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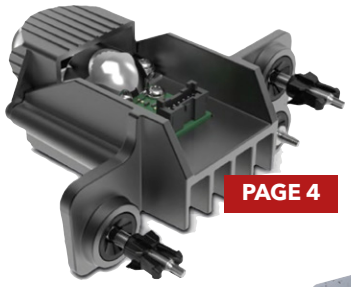
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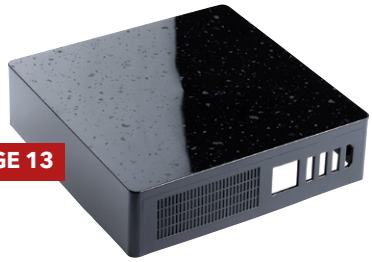
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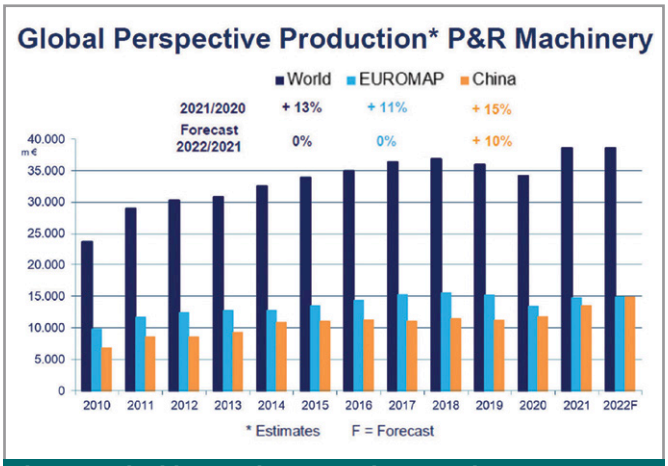
# Europe's machinery firms resilient in energy crisis, says Euromap

Euromap expects the production value for plastics and rubber machinery made in Europe to be about €15bn in 2022, similar to the 2021 level. Representatives of the pan-European machinery organisation, speaking at an online media briefing, stressed the industry's resilience in the face of energy and supply chain problems.

The demand for processing machinery and equipment is evident in all major sales markets and will continue to grow. Europe's share of world machinery production fell from 54.4% in 2001 to 40.0% in 2021, but global production value has more than doubled to €38.5m in that time, said Thorsten Kühmann, Secretary General. (2001 was chosen for a comparison as that was the year China acceded to the WTO.)

Luciano Anceschi, President of Euromap, said the order backlog for European machinery producers remains high. "The spirit [among customers] is still positive. Customers want to buy."




**Plastics and rubber machinery production values**
***Source: Euromap***

However, Europe faces uncertainty in the energy markets, particularly the gas market due to Russia cutting supplies as a result of the war in Ukraine. Anceschi said he hoped for a resolution in energy shortages and high prices because "our customers need a stable environment for evaluating new investments."

Kühmann was optimistic about energy developments in Europe, such as the construction of liquefied natural gas import facilities. The gas storage level in Europe is currently 90%, he noted, and the share of Russian gas in European supplies has fallen to just 8%. These factors gave him hope that Europe has a "fair chance" of getting through the winter months without power cuts, he said in the Q&A session. But energy prices will increase, he said.

Regarding problems in machinery companies' supply chains, Michael Baumeister, Vice President of Euromap, said major engineering companies are expecting the shortage of electronics components to start easing in mid-2023. But this is anecdotal and he noted that there is a large production backlog to work through.

Asked about a forecast for plastics and rubber machinery sales in 2023, Florian Mikulasch, Euromap's Director Markets, said uncertainties made it difficult to analyse the outlook. At this stage, there "might be little plus" in sales in 2023, but this is not adjusted for prices, and depends on the inflation level, he said.

› **www.euromap.org**

# Pexco acquires Performance Plastics

US-based Pexco has announced the acquisition of Ohio-based Performance Plastics, a precision injection moulder of high performance, tight tolerance components for applications in the aerospace, defence, and medical industries.

