set values can be freely defined and edited at any time, and the actual values determined by the control system can be displayed.

"With the updated visualisation of the user surface and a slightly updated symbolism, users who are already familiar with the previous BOY-controls will be able to get easily and quickly along with ALPHA 6", commented Thomas Kühr, Head of Electrical Design at BOY.

The display of the ALPHA 6 with its touch-surface still offers the advantages of a clear and intuitive machine control. In the course of the increasing networking of injection moulding machines, the ALPHA 6 also offers the use of a wide variety of "add-ons" (digital expansion programmes), such as the BOY-WLAN-Stick, the BOY-Software Moulding Assist and the BOY-Status-App. In addition, the possibility of a voice control was demonstrated at the exhibition booth. The BOY-WLAN-Stick - plugged into the BOY machine control - connects the injection moulding machine to the Internet via an existing customer-WLAN or a hotspot. This enables a secure, remote-controlled monitoring of process sequences up to an immediate assistance via remote maintenance



BOY XS E with ALPHA 6
(all pictures: BOY)

with the BOY-repeater from Neustadt-Ferenthal. After its premiere at the K 2022, the ALPHA 6 control system will gradually replace the current Procan ALPHA® 4.

Company profile

Dr. Boy GmbH & Co. KG is one of the leading worldwide manufacturers of injection moulding machines with clamping forces up to 1,250 kN. The very compact, durable machines work precisely, energy-saving and thus highly economically. With innovative concepts and solutions, BOY has proved itself again and again as a trendsetter. Automation, digitalisation as well as sustainability and CO₂ savings are particularly in focus. Since the company was founded in 1968 more than 50,000 Injection Moulding Machines have been delivered worldwide. The privately-owned company continues to put special emphasis on engineered performance and high-class "made in Germany" workmanship. **smi**

BOY
www.dr-boy.de

More space for the mould on the same footprint

At the K show 2022, the dual platen large machines from the ENGEL duo product family were exhibiting even more flexibility and efficiency. The new duo tech can accommodate larger moulds on the same footprint and achieves greater productivity thanks to a shorter dry cycle time and improved power.

"We offer the optimum injection moulding machine as the perfect fit for any application," as Dr. Gerhard Dimmler, CTO of the ENGEL Group, emphasised at the start of the world's largest plastics trade fair in Düsseldorf. "And we help our customers to produce in a very cost effective, energy-efficient and sustainable way by doing so. This further development of the dual-platen large machines sees us consistently follow the successful path of application-optimised ENGEL solutions."

The new duo tech series includes 35 sizes with a clamp force range between 3500 and 55000 kN. This means that the ENGEL large machine portfolio has been extended with two new sizes. Compared to the previous duo series, the clamp force sizes have been redistributed and supplemented by further WP (wide platen) versions.

Even in the standard version, the mould installation space of the new duo tech offers more space. This means that

larger moulds can be mounted. Users benefit from comparatively low capital outlay and reduced energy consumption. The extra space is made possible by the newly-developed clamping unit alone. The footprint of the duo tech machines is as compact as ever, compared with existing duo models. Thanks to the dual-platen design, the ENGEL large machines have always been particularly short, ensuring high productivity per unit of area. An additional duo machine will often fit on the production floor.

More productivity thanks to improved ergonomics and performance

Even the standard version of the duo tech accommodates all media supply connections on a media panel arranged close to the mould where they are easily accessible. This accelerates mould set-up and boosts productivity.

On the injection side, too, the new duo tech offers even better performance features. Both the injection and the plasticising capacity have been boosted by up to 25 percent. This means that longer flow paths can be achieved with relatively small duo tech models.

Another benefit: what were already the fastest dual-platen injection moulding machines on the market are now even faster. Depending on the size, the

dry cycle time can be reduced by another one to four tenths of a second. This reduces the specific, electrical energy consumption and, as a consequence, the production costs.

A large machine that is a perfect fit for any application

The visitors to the K show 2022 could experience the new performance class of the ENGEL large machine for themselves live on site in Düsseldorf. A duo 1000 tech injection moulding machine at the ENGEL stand with a clamp force of 10,000 kN was producing sophisticated automotive components using the foammelt injection moulding process.

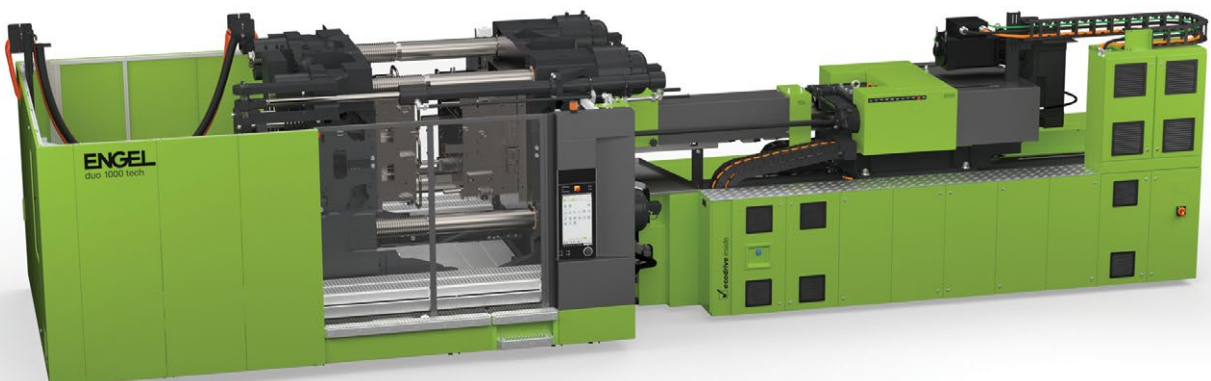
All told, the large machine portfolio of the ENGEL Group includes six series:

- the new duo tech with its wide range of options for flexible production of large plastic components,
- duo combi injection moulding machines for multi-component injection moulding,
- duo speed machines for high-speed packaging applications,
- e-duo machines with electric injection units for high precision requirements,
- vertical v-duo models, specifically developed for use in the composites industry, and
- t-win large machines by the second ENGEL brand, WINTEC, for classical single-component injection moulding, which are now available all over the world. **smi**

ENGEL

www.engelglobal.com

Greater flexibility and performance on a small footprint: the new ENGEL duo tech injection moulding machine makes the production of large plastic components even more cost effective (picture: ENGEL)





EI-Exis SP 420
 machine at Sumitomo (SHI)
 Demag booth at K 2022
 (photo: VM Verlag)

Sumitomo (SHI) Demag staged ultra-short forming 'Med-Cup' process with high-speed extraction

At K 2022 Sumitomo (SHI) Demag has once again demonstrated its medical sector expertise. This time deploying a hybrid high-speed EI-Exis SP 420. Collaborating with Zubler Handling AG and Otto-Hofstetter AG, the shared 'Med Cup' project manufactured with the highest precision 30ml medication dispensing cups from PP. Anatol Sattel, Director Business Development Medical, describes the exhibit as the perfect synergy of proven machine technology and application of the most advanced equipment and production techniques.

The ambitious project concept was to combine the highest energy efficiency while optimising material use and maintaining the highest quality. By using less material, the mould cools faster allowing the injected material to solidify faster and the production cycle to be repeated faster and more frequently. The outcome is an ultra-short moulding process combined with high-speed extraction. Re-

sulting in the release and analysis of 48 high quality medication dispensing cups in less than three seconds.

One machine, 432 million parts p/a

Demonstrating the enormous production rate, Sattel exclaims that the combination of an integrated intelligent stacking system from Zubler Handling with the four-axis pick-and-place robot supplied by Pagés, the production rate

can reach 57,600 cups per hour "The 48-fold application requires an installation space of approximately 25.5 square metres and produces about 432 million components per year. In comparison, a 16-fold application supplying 151 million parts takes up 15.5 square metres of floor space. The production output is three times as much as that of the smaller unit, yet the machine footprint is less than twice the size.

Otto-Hofstetter supplies the 48-cavity tool. The perfectly balanced hot runner is equipped with individually heated and controllable nozzle tips. This enables the injection of the cup, with a shot weight of around 70 grams, to occur centrally via open nozzles (point gate). A highly efficient, thermally balanced cooling system comprising 29 water cooling circuits, guarantees thermal stability in the mould. Its stable design allows safe and constant use in production. Among other features, the tool is designed to remove moulded parts from the front, making it very easy to service.

Rapid quality control

Product quality is maintained using a 100% inline control system installed by Zubler Handling. Comprising intelligent high-definition vision cameras placed along the high-speed extraction axis. At an extraction speed of 7.5 millimeters per second, the cameras take an image every twelve milliseconds, processing 96 images in total. Anomaly detection and dimension measurements are performed on each image with an accuracy of 0.05 millimeters. "The quality of every cup, perfect and sub-standard, are identified and segregated at the end of the process," explains Sattel.

After removal, the cups are stacked on a round table equipped with 2 x 48 compartments. Once the rotary table is fully stacked, it moves to its next position where the cavity stacks are sorted by the pick & place robot. The robot can handle eight stacks simultaneously, sorting them individually into good or bad shells.

Measurably more sustainable and energy efficient

The EI-Exis SP 420 is especially suitable for high-speed applications. Capable of delivering a cycle time of less than two seconds, the speed of the opening and closing sides means the EI-Exis SP remains the fastest injection moulding machine series on the market today.

The hydraulic accumulator is the main reason behind this machine's short cycle times and injection speeds of 1,000 mm/s. As a result, processors can manufacture even thinner and lighter items, resulting in a significant reduction in raw material use, waste and shipping costs. Being able to adjust the accumulator charging to the injection pressure required for the exact moulding process not only lowers energy usage, but also reduces wear and tear on parts.

Not only is the EI-Exis SP's processing cycle time less than competing technologies, its hybrid design also offers a measurable energy efficiency and sustainability advantage. It's a powerful and ecological combination, reports Sattel.

Given the company's Act! Sustainably slogan, the Group and all future product developments are focused entirely on reducing environmental impact. The EI-Exis SP range fits into this ecological commitment, whereby Sumitomo (SHI) Demag states that all future innovations, machines and equipment are now totally manufactured with this corporate social responsibility (CSR) mission in mind.

About Sumitomo (SHI) Demag

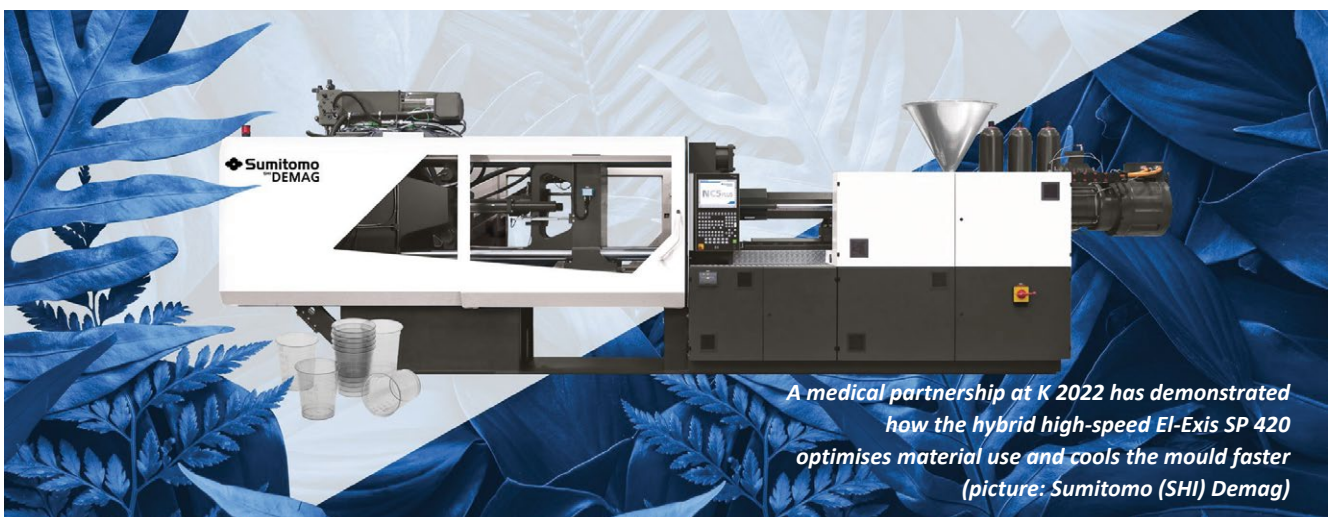
Sumitomo (SHI) Demag Plastics Machinery GmbH has shaped the development of the plastics industry from its very beginning. As a specialist for injection moulding machines for plastics processing, Sumitomo (SHI) Demag and its Japanese parent company are leading the industry.