Pexco CEO Sam Patel said: "We are excited to welcome Performance Plastics to the Pexco family. Performance Plastics has an outstanding reputation in the market and is recognized as a leader in the production of thermoplastic parts that are geometrically complex and with tight tolerances. There are few manufacturers who can help customers meet these standards [and] Performance Plastics' high performance polymer knowledge and expertise are powerful differentiators."

Chris Lawson, COO of Performance Plastics, added: "We are thrilled to bring our expertise to the Pexco family. Our focus on engineering quality and strong work ethic are a great cultural fit, and we look forward to collaborating with the fluoropolymer and other high performance polymer experts under the Pexco umbrella."

Based in Atlanta and with multiple plants across the US, Pexco supplies customers in the fluid handling, lighting, traffic safety, fence, and electrical insulation sectors.

Performance Plastics has expertise in processing fluoropolymer, Torlon, PEEK and Ultem, and is also known for using its own proprietary manufacturing processes.

› **www.pexco.com**

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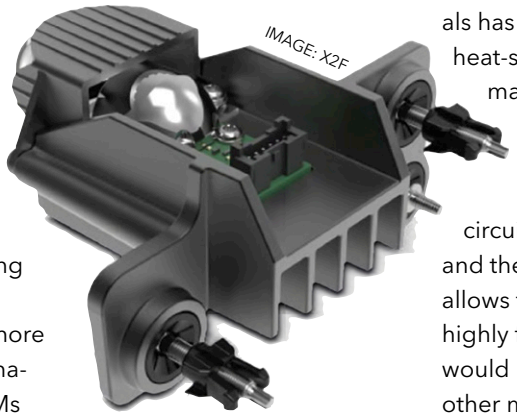
# X2F and Covestro join forces on heat-sink

X2F has teamed up with Covestro to develop a lightweight, thermally conductive automotive heat-sink with in-mould electronics using X2F's controlled viscosity moulding technology. This new product will provide a more affordable, lighter alternative for automotive OEMs and processors, said X2F, as the Makrolon PC heat-sink is approximately half as heavy as the typical aluminium equivalent.

It is part of an in-mould assembly that can be used to integrate LED modules directly into the headlamp housing, eliminating the weight and labour associated with the installation of brackets, screws, thermal pastes, and adhesives. The production-ready X2F technology has already been demonstrated in other applications.

Paul Platte, Senior Marketing Manager of Covestro, said: "This new program involves using controlled viscosity moulding to attach the LED module directly onto the thermally conductive heat-sink without changing the heat-sink adjuster module design. We are pleased with the outcome so far and look forward to how the automotive industry will adopt the technology."




**Above: The Makrolon PC heat-sink is moulded using X2F's in-mould electronics process**

X2F's ability to mould thermally conductive materials has applications beyond heat-sinks. Thermal management is critical for superior performance in batteries, motors, and printed circuit board applications, and the X2F approach allows the moulding of highly filled materials that would not be possible with other manufacturing approaches, according to the company.

Reza Garaee, Senior Project Manager for X2F, says: "This innovative technology enables the manufacture of previously impossible-to-mould thermoplastic parts that provide step-change improvements for our customers. In the case of heat-sinks, it dramatically streamlines production, reduces manufacturing times, eliminates fasteners and pastes, and increases product design flexibility."

› **www.x2f.com**
› **www.covestro.com**

## Quickparts acquires Xcentric

On-demand manufacturing service provider Quickparts has acquired Xcentric in the US, expanding its custom 3D printing and traditional manufacturing capabilities. Terms of the transaction were not disclosed.

Headquartered in Clinton Township, Michigan, and founded in 1996, Xcentric provides variety of quick-turn digital injection moulding and CNC solutions, from rapid prototyping to product creation at scale.

With nearly 100 full-time employees and boasting 18,300 $m^2$ of manufacturing space, Xcentric will expand Quickparts' capabilities and expertise to deliver injection moulding, CNC machining and other critical services. This acquisition complements Quickparts' current portfolio and will support the company's growth.

› **www.quickparts.com**

# Essentra increases recycled content

After successful phase one trials, Essentra Components has announced a number of products within its LDPE range are now manufactured almost entirely from recycled materials in what the company describes as a significant step forward in sustainability and carbon reduction.

The selected product range is made from 98% recycled plastic with the remaining 2% being made up of colourants and consists of tapered caps and plugs, corner protectors, tube end plugs and tube end caps.

The products are part of a two-phase project that aims to increase as many of Essentra Components' LDPE range from the current up to 50% composition to the new 98% composition. Phase two of the project is currently undergoing quality assurance testing and is expected to be released in the coming months.

The new range is already available and will be manufactured primarily in Essentra's factory in Oxford, UK.

Richard Sederman, Strategy and M&A Director at Essentra Components, said: "Using recycled LDPE is a vital step towards circularity, helping the whole industry reduce its carbon footprint, and develop the materials of the future."

Essentra Components has been going through a transformation in recent years, divesting its extrusion business and this year updating its injection moulding machines.

› **www.essentracomponents.com**

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# Plastics becomes sixth largest US manufacturing industry

The Plastics Industry Association has unveiled its 2022 Size and Impact report, the association's flagship annual analysis of the plastics industry's overall contribution to the US economy.

The data reveals that the industry now accounts for nearly a million jobs, a figure rising to 1.5m when suppliers to the plastics industry are included. Plastics manufacturing employment grew 3.2% from 2020 to 2021, more than twice the growth rate of manufacturing as a whole and US plastics shipments totalled $468bn for 2021. When suppliers are included, shipments totalled $600.4bn.

Matt Seaholm, President and CEO, said: "Today's report shows that the plastics industry, while previously eighth, is now the sixth largest manufacturing industry in the US. Plain and simple, these numbers show that the plastics industry is growing and will continue to do so as part of a circular economy."

He added: "The plastics industry continues to develop new technologies that improve the manufacturing process to include more recycled content, less material, and improved performance, greatly reducing waste."

› **www.plasticsindustry.org**

## IN BRIEF...

German injection moulding company **Dorn** has expanded its facility in Tetnang, increasing the production area from 500m² to 1,500m² and doubling its machine park spaces to 36. In addition to the significant increase in production area, the facility also features upgraded facilities and state-of-the-art equipment, including its own transformer for the power supply.
**www.dorn-spritzguss.de**

**BEC Group** has formed a new partnership with silicone solutions provider **Silclear**, which has been designing and manufacturing silicone parts for the dairy and medical industries for 30 years. Both are based in New Milton, Hampshire, UK. In contrast to BEC's plastic injection moulding techniques, Silclear uses compression moulding to manufacture the tubing, valves and fittings they produce.
**www.becgroup.com**
**https://silclear.com**

# Evco expands US facility

Custom plastics and contract manufacturer Evco Plastics has made two additions to its plant in Oshkosh, Wisconsin, US.

The west end addition will be a 32,600 m² facility, the company's 12th, while the other add-on will be connected to the existing structure, totalling 35,800 m² between the two. On completion, the Oshkosh campus will total 75,430 m².

IMAGE: EVCO

**Two additions have been made at Evco's facility in Oshkosh**

The west-end building, which will be known as OSH2, will be primarily allocated to contract manufacturing lines and warehousing storage. It will also feature individual automation and tooling areas, as well as an enclosed room dedicated to part grinding.

To support increased production at the extended facility, new equipment will be added including a 4,000-tonne press, a 36-tonne crane, a 3,000-lb dryer and a 72-zone heat controller. With the inclusion of the new machinery, Evco Oshkosh will have a total of 25 moulding machines and four cranes.

The additions will be fully operational by November 2023.

› **www.evcoplastics.com**

# Salona Global buys DaMar

Salona Global has successfully closed the acquisition of DaMar it initially announced in June. The addition is projected to add $6.6m of annual revenue, with a gross profit margin of approximately 45%.

With over 50 years in business, DaMar currently serves the medical and consumer industries with precision plastics mouldings. The acquisition adds these capabilities to Salona Global and builds upon its strategy of creating a fully integrated global medical device company. More purchases are planned.

› **www.salonaglobal.com**


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## Currier Plastics expands

Currier Plastics, a US-based provider of custom injection and blow moulded parts has purchased a new 23,000 m² facility in Aurelius, NY.