The global development and production network of Sumitomo Heavy Industries and Sumitomo (SHI) Demag is comprised of four facilities in Japan, Germany and China with more than 3,100 employees. The product portfolio includes all-electric, hydraulic and hybrid injection moulding machines with clamping forces of between 500 and 15,000 kN. With more than 157,000 installed machines, Sumitomo (SHI) Demag is present in important global markets and ranks among the largest manufacturers of injection moulding machines in the world.

In addition to injection moulding machines, Sumitomo (SHI) Demag offers customised and standardised systems for the part handling automation, technical and process solutions for special applications, tailored services and service concepts as well as a range of financial options to support investment in injection moulding machines.

With its comprehensive sales and service network of subsidiaries and agencies, Sumitomo (SHI) Demag is present in all major markets. **smi**

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



BMB focuses on speed, thin-walled production and energy saving

*eKW70HP/3450 WP Hybrid
(all pictures: BMB)*



After the pandemic, a time full of great uncertainty that led to reduced investments in research and development and this in conjunction with the energy price increase is strongly affecting our lives, thus leading BMB to focus on energy savings for K 2022.

BMB's goal is to aim at high productivity but give new breathing space to the packaging manufacturers.

With 4 production cells running during the exhibition, BMB conveyed the message of great reliability even for the most demanding applications, an example of which was a cycle time of 2.3 s. but with a particular focus on energy consumption reduction. If consumption can be contained with these fast cycles, the benefits are guaranteed. The machines were equipped with a new

CNC control where the operator interface was improved thanks to a larger screen and the integration of some new digital functions.

eKW70HP/3450 WP Hybrid

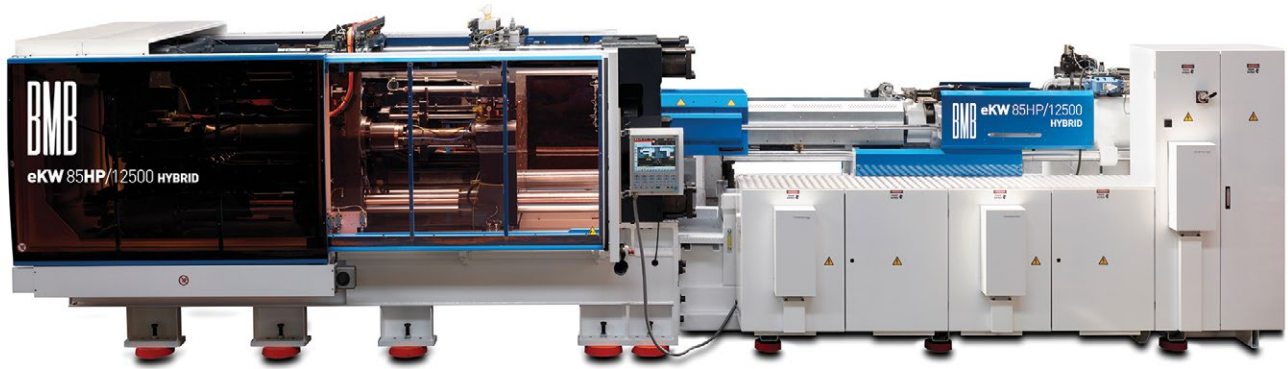
The application involves the moulding of thin-walled round containers with wrap-around and bottom IML. A cycle time of 4.8 s. ensured the production of 8 containers with 2 labels each, monitored by cameras and then packaged. This

system was a customized production cell which was to be shipped to the end user after the fair.

Thanks to HolyGrail 2.0 technology, the label is able to show the content details through a smartphone. This important feature allows the transfer of multiple information that may relate to production, expiry date or recycling instructions. The cameras used in the recycling plants can in fact collect information on



eKW28Pi/1300+330 full electric



the material and therefore direct and separate the different types of plastic for an accurate recycling process.

eKW28Pi/1300+330 full electric

The application concerns the production of two-color flip-tops for cosmetics, from a 16-cavity mould. The 280 tonnes full electric machine exhibited showcased a high precision moulding, with weights of only 2.3 g for the base and 1 g for the top in a 11 seconds cycle time. The two-color or two-component injection molding machines are increasingly requested for various sectors and needs, in case of an item made combining different weights and/or materials.

eKW85HP/12500 Hybrid

This 850 tonnes high performance machine is the ideal machine for packaging applications with products that of a 'deep draw' design such as buckets, home containers, hospital and other waste material containers. This machine is characterized by a very high injection speed, necessary for the correct production of thin-walled parts. Thanks to the direct electric drives and roller recirculation screws on opening and closing, extraction and plasticization, it

is possible to obtain energy consumption that is really similar to that of a fully electric press, with the advantage of an injection speed of about 2 m/s.

eKW20Pi/700 full electric

This application represents perhaps one of the best examples of productivity with a very low energy consumption. All this is possible thanks to a perfect balance between machine, mould, automation and ancillary accessories. The eKW20Pi/700 full electric machine model was exhibited at BMB partner Enelkon's stand. Enelkon was demonstrating the entire cell, consisting of an IML automation system, equipped with 10 cameras and a stacking system to place the products in cardboard boxes.

The new BMB machine controller

The new control represents at the same time an important step towards digitalization, thanks to advanced functions in support of the operator called to parameterize the best possible cycle; a mechanical keyboard is used to select the main functions of the machine, while a virtual touch keyboard allows the programming of non-critical functions.

The operator is recognized by the machine and authorized to different

eKW85HP/12500 Hybrid

programming and visualization levels according to the function. Naturally, with the new CNC control, both the instruction manual with on-line help function and the integration of peripherals and data collection are primary functions in a 4.0 perspective.

For over 50 years BMB has pursued uncompromising product quality. This philosophy that has seen BMB remain anchored to strategic choices, linked to direct drives with recirculating roller screws, to the best platens parallelism that can be found on the market and to many other peculiarities, has significantly contributed to giving a high-quality identity brand quality.

Centralized oil lubrication, liquid cooling on all drives and braking energy recovery have always made the difference in terms of performance, reliability and energy saving.

Now more than ever the choices of a long and careful research are proving to be fundamental for us and above all for our customers. **smi**

BMB

www.bmb-spa.com



eKW20Pi/700 full electric

“How Stork IMM is helping companies save energy & boost productivity”

Given the strong demand for energy saving measures, Stork IMM is pleased to present an overview of 10 ways to save up to EUR 450,000 per year in energy costs with your existing Stork IMM.

Monitoring and saving energy is one of today’s most current and important issues facing companies across the plastics manufacturing industry. The sudden and rapid increase in energy prices, coupled with a continuing need to focus on sustainable operations, is forcing companies around the world to find the right way forward.

Saving energy has always been an important topic for Stork IMM. Today, we are proud to be a pioneer in designing and manufacturing among the most energy-efficient hybrid injection moulding machines available. Stork IMM’s unique concept, in which all braking energy is fed back into the energy network, makes the machine considerably more economical than other comparable hybrid injection moulding machines in the market.

While all new Stork IMM injection moulding machines are as supplied, as standard, with the latest energy-saving applications,



Stork IMM is helping companies save energy & boost productivity (all pictures: Stork)

10 Ways to Reduce Energy Consumption on Your Existing IMM		Savings kWh/kg	ROI Years
#1	Upgrade to a new energy efficient injection unit & drive system	0,3 - 0,4	1 – 3
#2	Upgrade to electric plasticizing & upgraded hydraulics	0,3	< 1
#3	Upgrade to electric opening & closing	0,2 - 0,3	< 1
#4	Reduce excess motor and pump capacity	Cycle dependent	
#5	Upgrade to a frequency converter on the main motor to reduce idle losses	Cycle dependent	
#6	Cosinus phi optimisation to increase grid capacity	1%	< 1
#7	Add Barrel isolation blankets to reduce heat losses	0,02	< 0,5
#8	Upgrade to new energy efficient pump control (Standard since 2016)	3%	< 1
#9	Upgrade software for automatic accumulator pressure reduction (Std. since 2005)	5% /10 bar	< 0,5
#10	Optimizing machine settings	0 – 20%	1 month

Stork IMM strives to go further. Many customers are already familiar with the many options that Stork IMM has been offering for upgrading older injection moulding machines to the latest technology.

Machines, built for targeted applications

Stork IMM develops, produces and maintains top quality injection moulding machines for markets where production speeds and reliability are crucial factors in the business model.

Stork IMM distinguishes its self by offering a product line for each application. In this special product line Stork translates its customers' passion, craftsmanship, experience and requirements into dedicated solutions.

Stork constantly listens to its customers, integrates the insights thus gained into its own expertise and ensures effective implementation in its products. This is a dynamic process. Stork is innovating continuously. It's the very reason why the Stork injection moulding machine will always be the best, fastest and most reliable for the targeted applications. **smi**

Stork IMM
www.storkimm.com

Given the strong demand for energy saving measures, Stork IMM is pleased to present an overview of 10 ways to save up to EUR 450,000 per year in energy costs with your existing Stork IMM

Wilmington Machinery has recently announced two new machines

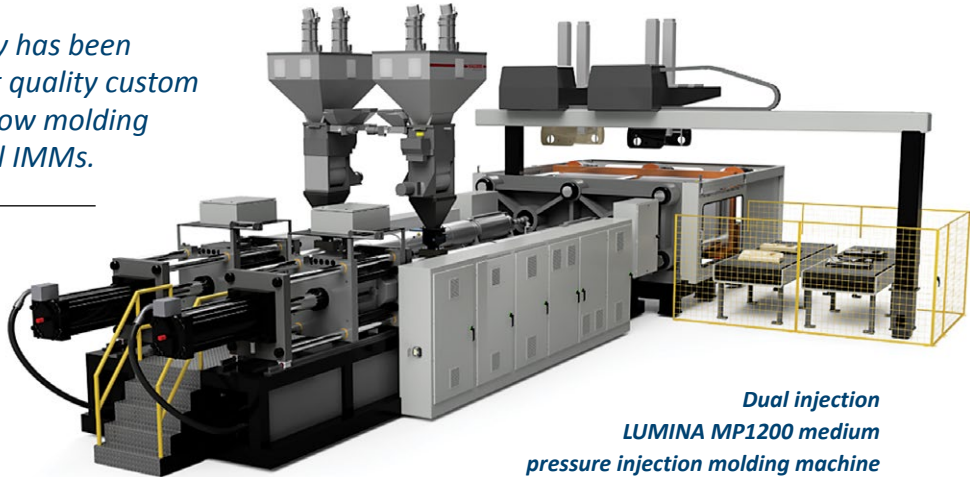
Since 1972, Wilmington Machinery has been designing and building the highest quality custom and standard high-speed rotary blow molding machines and large part structural IMMs.

New Dual Injection LUMINA MP1200 Medium Pressure Injection Molding Machine

The MP1200 is Wilmington Machinery's latest addition to its medium pressure large part injection molding machines first introduced at NPE 2018. It boasts dual 130mm reciprocating/compounding injection units with Wilmington's unique in-line first-in, first-out 50lb accumulators. The new machine accepts both hot runner and cold runner molds including stack molds.

The machine is ideal for molding large gas assist or foam products requiring superior cosmetics and high-capacity production. For foamed products the machine boasts direct gas injection into the extruder barrel using Nitrogen or CO₂ gases.

Like Wilmington's other medium and low-pressure machine models the new machine is available with integrated



Dual injection LUMINA MP1200 medium pressure injection molding machine

robotics, gas assist control, resin blending, gas generation, hot runner control and other accessories. There are no licenses or fees required.

Wilmington believes that this new dual injection machine is like no other made today. Wilmington began production of classic low-pressure structural foam machinery in 1972. It continues its tradition of pioneering innovative and cost-effective injection molding machinery capable of processing 100% recycled materials.