The new facility will triple the ISO Class 8 cleanroom space to accommodate growing demand for plastic consumables driven primarily by changes in the IVD, POC, and Life Science markets. Upgrading of the company's Quality and R&D is also planned.

VP of Business Development, Ron Ringleben, said: "Currier has become a leading provider for complex, precise consumables in several healthcare markets. This expansion will give us the place to grow more incredibly strong valuable partnerships."

Sales & Marketing Manager Rob Knapp added: "While the focus of the new facility is driven by the demand in the healthcare space, [it] will allow us to continue to support our key customers in other spaces like general packaging and amenities."

› **www.currierplastics.com**

# Arburg France opens new technology centre

Arburg France has officially opened a new technology centre at the industrial park in Tremblay-en-France.

With a total 1,500 m² of floor space the facility is around 40% larger than the previous location in Aulnay-sous-Bois and features a showroom of over 400 m² with space for up to four Allrounder injection moulding machines, depending on machine size, and Freeformers. The site also includes two training rooms measuring over 100 m².

Representatives from Arburg's HQ including Managing Partner Renate Keinath and Managing Director Sales and Service Gerhard Böhm were present to celebrate the opening alongside distinguished guests and customers.


IMAGE: ARBURG

**Above: Ribbon-cutting at the tech centre in Tremblay-en-France**

Keinath said: "We can show a representative cross-section of the Arburg portfolio. The machines are available for tests with customer moulds, as well as for training purposes. The entire infrastructure of the ATC is state of the art and ensures that customers and employees alike will feel completely at ease in the new premises. This is a significant milestone for us and for our presence in France."

A subsequent open house event included a guided tour for visitors and live demonstrations of the machines. Afterwards, experts gave presentations to visitors.

› **www.arburg.com**

# Ice Flex is now Wittmann Digital

The Wittmann Group has upped its original stake in Ice Flex and changed the name of the Italian supplier to Wittmann Digital.

Wittmann first formed a joint venture with Ice Flex in 2018, a move that allowed Wittmann to include TEMI, the modular MES package developed by Ice Flex, in its customer offering for production planning, monitoring and data storage.

Michael Wittmann, CEO of the Wittmann Group, said: "By increasing its stake in the software company and changing its name, Wittmann is sending a clear internal and external signal that the group is staying on the course taken in 2018 and continuing to drive the advancement of its digital activities."

› **www.wittmann-group.com**

# Europlaz installs cleanroom IntElect machine

Medical device manufacturer Europlaz Technologies has installed a small footprint 130-tonne IntElect injection moulding machine from Sumitomo (SHI) Demag in one of its production cleanrooms.

The IntElect machine's large platen area offers Europlaz greater production flexibility with the ability to accommodate various mould tool configurations. Notable features of the new all-electric machine include ActiveFlowBalance, which helps stabilise and evenly distribute the pressure of the expanding melt within multi-cavity mould tools, and the ActiveLock feature that digitally controls the closing position on the non-return valve.