New Rotary Blow Molder for Calibrated Bottles

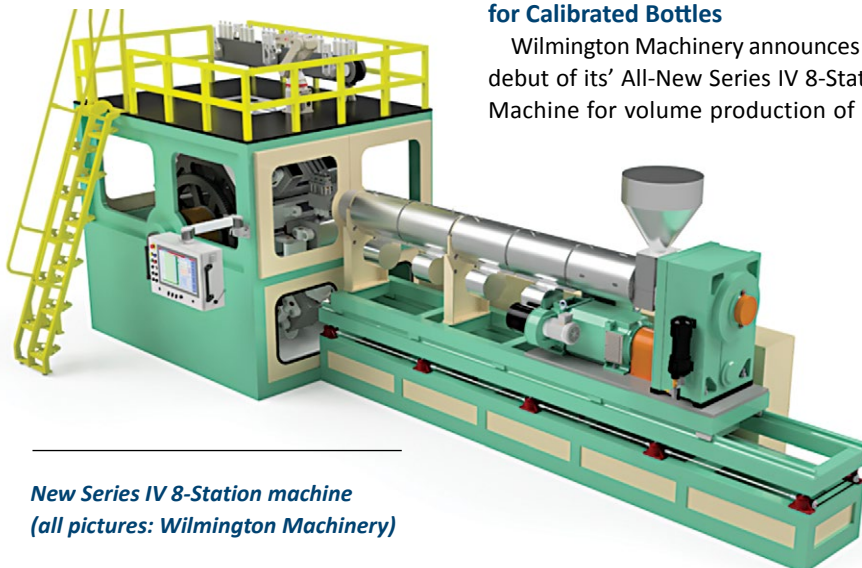
Wilmington Machinery announces the debut of its' All-New Series IV 8-Station Machine for volume production of 8oz

to 4 litre bottles at rates from 48 to 144 bottles per minute. The new machine is available with single, dual, and triple parison die heads for monolayer or multilayer bottles for food, chemical and other applications.

The Series IV machine like Wilmington's other rotary machines is all-electric, has comparatively small footprint, and boasts minimal labor and maintenance. New control systems are more operator friendly and provide for data collection and trending analysis.

Wilmington has been building rotary blow molding machinery and integrated systems since 1979. It readily admits that it did not invent rotary blow molding (aka "wheels") but has always sought to perfect it by supplying innovative and cost-effective solutions to the major custom molders and end users worldwide.

Wilmington Machinery is a recognized leader in developing innovative, cost-effective high speed blow molding and large part structural injection molding machines. **smi**



New Series IV 8-Station machine (all pictures: Wilmington Machinery)

Wilmington Machinery
www.wilmingtonmachinery.com



WITTMANN BATTENFELD has successfully launched its Airmould 4.0 internal gas pressure technology

After WITTMANN BATTENFELD first presented the new generation of the Airmould internal gas pressure technology to its customers at the Fakuma 2021, the development targets have now been reached, and the competitive system has already been installed and tested on the premises of several customers. With the further development of Airmould, an even more compact and user-friendly system has been created, which meets the requirements of the industry and offers its users a number of advantages.

Airmould is WITTMANN BATTENFELD's solution to meet the need for saving resources and for light-weight construction, and for extremely short cycle times as well. Airmould internal gas pressure technology is a process by which nitrogen is injected into a mold cavity either partly or completely filled with plastic melt to form an internal cavity structure. In

this way, lightweight parts can be produced within a short cycle time and with high-quality surfaces, while also saving resources.

Since the end of the 1980s, WITTMANN BATTENFELD has been developing and producing the internal gas pressure technology at its facility in Meinerzhagen / Germany with the main focus on meeting the needs of its customers

and markets. This applies equally to the new upgrade Airmould 4.0, by which WITTMANN BATTENFELD has taken an important step forward. Airmould 4.0 is the only internal gas pressure system which functions without having a large control cabinet which takes up a lot of space on the production floor. The modules required are also about 15% smaller than previous versions; they



Airmould pressure generator and nitrogen generator for own nitrogen supply



Airmould 4.0 pressure control modules, central unit and manual operating panel

are very compact and can be mounted and used flexibly on every type of injection molding machine. Another great advantage of this system is that the technical expertise for the injection molding machine and the Airmould system both come from a single source, and Airmould 4.0 is optimally designed to meet the demands of the market. In fact, Airmould 4.0 can not only be integrated into the B8 control system of an injection molding machine for easier operation, but also into machines of other brands via the uniform operating panel of the WITTMANN Group. For example, at the company's long-standing Airmould customer Oberland MV, where Airmould 4.0 has already been in use on one of their existing machines since mid-April.

The team members of Oberland MV commit themselves daily to keep on inspiring their customers with innovative ideas and excellent performance. To

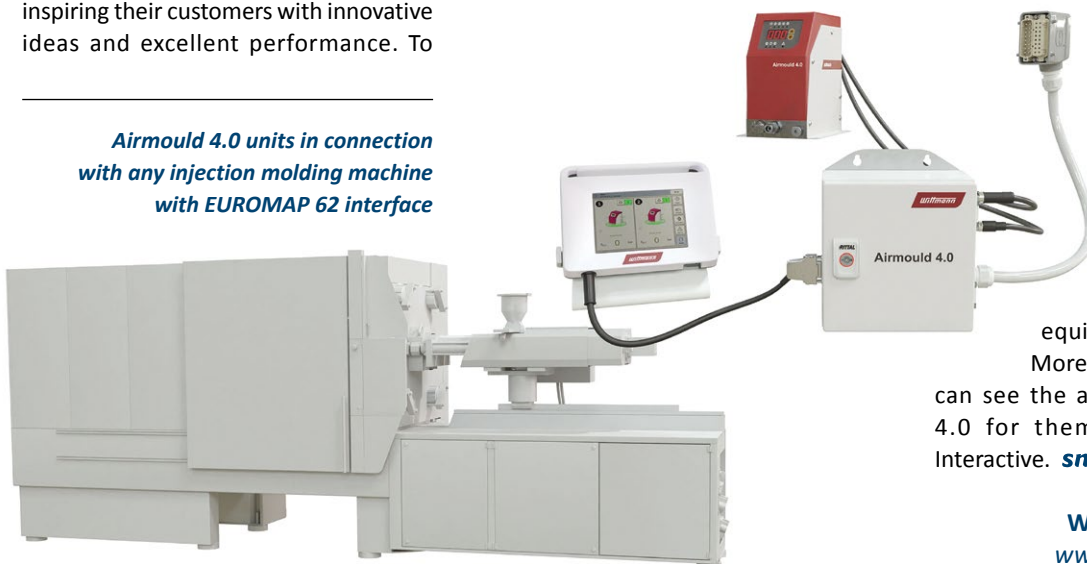
achieve this, they rely on Airmould 4.0 every day. Almost 80% of the reusable boxes produced by their company have been manufactured using the Airmould process for decades, so more than 120 modules from WITTMANN BATTENFELD are now in use there, from both the predecessor series and the new generation of Airmould 4.0. Weight reductions, component stability and minimization of sink marks are important arguments in favor of this technology, as these constitute an assurance of high-quality standards for the strong wall thicknesses of Oberland MV's products.

Innovative and ecologically sustainable, reusable solutions have made Oberland MV a leading manufacturer of packaging for the European beverage industry. They offer their customers system solutions which include product development, manufacturing and design as well as recycling. Prizes won such as the German Packaging Award and the World Star Packaging Award are tangible evidence of the company's commitment to high quality standards for more than 50 years.

Satisfied customers using internal gas pressure every day have confirmed to WITTMANN BATTENFELD that the development targets for Airmould internal gas pressure technology have been defined and pursued correctly. WITTMANN BATTENFELD looks forward to opening up further market potential with Airmould 4.0, especially under present production conditions, and to convincing users of the advantages of this internal gas pressure technology. After all, who would not prick up their ears when there are buzzwords in the air such as saving resources, minimizing energy consumption, simple workcell concept, intuitive operation, low operating costs and short cycle times?

Where necessary, customers will receive application technology support in introducing Airmould. This support may range from assistance with the machine layout right up to the pilot series in production, depending on the customer's requirements, since WITTMANN BATTENFELD not only offers the necessary components, but also application technology support, servicing of the equipment and spare parts. Moreover, prospective buyers can see the advantages of Airmould 4.0 for themselves on Wittmann Interactive. **smi**

Airmould 4.0 units in connection with any injection molding machine with EUROMAP 62 interface

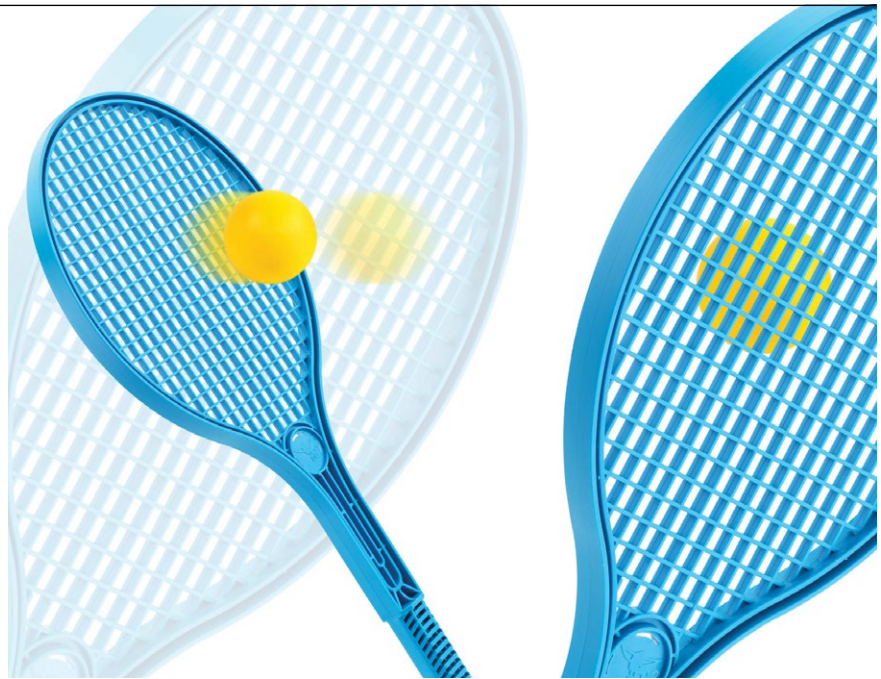


Sales launch at K 2022: KraussMaffei starts sales of precisionMolding and powerMolding in Europe and North America

- *New injection molding machine series deliver high precision and a high performance level with fast availability and short lead times*
- *Ideally suited for standard applications for TEC and consumer goods, electrical and electronic devices, automotive, logistics and packaging and medical technology*
- *Live at K: Sustainable applications for the toy and automotive industry*

KraussMaffei launched sales of the precisionMolding and powerMolding in Europe and North America at K 2022. With this step, the all-electric precisionMolding is now available worldwide in the clamping force sizes from 500 to 3,200 kN, while the hydraulic powerMolding two-platen machine will be available from January 1st 2023 worldwide in the clamping force sizes from 6,500 to 16,000 kN. KraussMaffei is expanding its product line substantially by adding two new premium quality injection molding machine series for standard applications.

This development is driven primarily by increasing cost pressure as well as dynamically changing market and product trends. For these requirements, KraussMaffei is now offering two customized solutions in the precisionMolding and powerMolding. Both injection molding machine series feature an outstanding modular concept with a customized selection of options that are available quickly within short lead times. And this is available at an attractive price/performance ratio. The target industries for both the precisionMolding and powerMolding are standard applications, for example for technical parts and consumer goods, electric and electronic devices, as well



as for the automotive, the logistics and packaging or the medical industry.

KraussMaffei is undertaking a significant expansion of its product portfolio with the precisionMolding and powerMolding. "We offer our customers system solutions from injection molding technology and automation for the complete range of requirements – from standard one-component injection molding on the precisionMolding or powerMolding to

Sustainable fun for kids: At K, the precisionMolding 160-750 produced soft tennis ball rackets made of 100 percent biobased polyethylene (all pictures: KraussMaffei)

technologically challenging applications on the proven PX, CX, GX or MX series. We have been doing this for many years now with innovative, reliable solutions and worldwide service," Xiaojun Cui explains.

"In Europe and North America, we are also seeing increasing demand for high-performance standardized injection molding machines that also offer fast availability."

Xiaojun Cui, Executive Vice-President New Machines Business KraussMaffei



Proven KraussMaffei quality and maximum energy efficiency

Both the precisionMolding and powerMolding stand for high efficiency and profitability that meet the familiar KraussMaffei quality standards. Integration of digital solutions such as the APCplus (Adaptive Process Control) machine function or automation solutions is also easy.

The all-electric precisionMolding inherently features good energy efficiency thanks to the all-electric machine design. The powerMolding offers the proven KraussMaffei BluePower servo drive in standard models. This controls the pumps according to the optimal requirement/energy consumption. Only as much energy as necessary at the moment is consumed. The bottom line: Depending on the application, the powerMolding offers up to as much as 40 percent higher energy efficiency over comparable standard injection molding machines on the market.

Sustainable applications for the toy and automotive industry live at K

The precisionMolding 160-750 with a clamping force of 1600 kN produces soft tennis ball rackets from a sugar cane-based biopolyethylene from FKUR, which indeed are 100% made of this

material. The most outstanding feature: The biopolyethylene from FKUR not only binds CO₂ during its own production, but is particularly robust and durable and can be recycled up to 100 percent after use. Here as well, the proven APCplus machine function reliably compensates for external influences on the injection molding process and ensures consistently high component quality. The cost-effective system solution is being supplemented by an LRX EasyControl linear robot that is ideal for simple pick-and-place applications.

The powerMolding 1300-11900 with a clamping force of 13,000 kN is part of the complete circular economy at the KraussMaffei trade show booth. It is producing frontend carriers for the automotive industry. The material is 100 percent recycled PP made of old insulin pen caps for the medical industry.

For this application on the powerMolding, too, the APCplus machine function assumes an important function.

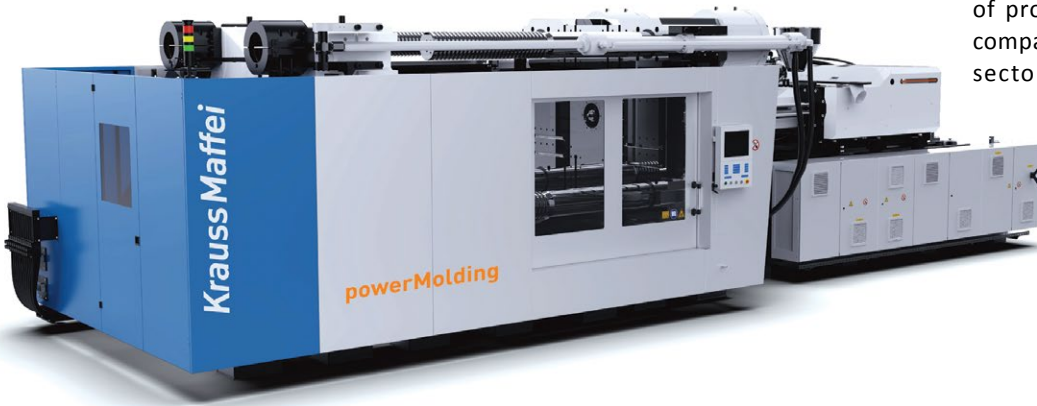
Perfect entry to the world of all-electric injection molding: the precisionMolding provides a high performance level with fast availability and easy operation

Proven KraussMaffei quality and maximum energy efficiency: The hydraulic powerMolding two-platen machine is ideal for standard applications in injection molding

It reliably compensates for the batch fluctuations commonly encountered in recycle processing and thus ensures consistently high component quality here as well. An integrated linear robot of the LRX series takes over safe and reliable handling of the components.

KraussMaffei – Pioneering Plastics

KraussMaffei is among the world's leading manufacturers of machinery and systems for the production and processing of plastics and rubber. Its brand stands for cutting-edge technologies – for more than 180 years. Its range of services covers all areas of injection molding machinery, extrusion technology and reaction process machinery. This gives KraussMaffei a unique selling point in the industry. With the high innovative power of its standardized and individual product, process, digital and service solutions, KraussMaffei can guarantee customers sustained additional value over the entire value-adding chain. The range of products and services allows the company to serve customers in many sectors including the automotive, packaging, medical and construction industries, as well as manufacturers of electrical and electronic products and household appliances. **smi**



KraussMaffei
www.kraussmaffei.com

SMARTcap gets trade fair in Düsseldorf off to impressive start

Elmet got off to a high-profile start at the K 2022 in Düsseldorf. The Upper Austrian company was represented on two stands. Presented highlights included a manufacturing cell with four-cavity mold and SMARTshot E all-electric gate valve cold runner and the new SMARTmix TOP 7000 Pro dispensing system. The caps for beverage and food cans produced on the system were very popular among the visitors. The system itself impressed experts and interested parties alike – a sound basis for the successful days in Düsseldorf.

The world's leading trade fair for the plastics and rubber industry was extremely successful for the Upper Austrian company, Elmet. The global player in the development and production of high-quality equipment for making silicone parts impressed many visitors and interested parties within the first day.

Success on two trade fair stands

There were many interesting discussions on the company's own stand. At the same time, Elmet also celebrated success on the Sumitomo partner stand. There, the partners present an innovative manufacturing cell with four-cavity mold and SMARTshot E all-electric gate valve cold runner and the SMARTmix TOP 7000 Pro dispensing system developed in-house. "We address two different customer groups with this cell. On the one hand, we convince producers of the quality of our systems by visualizing the part weight, and on the other hand, the product produced is a real hit here at the trade fair," said Harald Wallner, Elmet CEO. "The process accuracy visualized by the part weight shows visitors how precisely a liquid silicone mold with the SMARTshot E all-electric gate valve and the SMARTmix TOP 7000 Pro dispensing system can produce," explained Wallner.

Efficiency meets sustainability

The innovative technology makes it possible to open the process window further and at the same time reduce the reject rate. In addition, the all-



electric date valve cold runner reduces energy costs because production can be started more quickly thanks to the faster start-up process. The number of start-up parts that have to be disposed of as rejects is also significantly reduced. "This efficiency impressed the visitors, as we combine sustainability with precision to target the exact pain points of the industry," said Wallner. Elmet relies on two systems developed in-house. The manufacturing cell builds on an Elmet injection mold with the fully automatic SMARTshot E gate valve cold runner system. The material is supplied via Elmet's SMARTmix TOP 7000 Pro dispensing system. The SMARTmix TOP 7000 Pro dispensing system is a new development from Elmet. With a footprint of only 1,150 x 790 millimeters, it is the most compact dispensing system for liquid silicone on the market.

Elmet impressed many K 2022 visitors and interested parties already within the first day (photo: Elmet)

Corporate data

Molds. Dosing technology. Part production. Jobs. Elmet inspires with smart silicone solutions. This is Elmet's guiding principle. The innovative company was founded in 1996. A powerful, dedicated team with a wealth of experience in moldmaking, dosing technology, and liquid-silicone injection molding has since developed into an internationally successful systems builder. Today Elmet is a global player in designing and manufacturing high-quality equipment for the production of silicone parts. **smi**

Elmet
www.elmet.com

Vario Shot Xgate – New interchangeable needle-valve pre-chamber

For some years now, the particularly effective Vario Shot nozzle range from HASCO hot runner has been enjoying increase in popularity. With the new interchangeable needle valve pre-chamber Vario Shot Xgate, HASCO has extended its proven nozzle portfolio.



Picture: HASCO

design. More than 1,000 nozzle variants enable countless demanding applications, from gating on lower distributor manifolds up to high-end needle valve solutions. The wide selection of nozzle lengths with runner and individual nozzles offers an elevated level of freedom in mould design.

The HASCO hot runner team will be pleased to support its customers in the optimum coordination of the nozzles, nozzle tips and needle valve pre-chambers to the specific applications. **smi**

HASCO
www.hasco.com

Vario Shot Xgate simplifies maintenance

This wear resistant Xgate simplifies the maintenance of the injection moulding tool and significantly reduces the maintenance costs. The life of the gates is considerably extended and guarantees perfect moulding quality over millions of injection cycles.

Precise needle guidance with pre-centring

The easily changed pre-chamber with a compact, easy-to-produce tight fit offers precise needle guidance with pre-centring and is also highly resistant to abrasive and chemically aggressive materials.

Individually geared to applications, the two new variants of the Vario Shot Xgate offer the ideal solution, either for amorphous or for semi-crystalline plastics. The gate area and contact surfaces can be varied for application-specific temperature control.

Optimum supplement to the Vario Shot nozzle range

The needle valve pre-chamber Xgate perfectly supplements the Vario Shot range, which is noted for its compact dimensions, optimum temperature control, simple servicing, and modular

Get news updates and magazine alerts
Submit your e-mail to subscribe free

www.smart-molding.com

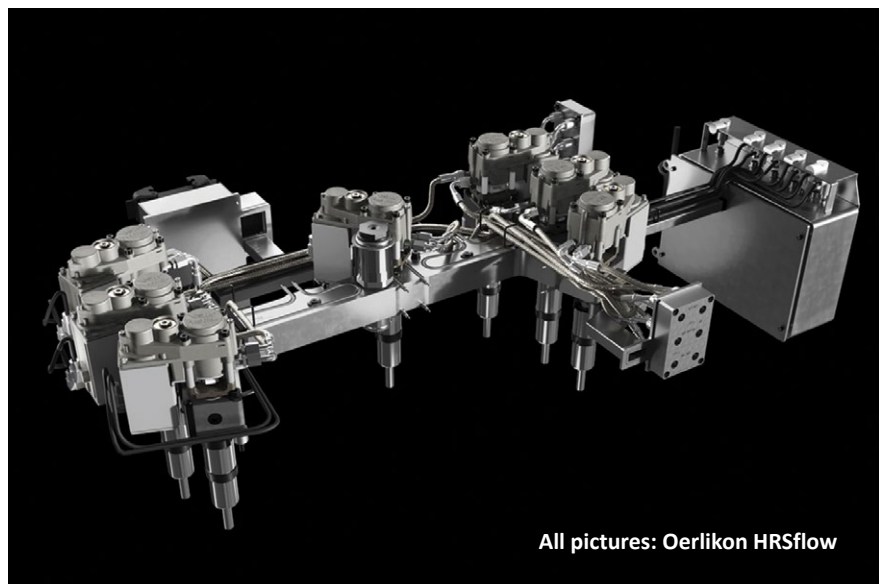


Oerlikon HRSflow hot runner systems in action: live molding demo at K2022

Intricate applications of Oerlikon HRSflow hot runner systems produced in cooperation with project partners in the fields of polymer materials, mold making and machine manufacturing, were presented at the last K Show. The live molding demonstrations were available at the partners' booths.

Thin-walled 150ml IML Yogurt cup: the evolution towards a fully recyclable packaging

At NETSTAL booth in Hall 15, the ELIOS 4500 Injection Molding Machine was producing a thin-walled 150ml IML yogurt cup (6.4 g) from a certified renewable PP polymer by SABIC®, highlighting the importance of human and environmental health. The material is based on tall oil, a waste product from paper production. The powerful and energy efficient NETSTAL injection molding machine compensated for the slightly thicker label in the injection molding process with a correspondingly thinner wall thickness of the cup. Wall thickness of the 5.4 g cup without label measured only 0.32 mm. This high-performance application ran with a fast 3.9 s cycle time. The new Xp nozzle Series from Oerlikon HRSflow, specifically engineered for thin wall packaging, ensured a reliable process



All pictures: Oerlikon HRSflow

and an increased productivity at the lowest cost per unit. The result was a low thickness component (0.4 mm) injected with ambitious cycle times and decorated with a new generation label: the NextCycle IML™ from MCC Verstraete. The NextCycle IML labels allow that a fully decorated PP IML package can be recycled without any impact of the label on the RPP material. These labels also featured digital watermarks from the Holy Grail 2.0 initiative. The project had been developed in cooperation with Netstal, IML Solutions, MCC Verstraete, Sabic, Oerlikon HRSflow.