› **www.europlaz.co.uk**

› **www.sumitomo-shi-demag.eu**

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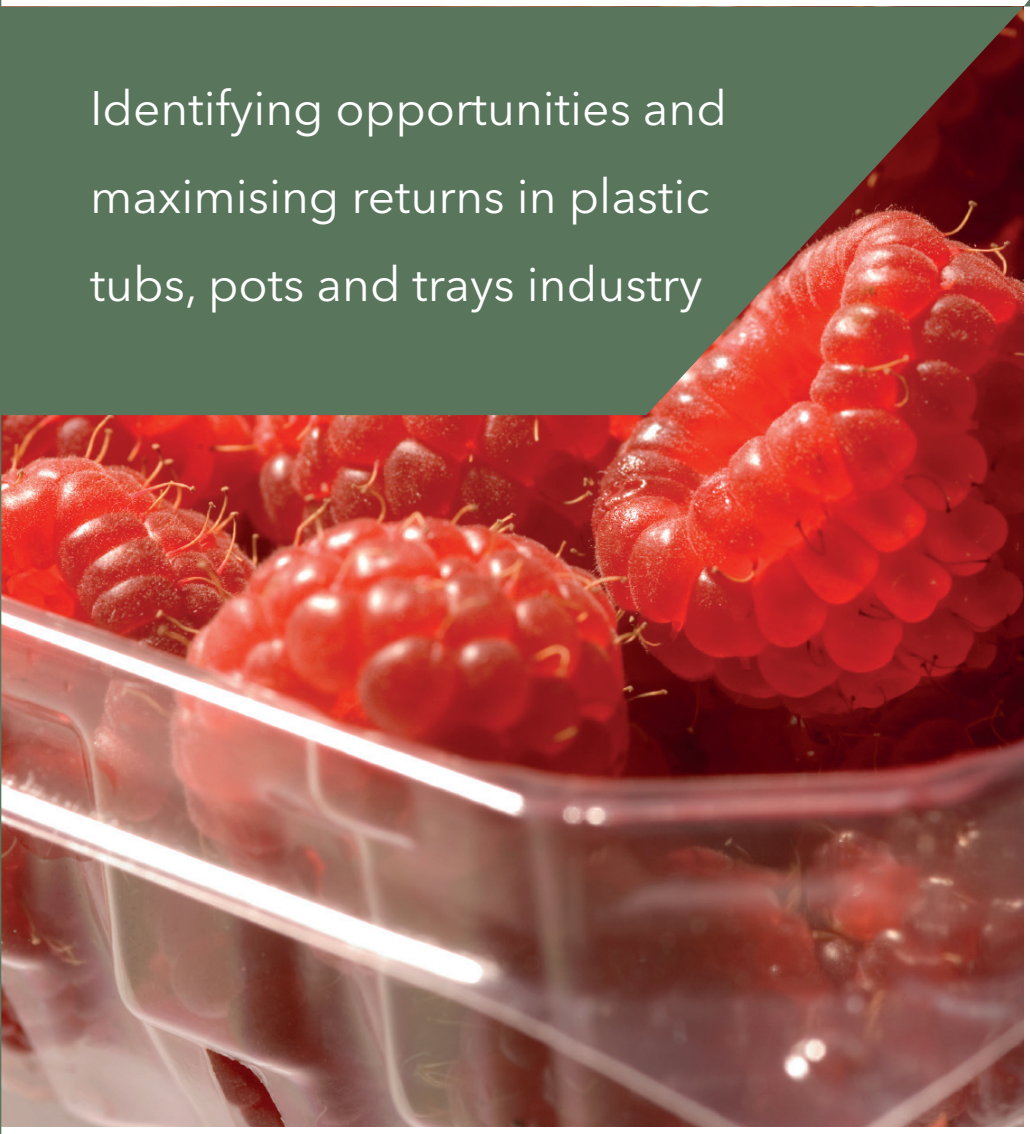

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IMAGE: SHUTTERSTOCK

***Leading in-mould technology companies are pushing the boundaries of what's achievable in functional and decorative surfaces. By Peter Mapleston***

# Developers light up smart surfaces

The growth in the use of decorative and functional films that form integral parts of all sorts of injection moulded products, from dairy tubs to car rear-ends, will be obvious to all who visit the processing machinery and materials halls at K2022 this month. Several production cells are running demonstrations, and samples of finished parts as well as the films themselves will be highly visible. Here are some of the most significant developments.

The **Arburg** stand at K shows is unmistakable. Not only because of the distinctive green of the machines, but also because of the long queues that wrap around them, full of visitors patiently waiting, sometimes for over an hour, for freebies. This year will be no different: one application highlight is the production of the base and lid of a toolbox with film decoration from **Leonhard Kurz**. The toolbox is assembled next to the machine – and then handed out to the queuing visitors. The turnkey system is centred on a hybrid Allrounder 1120 H with 6,500 kN clamp force and size 7000 injection unit.

Over-moulded 3D design films on the corners of the toolbox provide styling and high-grade aesthetics. A SCARA robot processes the film inserts, while further handling is taken on by a linear robotic system, the Multilift V 40. The films are first integrated into the part using the established in-mould decoration process (Arburg calls it in-mould lamination) and afterwards they are embossed with Arburg lettering in a hot stamping station.