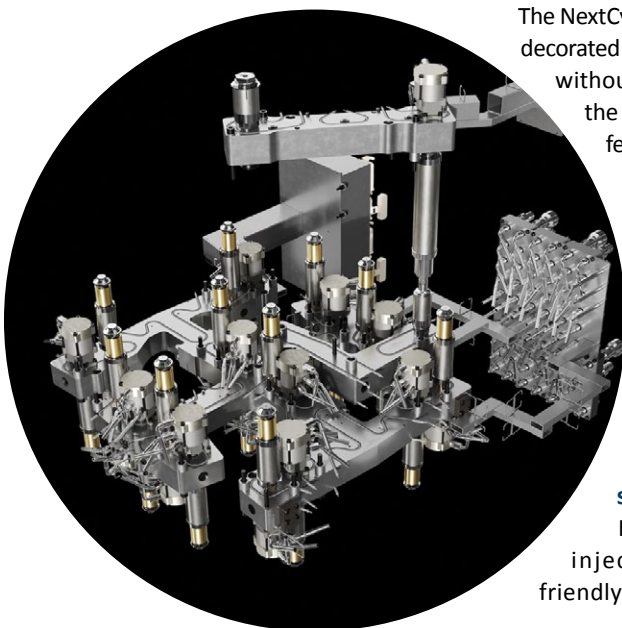
Eco-friendly fruit box: maximum precision combined with sustainability

Haitian showcased the injection molding of an eco-friendly fruit box which marks a key

step in Oerlikon HRSflow's approach to Circular Economy. The selected hot runner configuration was specifically designed to process APS PE compound with recycled TETRA PAK® carton package Alu Foil. The 4 drop FLEXflow servo-driven valve gate system, running on a Haitian Jupiter Series (JU4500III), ensured the production of a flawless part with the complete filling of all the ribs and walls and high process repeatability. For an optimal gate vestige quality, Oerlikon HRSflow's new patent pending TTC cooling bushing avoids pin's sticking issues even with fast cycle times. Project partners are Haitian, Mundimold, Tetra Pak®, APS, Oerlikon HRSflow.

Sustainable tool case: complex shapes made masterfully

Arburg presented at its stand in Hall 13 the injection molding of a complex tool case requiring the use of 4 hot runner systems from Oerlikon HRSflow.



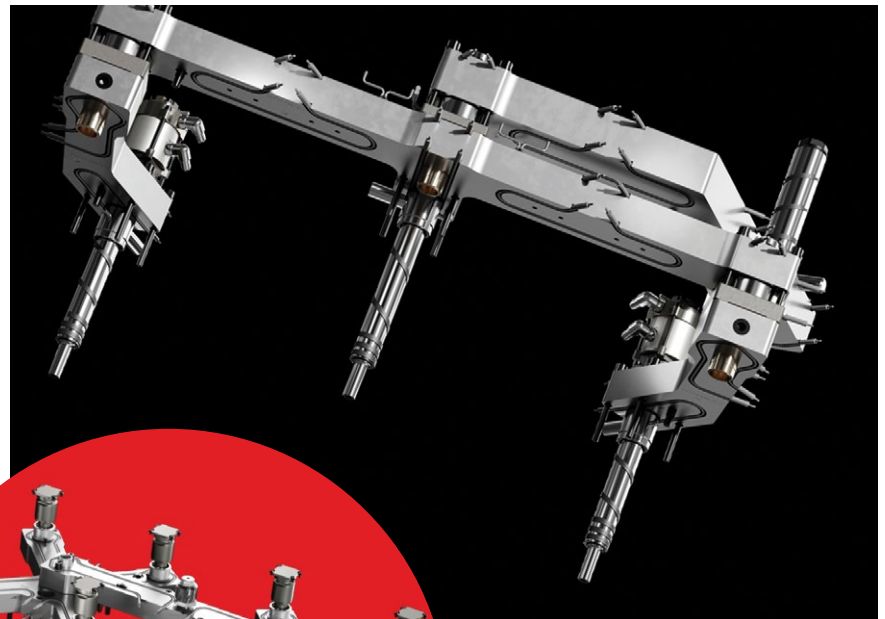
For the manufacturing of the two covers from a PC/ABS blend in a family mold, a 2 drops screwed-in system was used. Moreover a 3D Design Film was overmolded on the covers. Particular attention was also given to the inner tray, the handle as well as the lateral latches made of PET RECOPOUND® by KURZ. The result was a stable and robust end product with illimited possibilities of decorations. Project partners were Arburg, Hofmann, LEONHARD KURZ, Oerlikon HRSflow.

2K Rear-Panel: futuristic smart automotive surfaces

ENGEL (Hall 15) presented the injection molding of a smart 2K rear panel composed by a PC+ABS frame overmolded with PMMA or alternative PC. During the first injection phase a hydraulic 2 drops system from Oerlikon HRSflow was used while for the second one a Single nozzle from Ga Series was employed. The part was finally decorated with a capacitive and aesthetic film directly in the mold for an innovative result. To implement such complex requirements, exact rheological analysis calculations were necessary. Project partners: ENGEL, Schöfer, LEONHARD KURZ, Röhme, Oerlikon HRSflow.

3 component coffee-to-go cup: hot runner solutions for 100% recyclable parts

In Hall 15, Wittmann Battenfeld was demonstrating the manufacturing of a 3-component coffee-to-go cup with a lid. The rotational mold with 3 separate injection units was equipped with three different single nozzle systems by Oerlikon HRSflow optimized to process the 100% recyclable PP Borneables™ (nonpetroleum-based feedstock) from Borealis. The Borneables™ - made of renewable raw materials derived from waste and residue streams - perfectly meet the functional requirements of the molded part without compromise in terms of quality and sustainability standards. The cup, with a thickness of 2 mm, is produced in clear optic in the first cavity and over-molded in the



second cavity with an insulated shell. The insulating effect is obtained by foaming the melt through the special Cellmould® technology which enables the production of lightweight, rigid parts without sink marks. Project partners were Wittmann Battenfeld, Haidlmair, Borealis and Oerlikon HRSflow.

Garden tool: 2K irrigation connector

Additionally at K show, Oerlikon HRSflow was showcasing at Billion's booth in Hall 15 the injection molding of a garden tool, specifically an irrigation connector. The part was produced through a 2K tool equipped with two different hot runner systems with one nozzle. During the first phase, a face-to-face torpedo system was used to inject styrenic compounds (ASA polymer), while for the second phase, a screwed-in cylindrical valve gate system was employed to inject elastomer compounds (SEBS). During the second phase, the molded part could be easily

customized thanks to the marking operations directly embedded in the tool cycle process. Among the special features the automatic and quick change of the mold version enabling the production of the three different components - in this case the coupling diameters - without disassembling the tool or stopping the manufacturing activities. Project partners were Billion, Groupe Pernoud, Actemium, Sepro Group, Resinex, Lifocolor and DeViris, Oerlikon HRSflow.

High Gloss B Pillar: accurate injection, perfect appearance

The Injection Molding Machine manufacturer Tederic (Hall 15) was showcasing the production of a high gloss B pillar. The molded part was obtained through a 2K hot runner system developed by Oerlikon HRSflow. The hot runner solution enabled the perfect appearance of the component thanks to a gentle, low-stress injection. During first phase a 2 drops conical valve gate hydraulic system combined with ICM Technology were used to inject PMMA polymer, while for the second one (ABS material) a 6 drops system was developed. The project was conceived in cooperation with Tederic, Yuyao Skymold, Piovan and Technotrans Solutions GmbH, Oerlikon HRSflow. *smi*

Oerlikon HRSflow
www.hrsflow.com

The many different mould bases in the Meusburger product range are a reliable basis for mould making (photo: Meusburger)



The ideal basis for your injection moulding solution

Whether standard moulds, sliding core moulds, change moulds or micro moulds – Meusburger offers a comprehensive range of products. Customers benefit not only from many years of experience, but also from production from high-grade steel, heat-treated for stress relief, as well as from fast order processing from request to delivery.

Rely on a bedrock of experience

With the Meusburger mould bases, customers benefit from a perfectly coordinated product range based on more than 55 years of experience. The diverse range of products come in over 30 material grades and are stored on an area bigger than 2.5 football fields. With its large warehouse, Meusburger is optimally positioned to guarantee its customers continuous supply security.

The best piece of steel

To guarantee low-deformation processing, even the best raw materials are heat-treated for stress relief at Meusburger. Consistent quality checks along the production chain and state-of-the-art machines and testing equipment ensure the highest precision. Customers benefit from consistent strength and homogeneity down to the very fibres (of the material).

Order processing at the speed of light

Meusburger offers everything for mould bases from a single source. Thanks

to optimised order processes, customers benefit from quick response times and rapid order processing. Equipped with the latest technology, the Meusburger shipping team is ready to pass on the orders as fast as possible to the forwarding agent.

A wide range of products – continuously available

The many different mould bases in the Meusburger product range are a reliable basis for mould making. The pre-drilled F moulds lengthwise and crosswise are optimally suited for precise and high-quality standard mould bases. Concerning hot runners, the FH hot runner mould is a further step towards standardisation. It is composed of a complete mould base including a hot runner system and can be individually configured with just a few clicks. The major advantage for customers is the specially developed configurator, which allows for considerable time savings as well as high price transparency.

Apart from standard moulds, Meusburger also offers FB sliding core

moulds, which are the best and often also the only possible solution for the manufacturing of complex plastic parts. They are made from precise standard parts that are 100% compatible with the Meusburger F plates. The product range also includes ready-to-use FM micro moulds, which are designed for micro injection moulding and can be easily configured and ordered. Finally, the Meusburger FW change moulds are the ideal solution for the quick and cost-effective production of small series and prototypes. Thanks to the special change system with positioning wedges, the inserts can be changed quickly and easily with repeatable accuracy. 100% of the Meusburger portfolio is produced in-house in Austria and can thus be dispatched directly from stock. Additionally, the standard parts manufacturer also offers a wide range of components that are optimally tailored to the mould bases.

Meusburger
www.meusburger.com

Partnership to create the most lightweight Plug-in hybrid vehicle fuel tank

DSM Engineering Materials has recently announced its successful partnership to create an industry-first lightweight solution for hybrid vehicle fuel tanks. By using Akulon® Fuel Lock, DSM's high-performance low-carbon-footprint PA6 material, the fuel tanks can be produced with a blow molding monolayer construction that significantly reduces weight and cost without compromising safety or risking additional emissions.

Minimizing weight to maximize efficiency

As e-mobility continues to develop, regulations and standards are evolving alongside the industry. European Union regulations set a maximum CO₂ emission rate of 95 g/km for passenger cars, which necessitates a careful balance of materials and design to maximize fuel efficiency. Traditionally, fuel tanks were made of steel to prevent volatile compounds from escaping, but these tanks add significant weight to the vehicle. Hybrid vehicles enable the use of smaller fuel tanks, making a polymer solution more viable, but high-density polyethylene (HDPE) still requires multilayer structures with complex additional features to prevent permeation, and withstand the extended periods of internal pressure inherent to Plug-in hybrid vehicles.

Following the successful development of the world's first Automotive fuel tank in polyamide commercialized on the Alpine A110, DSM Engineering Materials continued its partnership with RM Technologies, MTS France and Renault to create once again an industry-first solution for the Renault CAPTUR E-Tech Plug-in-Hybrid, drawing on its portfolio of high-performance materials to complement Renault's fuel systems engineering expertise. DSM's innovative Akulon® Fuel Lock material enables a lightweight monolayer fuel tank with the low permeation properties needed to meet regulations.



Picture: DSM Engineering Materials

A high-performance solution

Akulon® Fuel Lock PA6 grades are designed for injection or blow molding and extrusion, making them highly versatile for the rapid design innovation of the e-mobility sector. Extremely high parison stability enables very narrow wall thickness distributions, and robust performance at both high and low temperatures ensures that safety is always paramount.

Akulon® Fuel Lock is offering a drop-in solution and a second life to the monolayer blow molding machines dedicated to the production of the declining diesel monolayer fuel tanks

Dr. Laurent Gervat, Technical Polymers and Composites Expert, Leader of the Upstream Strategy Material Team, RENAULT stated, "Working with DSM Engineering Materials to create our new hybrid vehicle fuel tanks has helped us to take a significant step toward providing

more sustainable mobility to our customers everywhere. Hybrid vehicles are indeed a key part of the transition toward a more sustainable economy, and we're very proud to offer this innovative new solution to the market."

Gilles Marcel, Global Account Manager, DSM Engineering Materials says, "It's great to see our Akulon® Fuel Lock PA6 portfolio enabling innovation in the e-mobility market, and we're proud to have worked with Renault and our other partners in the value chain to achieve this industry first. We'll continue to prioritize this important sector as we continue to expand our range of high-performance solutions such as bio-based Fuel Lock polymers, and we look forward to enabling many more of our customers to achieve their sustainability goals."

DSM Engineering Materials
www.dsm.com



Photos source: BCN3D

BCN3D provided its 3D printing technology to successfully plan the removal of a big tumor

- *The maxillofacial surgery and oncology team at SJD Barcelona Children's Hospital, in this case, led by Dr. Josep Rubio, performs a 3D planning and simulation of the resection of a tumor in a young patient's cheekbone.*
- *The creation of the two three-dimensional pieces of the patient's skull and tumor has been essential for the doctors to achieve the extraction with maximum precision.*

BCN3D's 3D printing technology has been integrated into the pediatric maxillofacial surgery team at the SJD Barcelona Children's Hospital (SJD) to successfully perform a complicated operation to resect a malignant tumor in an 11-year-old boy. In this case, the medical team led by Dr. Josep Rubio, head of the maxillofacial surgery unit at SJD Barcelona Children's Hospital, decided to carry out preoperative planning and simulation using BCN3D's 3D printed technology and three-dimensional anatomical models of the parts of the patient's skull, given the complexity of the operation.

The planning consisted of the 3D design of the anatomy of the limits of the resection to be performed in the subsequent intervention, creating an image of the skull and the patient's child's tumor, which was then 3D printed in the hospital's 3D printing laboratory.

The medical team and the radiologists managed to print both pieces thanks to BCN3D's 3D printing technology – specifically the W27 3D printer from the Epsilon series – which, with its double extruder head and the materials used (ABS), provides the necessary realism for the doctors to plan the actual surgical intervention based on the exact resection

of the entirety of the child's eye tumor, a facial osteosarcoma.

"The goal of the surgery was to remove a child's tumor located in his cheekbone and to remove the tumor with safe margins. To do this we used 3D planning to delimit the limits of the resection. Nowadays, 3D planning at the SJD Barcelona Children's Hospital is standard practice in maxillofacial surgery, especially in very complex cases such as the one we dealt with in this child. We had to create cutting and positioning guides to transfer the virtual planning from the computer to the operating theatre. This has allowed us to

execute what we designed virtually with precision to be able to extract the safety margins next to the tumor as previously designed,” explains Dr. Josep Rubio, head of the maxillofacial surgery unit at SJD Barcelona Children’s Hospital.

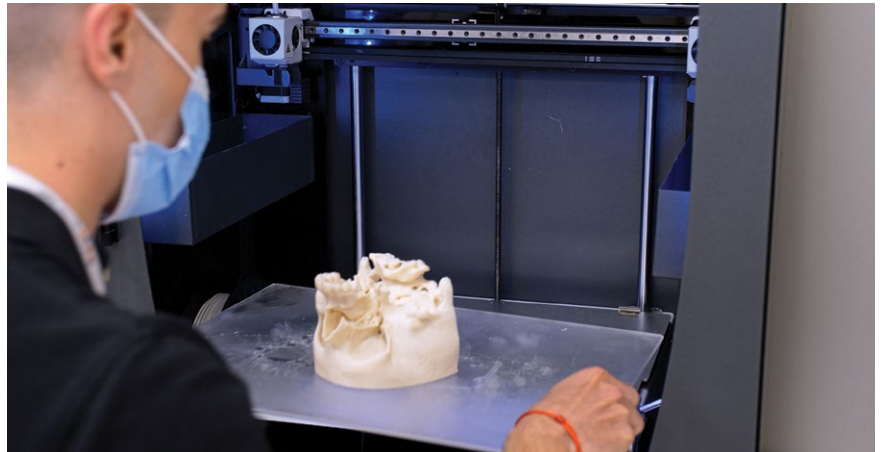
The aim of the surgery was to remove Andrés’ tumor, which was lodged in the cheekbone, and to remove it with safe margins. That’s when 3D printing technology came into play to plan the operation and accurately delineate the tumor in the cheekbone eye.

“3D printing helped us avoid potential postoperative complications and improved the quality for both the patient and the surgical process. After weeks of surgical planning, we were able to perform a complete resection of the lesion and also preserve the patient’s vision,” says Dr Adaia Valls, maxillofacial surgeon at SJD Barcelona Children’s Hospital.

Little Andrés’ illness

Andrés, who was not the first to present with cancer, was diagnosed with retinoblastoma when he was 11 months old. When his parents decided to have him treated at SJD Barcelona Children’s Hospital in 2016, the medical team decided to change his prosthesis in his right eyeball.

After two years of treatment to treat the first tumor, he recovered with a specific treatment. However, as Andrés was a carrier of a germline gene, the doctors told his parents that the boy could suffer a type of cancer in his bone system, something that happened years later when he developed a facial osteosarcoma.



The treatment plan of the oncology team was to carry out chemotherapy for three months and then come a fundamental part of the treatment, guaranteeing local control of the lesion. For this it is essential to obtain a complete section of the tumor, other local treatments such as radiotherapy in this type of tumor are not as effective and, in addition, this patient had already had a radio-induced tumor.

3D printing in 200 surgeries a year

The SJD Barcelona Children’s Hospital is a pioneer in Spain and Europe in the research and implementation of new technologies. So much so that it uses 3D printing in more than 200 surgeries a year. In the additive manufacturing service, they have, among others, BCN3D 3D printers from the Epsilon W27 and W50 series.

3D printing and planning made its debut at this center in 2013, after a doctor specifically requested a biomodel to complement the planning of a

complex oncological case. Since then, the use of this technology has expanded exponentially, leading to the creation of a multidisciplinary group of nine different specialties that benefit from this technology.

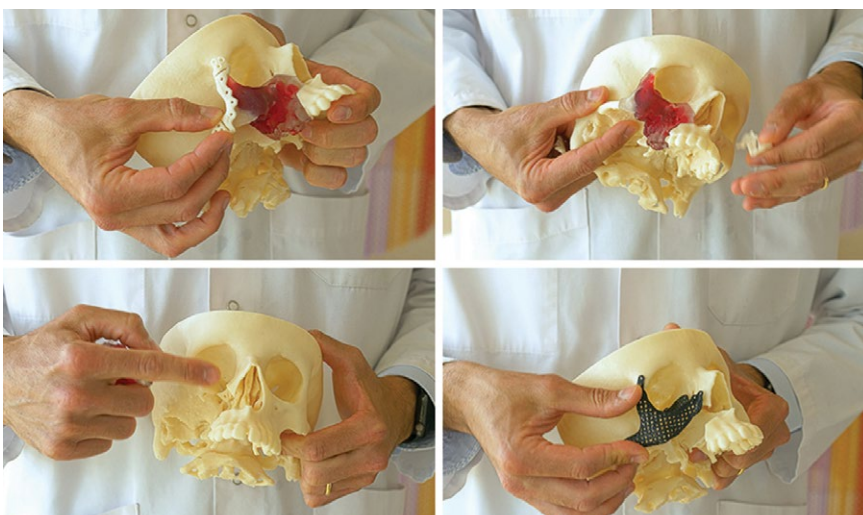
“We decided to work with BCN3D 3D printers because they are the machines we usually use for planning anatomical bone models in maxillofacial surgery and complex surgery or trauma cases. We use materials that define excellent chromatic tonalities, accuracy in the printed pieces and we obtain the best results with the efficiency of its double extruder system, printing very realistic pieces”, points out Arnau Valls, innovation engineer in the 3D printing service of the SJD Barcelona Children’s Hospital.

Printed biomodels: The future of medicine

Biomodels serve as a visual aid, portraying the anatomical relationships and the relationship of the tumor with the different anatomical parts. They function as a pre-surgical simulation model, aiding the practice of the cuts to be made by the surgeon. 3D printing helps to customize surgical interventions for each patient, accelerating the generation of support and guidance tools for the surgeon, such as cutting guides and implant positioning, improving the precision and safety of the surgery. In addition, the team of the SJD Barcelona Children’s Hospital 3D planning unit has open lines of research to improve the printed models and achieve, through research into mechanical properties, colors, and textures, a better imitation of living tissues. *smi*

BCN3D

www.bcn3d.com



LSR Molding: Identifying quality problems before they appear

Low viscosity of LSR makes the injection molding a constant challenge. In order to maximum profit and minimum scrap it is important to gain an overview of the entire process.

The demand for liquid silicon rubber (LSR) products is constantly growing. Particularly in the medical and infant care markets, its high thermal stability and very good physiological properties make LSR the material of choice for an increasing number of applications. But the low viscosity of LSR makes the injection molding a constant challenge. In order to maximum profit and minimum scrap it is important to gain an overview of the entire process. This includes the flow and curing behavior as well as the temperature conditions. Problems can thus be detected and eliminated at an early stage.

CVA Silicones, in France, reached out to SIGMA in order to get a better insight on one of its product applications. In this case, they wanted to build a four-cavity mold for a silicon-nipple application. The challenge was to completely analyze the mold performance and predict any quality problems that might occur during production.

The process simulation of the mold starts at room temperature. Heating cartridges and plates preheat the mold to working temperature. Once it is heated, several production cycles are simulated one after the other to bring the mold into a quasi-stationary state (Fig. 1). A detailed analysis of the filling, holding and heating phases is then conducted.

The current tempering layout led to large temperature differences in the moving mold half, as shown in figure 2. While the temperature of the cavity plate was between 165 °C and 170 °C, it varied by 20 °C between

the core base and core tip. This large temperature gradient lead to different curing behaviors and thus ultimately to a longer cycle time.

The analysis of the entire mold demonstrates how important it is to consider the "big picture" of thermal performance. For comparison purposes, a "conventional" injection molding simulation was carried out, in which a homogeneous temperature was assumed. The simplified approach with a uniform mold temperature of 160 °C emitted a heating time of 30 s (Fig. 3). The simulation showed that the tip of the component was only 43 % cured after 30 s. A dimensionally stable demolding of the suction cup is not yet possible at this point. In the real cycle a longer heating time is therefore required.

The observation of the real temperature behavior is of particular importance for the component quality and can have costly consequences if not taken into account. In order to analyze the temperature behavior, a great many tests on the actual mold would be necessary to identify defects. Finally, SIGMASOFT® Virtual Molding was used to revise the tempering concept and optimize it with regard to a more even temperature distribution in the mold.

The application of SIGMASOFT® Virtual Molding in LSR injection molding enables the user to identify reasons for quality problems early on, save costs, and reduces scrap. Saving iterations in the development of the actual molds and parts means additional time savings for new projects.

About SIGMA

Since 1998, SIGMA Engineering GmbH has been driving the development of the injection molding process with its simulation solution SIGMASOFT® Virtual Molding. This virtual injection molding machine enables the optimization and development of polymer components and molds as well as the mapping of the entire production process. The SIGMASOFT® Virtual Molding technology combines the parts 3D geometries with its tooling and temperature control system and integrates the parameters of the production process. This ensures a cost-efficient and resource-saving production as well as high-performance products - from the first shot.

SIGMASOFT® Virtual Molding integrates a multitude of process-specific models including 3D simulation technologies that have been developed and validated over decades and are being continuously optimized. The SIGMA Solution Service and Development team support customers specific goals with application solutions. The software company SIGMA offers application engineering, training, direct sales and support. A software straight from its developers and designers to be a solution service to polymer engineering all over Europe.