On its own stand at K2022, Leonhard Kurz will be presenting innovative and sustainable solutions in numerous application areas. These include automotive, home appliances, consumer electronics, and health & beauty.

In the automotive exterior segment, it has what it calls pioneering surface solutions strongly geared towards defining trends such as e-mobility and autonomous driving. Biggest highlight is the live production of a rear-end cover, 852 mm across on an Engel machine. The cover is not only in-mould decorated but also two-component moulded. "2K


IMAGE: ARBURG/LEONHARD KURZ

**Right: Over-moulded 3D films and hot-stamped Arburg lettering improve aesthetics on this toolbox**

material mixes and high-end spin-stack technology enable targeted light barriers and structures for 3D lighting effects," says the company. The part is fully recyclable.

New machine and process technology was developed together with the Kurz subsidiary Schöfer and enables the use of two-component moulding together with IMD technology. Two different plastics are used here: ABS/PC blends and PMMA. "This special blend of materials, allows us, for example, to provide backlighting with targeted light separation – without any undesirable light diffusion. This is the series-ready answer to the market requirements in terms of multi-component technology," says Martin Hahn, Head of Application, Technology & Innovation in the company's Business Area Plastic Decoration. All the components can later be mechanically recycled together.

The connected surface incorporates large, seamless decoration, backlighting, and 3D lighting effects. "This means that the rear-end cover also facilitates communication with other road users," says Hahn. "Further highlights are only revealed at second glance. The possible integration of touch operation offers, for example, activation of a Shy Tech charge level indicator for e-cars. The component is also permeable to radar waves and supports the latest driver assistance systems – right through to autonomous driving." (Shy Tech functionality enables integrated icons to become visible and reveal stored functions on a surface when the user's hand approaches.)

Kurz is also presenting a development that enables new metallization designs with different colour variations, colour gradients, and 3D geometries. The process is based on the reaction of two different metals with each other. The new solution can be backlit and enhanced with haptic and matte gloss effects. Kurz Biofense technology can also be used to provide the surfaces with long-term hygiene protection.

Washing machine panels on display show the wide range of customisation and backlighting options that can be implemented using IMD technology and In-Mould Electronics (IME). While the black top layer creates a Shy Tech effect with a dark surface when switched off, the integrated functions are revealed at a second glance.

This is made possible by touch sensors from Kurz company PolyIC, which are used both as touch screen sensors in front of display elements and as individually writable touch key sensors. In the latter, a diffuser layer can also be cost-effectively integrated directly into the sensor structure. This eliminates the need for light-diffusing inserts. The sensors can be equipped with light-blocking and laserable decorations.

With Recosys, Kurz offers a PET take-back system in which the transfer carrier residues are recycled into a high-quality compound granulate, called Recopound. This can then be used to manufacture robust plastic components through injection moulding.

Leonhard Kurz has teamed up with numerous partners in developments that are on view all around the show. For example, together with injection machine maker **Wittmann Battenfeld**, it is presenting an overhead light console for integration into car roof linings. IME enables it to be used to control various functions such as the ambient light, reading light, and sliding roof.

"Injection moulding and integration of PolyTC sensors as well as decorations are combined in a single, highly efficient work step to form a 3D-deformed component using IME," says Kurz's Hahn. "This creates a seamless organic surface in an appealing Shy Tech design with maximum creative freedom." Other participating partners include component processor Syntech Plastics and automotive Tier One Plastic Omnium, which completed its acquisition of AMLS (Automotive Lighting Systems) from AMS Osram in July.