SIGMA Engineering GmbH, headed by Managing Director Thomas Klein, has subsidiaries in the USA, Brazil, Singapore, China, India, Korea and Turkey. In addition, SIGMA supports its users worldwide in a variety of international companies and research institutions with its Virtual Molding technology. **smi**

SIGMA
www.sigmasoft.de

Figure 1 – Heating up the mold into the quasi-stationary state over several cycles (all pictures: SIGMA)

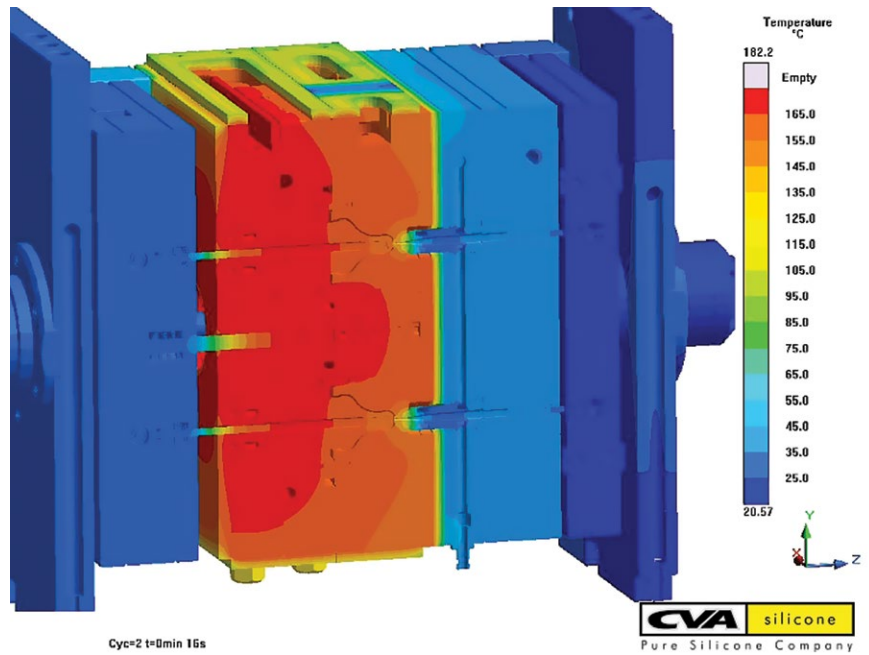


Figure 2 – The temperature distribution on the ejector side shows large temperature differences between core tip and core base

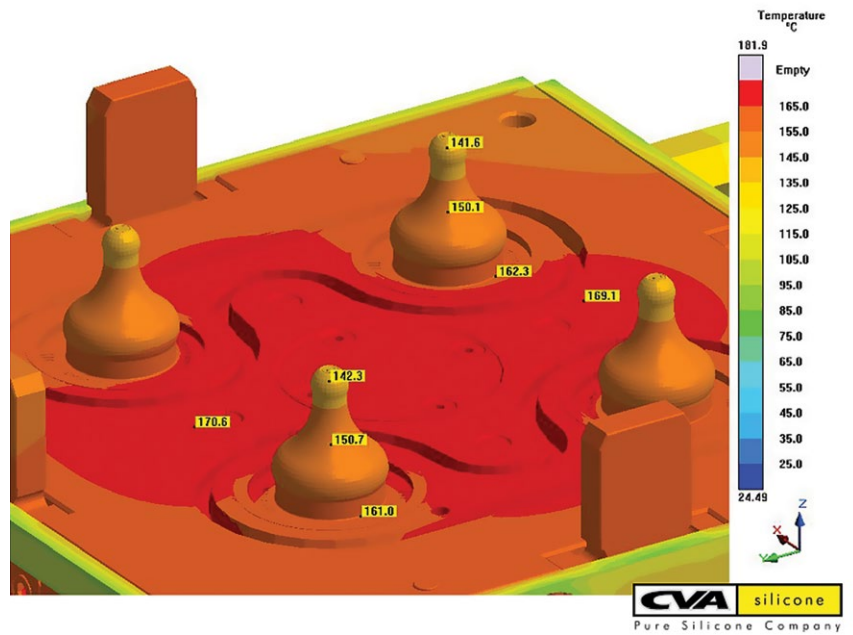
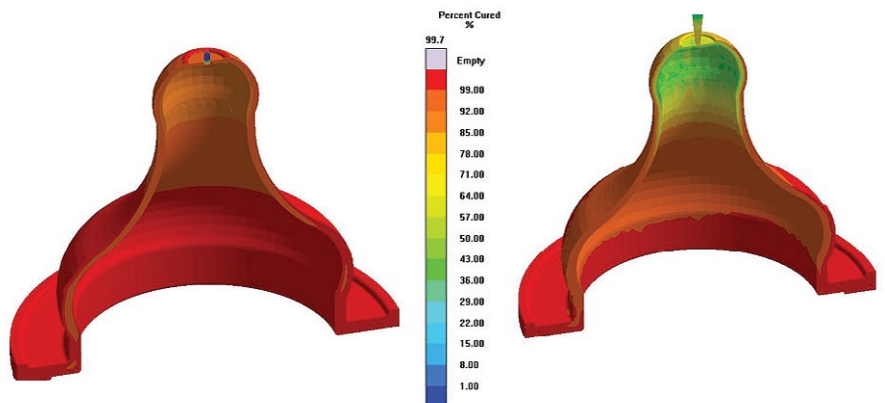
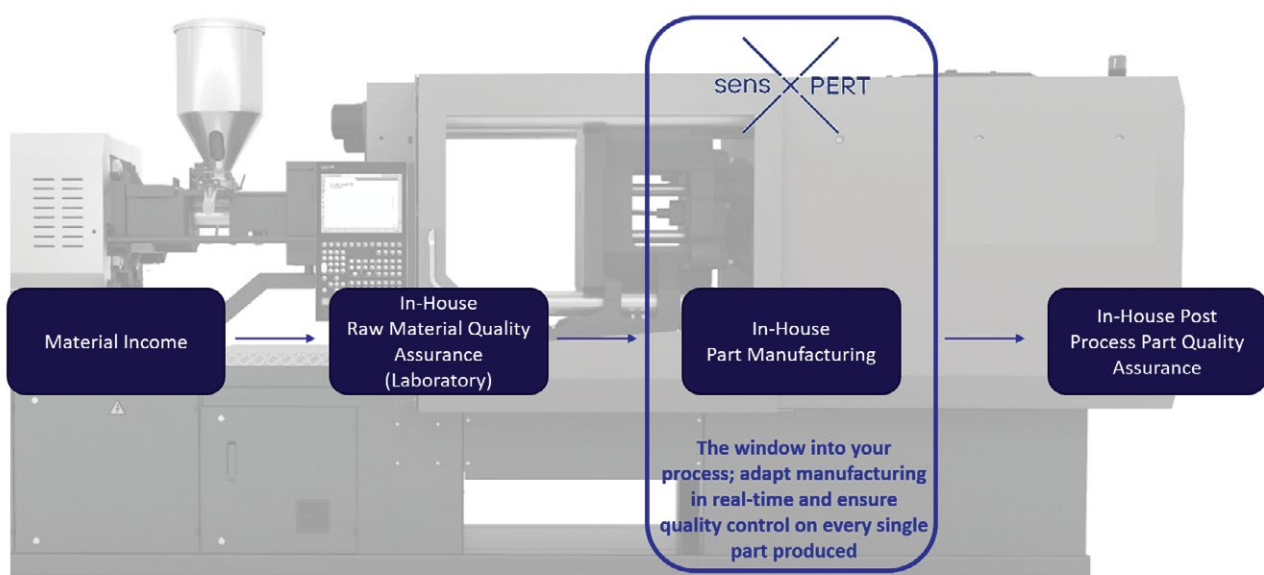


Figure 3 – Differences of the curing behavior at a constant mold temperature and at calculated mold temperature (Virtual Molding approach)



Continuous process optimization

Developed by NETZSCH Process Intelligence, sensXPERT, combines real-time material data from the mold with advanced machine learning software to analyze the material behavior. The smart technology enables continuous process optimization for up to 30 percent increase in production efficiency. Its technological advanced in-mold sensors provide real-time insights and transparency to react to material deviations and eliminate scrap.



NETZSCH Process Intelligence, a corporate venture of NETZSCH Group (Germany), has announced the launch of sensXPERT, a technology business designed to deliver significant productivity and quality benefits to processors in the plastics industry through data-driven manufacturing solutions. The integrated approach builds on the Group's 50+ years of know-how in the fields of material science and sensor technology.

sensXPERT combines real-time material data from the mold with advanced machine learning software to analyze the material behavior. The smart technology enables continuous process optimization for up to 30 percent increase in production efficiency. Its technological advanced in-mold sensors provide real-time

insights and transparency to react to material deviations and eliminate scrap. While allowing a dynamic and adaptive production, thus maximizing throughput, sensXPERT ensures direct in-process quality control of each single molded part.

"There is a growing need for digital technology solutions in the plastics processing industry to meet the challenges of tighter cost control, total quality assurance and enhanced sustainability," says Dr. Alexander Chaloupka, Managing Director & CTO for sensXPERT. "By using the artificial intelligence of our machine learning software to evaluate critical material, machine and process data, we help our customers optimize their manufacturing efficiency in real time, eliminating the need for time and labor consuming retroactive adjustments."

Picture: NETZSCH Group

At the heart of sensXPERT's manufacturing solutions, an Edge Device integrates the hardware and software for machine learning models designed to capture even the slightest deviation of material and process parameters. Based on measuring data collected from high-precision in-mold sensors, smart machine learning algorithms are applied to simulate, predict and analyze the actual material behavior on each individual machine. The learning models are trained with key parameters, including standard material and experimental data, such as glass transition temperature, pressure and required degree of curing, and are then continuously fine-tuned depending on the in-situ data measured over time.

sensXPERT lives a 'customer-centric' approach enabling plastic processors to have full manufacturing transparency. Next to seamless third-party sensor integrations, the company realized the potential to further link and connect production machines and molds with material science. The result is an exponential output increase that is immediately utilizable. True to the sensXPERT motto: Turning data into quality!

"Industry 4.0 stakeholders need real-time answers to what is happening in their manufacturing processes," adds Cornelia Beyer, Managing Director & CEO of sensXPERT. "Our unique approach unlocks the potential of fully data-driven productivity, delivering immediate quality and efficiency benefits to our customers in the plastics processing industry."

The sensXPERT technology adapts to any common thermosets, thermoplastics and elastomers

processing technique, from injection, compression and transfer molding to thermoforming, vacuum infusion and autoclave curing. It connects with customers' existing manufacturing and control systems through standard industrial interfaces and is offered as a cloud-based Equipment-as-a-Service (EaaS) solution. An intuitive Web App is provided for convenient on-site or remote user access.

Use cases in major industry segments, such as in the manufacturing of automotive composite wheels and airplane wing components, have shown significant increases in overall equipment efficiency (OEE), including solid return of investment (ROI). Similar solutions can easily be implemented in other industries.

NETZSCH Group

The NETZSCH Group consists of three Business Units under the umbrella of the Erich NETZSCH GmbH & Co. Holding KG.

The Erich NETZSCH Holding is an active holding company providing its operatively independent business units with a functional framework as well as an optimum administrative environment while supporting the efficiencies of the individual business units and the synergies among them in all areas of activity. The Erich NETZSCH Holding holds the objective of ensuring that the value of the NETZSCH Group as a whole is greater than the sum of its parts. We see it as our task to identify and take advantage of the opportunities arising within the Group and to keep any inherent risks within reasonable limits.

The management team of the ENH is responsible for coordinating and monitoring the implementation of group strategy. *smi*

NETZSCH Process Intelligence
www.netzsch.com

PROMOTE YOUR SMART SOLUTIONS FOR PLASTICS MOLDERS WORLDWIDE!



- **Online**
7.600
subscribers

- **Focused**
on advanced
molding technologies



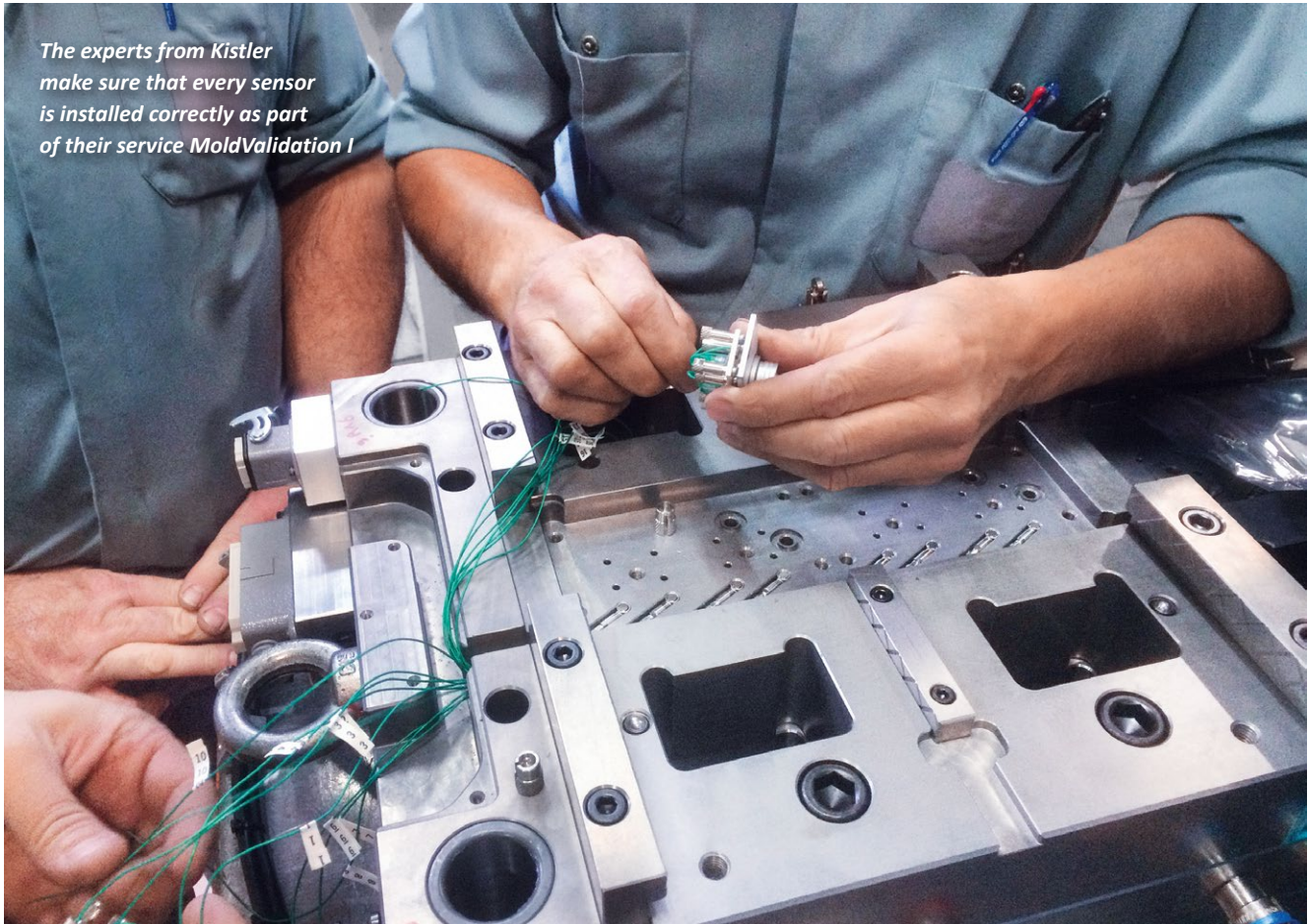
- **Available free**
on mobile,
tablet and PC

- **Bonus distribution**
at major
plastics events



To advertise contact
marketing@smart-moldi.com

www.smart-molding.com



The experts from Kistler make sure that every sensor is installed correctly as part of their service MoldValidation I

Many factors – one ideal injection molding process

How to make the most of cavity pressure measurements:

An interview with Christian Streili, Field Service Development Manager at Kistler

Maximum efficiency and minimal scrap – that is injection molders' ultimate goal. Measuring cavity pressure is an effective way to optimize production processes. To benefit from this technology, manufacturers must both install the sensors and interpret the data correctly – a challenge in itself, as many different factors can affect the part quality. Christian Streili, Field Service Development Manager at Kistler, explains why injection molding processes profit from expert knowledge and how Kistler helps its customers to make the most of cavity pressure measurement.

In theory, injection molding is simple: A mold is filled with liquefied plastic that hardens in the desired shape. In reality, however, producing perfect pieces with as little scrap as possible is incredibly complicated. Different shapes and materials come with different demands, while varying

external factors also affect the process. This is where tiny piezoelectric sensors come in: They help injection molders find and maintain the optimal process for each mold – no matter the materials. They measure and analyze the cavity pressure during the injection molding process. Based on these measurements, manufacturers can control the injection molding process, balance the hot runner system in line as well as automatically sort out bad parts.

This is where it gets complicated, because using these sensors and interpreting the measurement results is by no means an easy task. To make the most of the hardware and measurement data, a lot of expert knowledge about the molding process and the measurement equipment is necessary. To ensure that its customers can put their piezoelectric measurement technology to optimal use, Kistler offers special service support.



Mr. Streili, in your opinion, what are the main challenges in injection molding?

I think the main challenge is the complexity of the process itself. There are many parameters that ultimately influence the quality of the finished product: part size, material, the temperature of the environment as well as the temperature of the plastic. Also, molding processes with an inlay, where several materials come together, behave differently than those without. Many injection molders underestimate these influences or know little about how seemingly miniscule changes in the process can affect the quality of their parts. For instance, switching from one material supplier to the next can have a decisive impact on product quality – even if the composition of the plastic is exactly the same on paper.

Which role does measuring cavity pressure play in overcoming these challenges?

Cavity pressure plays a crucial role in injection molding. It reflects the complete process in the cavity – and thus provides insights into the conditions under which the component is produced. This makes cavity pressure an indicator of the product quality. Specific quality-relevant properties of the part, such as

By identifying problems and increasing efficiency, the service package MoldValidation II helps to optimize existing processes

dimensional accuracy, surface quality, weight and degree of forming, relate directly to the conditions during the different phases of the process. The cavity pressure thus represents a part-specific fingerprint of the product quality and can be used to make precise statements about optimum process parameters. Also, by measuring cavity pressure, manufacturers can identify scrap parts before they even come out of the mold.

What does this quality check look like?

The sensors collect measurement data before it is transmitted to a process monitoring system, which evaluates them and visualizes the results in the shape of a curve. For sorting out NOK parts, a so-called evaluation box needs to be defined. If the curve of the cavity pressure goes through this box, the produced part is good; if it does not, the part is defective. It is important to define these boxes correctly. If the evaluation box is too small, there will be pseudo scrap. If it is too big, the product quality will be affected.

With MoldValidation II, we take a closer look at existing processes. The goal is to optimize the process by determining the ideal parameters. This makes sense for customers who have a hard time identifying a problem within a running process.

What service do you offer your customers to ensure that they use cavity pressure measurements to their full potential?

Actually, we offer several services to support our customers. First of all, we are able to provide a simulation of the process even before the injection mold is built. With this simulation, we can determine how many sensors are needed, where the sensors should be optimally positioned, and which sensor type is best suited for the process. Also, we can detect possible errors and weak points in the injection process at a very early stage.

With our service package MoldValidation I, we make sure that the sensor is installed correctly and works properly. For instance, we check if the holes that house the sensor were drilled correctly and if the sensor fits in well. We also check if the measurement cables have been installed in the right way and if they are protected in critical parts of the injection mold.

With MoldValidation II, we take a closer look at existing processes. The goal is to optimize the process by determining the ideal parameters. This makes sense for customers who have a hard time identifying a problem within a running process. It also makes sense if a crucial part of the process is due to be changed – for instance if the customer wants to use a new mold. But it can also help manufacturers reduce scrap or simply make a working process even more efficient, as we help to define the evaluation box. In any of these cases, we help the customer adjust his injection molding process in the best way possible and make sure that our customer is getting the most out of the technology and the data our sensors generate.

At the end of each of these services, the customer receives documentation of the service and a clear recommendation for possible next steps.

Why do manufacturers need the help of experts? Would a simple checklist of the most important parameters not suffice to improve a process?

There are some criteria which are universally true and can help improve product quality in injection molding – for instance, the (processing) temperature of the material can influence the dimensional accuracy. But what our experts do is more complex. After all, every mold and every process is different: There are so many additional contributing factors that it can be difficult to detect the correlations between faulty processes and external factors. This is where our expertise truly pays off – and why even very experienced injection molders who are able to install their sensors themselves can profit from a service like MoldValidation II.



Christian Streili knows what matters when measuring cavity pressures (all photos: Kistler)

About the Kistler Group

Kistler is the global market leader for dynamic pressure, force, torque and acceleration measurement technology. Cutting-edge technologies provide the basis for Kistler's modular solutions. Customers in industry and scientific research benefit from Kistler's experience as a development partner, enabling them to optimize their products and processes so as to secure sustainable competitive edge. Unique sensor technology from this owner-managed Swiss corporation helps to shape future innovations not only in automotive development and industrial automation but also in many newly emerging sectors. Drawing on our extensive application expertise, and always with an absolute commitment to quality, Kistler plays a key part in the ongoing development of the latest megatrends. The focus is on issues such as electrified drive technology, autonomous driving, emission reduction and Industry 4.0. Some 2,000 employees at more than 60 facilities across the globe are dedicated to the development of new solutions, and they offer application-specific services at the local level. Ever since it was founded in 1959, the Kistler Group has grown hand-in-hand with its customers and in 2021, it posted sales of mCHF 411. About 7% of this figure is reinvested in research and technology – with the aim of delivering better results for every customer. **smi**

Kistler
www.kistler.com

exhibitions calendar



Plast Eurasia Istanbul
23-26 November 2022
Istanbul, Turkey
<https://plasteurasia.com>

Plast Eurasia Istanbul with its steady increase in the number of exhibitors and visitors since the year it was organized it is waiting for you for the 31st time! The largest plastics industry fair held every year in Europe is organized by TUYAP in cooperation with PAGEV (Turkish Plastics Industry Foundation) in Tüyap Fair Convention and Congress Center, Istanbul.



Plastindia
1-5 February 2023
New Delhi, India
www.plastindia.org

Plastindia is an international plastics exhibition and conference where national and international exhibitors present their new products and technologies. It is an ideal meeting place for buyers and sellers, joint ventures etc. and also enhancement business prospects, strategic alliance and technology transfer.



PLASTEC WEST
7-9 February 2023
Anaheim, CA, USA
www.plastecwest.com

PLASTEC West is the largest annual plastics event in North America. It goes above and beyond plastics and polymers. Discover the latest biocompatible polymers and cutting-edge large-scale injection molding solutions, while uncovering technology solutions in medical design & manufacturing, 3D printing, and robotics.



Asiamold
1-3 March 2023
Guangzhou, China
www.asiamold-china.cn
cn.messefrankfurt.com

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



Chinaplas
17-20 April 2023
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.



Moulding Expo
13-16 June 2023
Stuttgart, Germany
www.messe-stuttgart.de/moulding-expo

In 2023, Moulding Expo will be the most important European event for tool, pattern and mould making: The top exhibitors of the branch present the best the European tool construction, pattern and mould making industry and suppliers' technologies has to offer – at first hand, with passion, soul and enthusiasm. Look forward to an industry get-together which provides new business opportunities to your company.



PLAST
5-8 September 2023
Milan, Italy
<https://www.plastonline.org/en/>

Plast is an international trade exhibition for the plastics and rubber industry, where interested visitors can get a complete overview of the latest developments in the industry from raw materials to finished products, from machinery to services. Plast will coincide with the exhibitions Ipack-Ima, Grafitalia and Converflex that are dedicated to packaging, graphics and converting.



FAKUMA
17-21 October 2023
Friedrichshafen, Germany
www.fakuma-messe.de

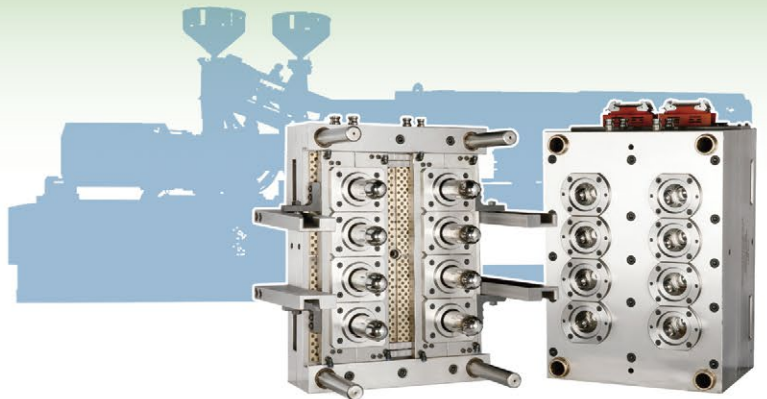
Fakuma is a prominent meeting place for the industry, with international charisma. It holds second place in the overall ranking of international trade fairs for plastics. Fakuma offers a top-class, comprehensive range covering all aspects of injection moulding technology as well as extrusion and thermoforming,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

PROMOTE YOUR SMART SOLUTIONS FOR PLASTICS MOLDERS WORLDWIDE!



• **Online**
7.600 subscribers

• **Focused**
on advanced molding technologies



• **Available free**
on mobile,
tablet and PC

• **Bonus distribution**
at major plastics events



To advertise contact marketing@smart-molding.com
www.smart-molding.com