"The interior of vehicles is increasingly becoming a second living space. As a result, ambience,

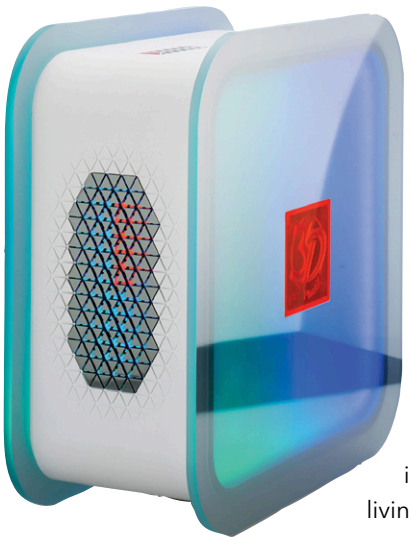

IMAGE: LEONHARD KURZ

**Right: This casing for a gaming computer is decorated using films from Leonhard Kurz**

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IMAGE: LEONHARD KURZ

**Above: Overhead lighting console incorporates numerous decorative and functional features**

design, and the feel-good factor are becoming more and more important," says Hahn. "Any surface can now be functionally equipped. Intelligent control and attractive design are perfectly implemented in the roof-lining concept."

In addition to seven capacitive touch buttons, the concept component, based on a single sensor label, also offers a touch slider for controlling the ambient light as well as highly transparent buttons for operating the matrix LED reading light. With Shy Tech, the console only reveals its functionalities when, for example, a call is received on a phone connected to the car. Almost all features can be customised.

Hahn says: "From backlighting and depth effects to different colour variants and decors to customer-specific durability requirements, all conceivable variants can be realised. In addition to the black high-gloss look, surfaces can also be given super matte or even soft-touch effects. And thanks to the integrated gobo ["goes before optics"] light projection, it is also possible to display logo or branding elements inside the vehicle."

Kurz has also collaborated with polycarbonate producer **Covestro** and **Sumitomo (SHI) Demag** to present a new concept for a wallbox for charging electric vehicles. According to Covestro, it "combines great freedom of design and high functionality with more sustainable manufacturing in terms of both materials and processes."

A polycarbonate compound from Covestro's new Makrolon RE product range and PC films from its Makrofol range are used in the manufacture of the demonstrator. Both are said to have very low carbon footprints, making use of raw materials derived from biowaste and residues.

**Right: The OSIRE E5515 RGB side-looker LED, is a demonstrator produced by AMS Osram which incorporates TactoTek's IMSE technology**

The demonstrator is manufactured using a combined Film Insert Moulding (FIM) and IMD process, for which Sumitomo (SHI) Demag has developed a customised plant technology. The wallbox has an integrated display with touch functions. Capacitive and backlightable touch sensors from PolyIC can be easily integrated behind the wallbox surface. They make it possible for the charging of the car battery to be controlled steplessly by touching the control panel with a finger.

In addition, says Covestro, the PC materials are well suited for the Print Mould Design technology, which Kurz subsidiary Burg Design has optimised for the application of logos and other features.

Sumitomo (SHI) Demag is producing the demonstrator on its stand at the show. Visitors can also use an augmented reality app to design the demonstrator themselves and thus get a closer look at the technologies. Covestro will also exhibit the demonstrator and AR app on its stand.

Kurz is not alone in developing film-based smart surfaces. Earlier in the year at consumer electronics show CES 2022 in Las Vegas, Covestro showed off what it had done with **TactoTek**, which claims to make the world's most advanced smart surfaces, and has created demonstrators highlighting functional electronics that can simultaneously control surface, computer and display.

The final design featured a Raspberry Pi computer, OLED display, all necessary circuitry and electronic components, as well as inks for colouring and decoration in a Makrolon compound, sandwiched between two layers of Makrofol film. Covestro called the result "a powerful new frontier in consumer electronics with a mono-material design in which the plastic can be recovered at will and turned into new raw materials."

"Light is the new chrome, it can be used to please, inform and interact with the consumer," says Paavo Niskala, SVP IMSE Technology at Tactotek. "Today brands in automotive segments want to use light to communicate with the user and utilise interior surfaces intelligently while embedding technology in a non-obtrusive manner. Trends like light animation, shytech, and thin-light units drive this market."

He says: "Tactotek's Injection Molded Structural Electronics (IMSE) enables the integration of light and plastics in an intelligent manner. Further, our latest innovations make the integration of digital drivers and controllers within plastics, creating digitalised smart plastics, that can be programmed to interact, inform and delight the user. In addition to ensuring differentiated designs, IMSE technology is a


IMAGE: TECTOTEK

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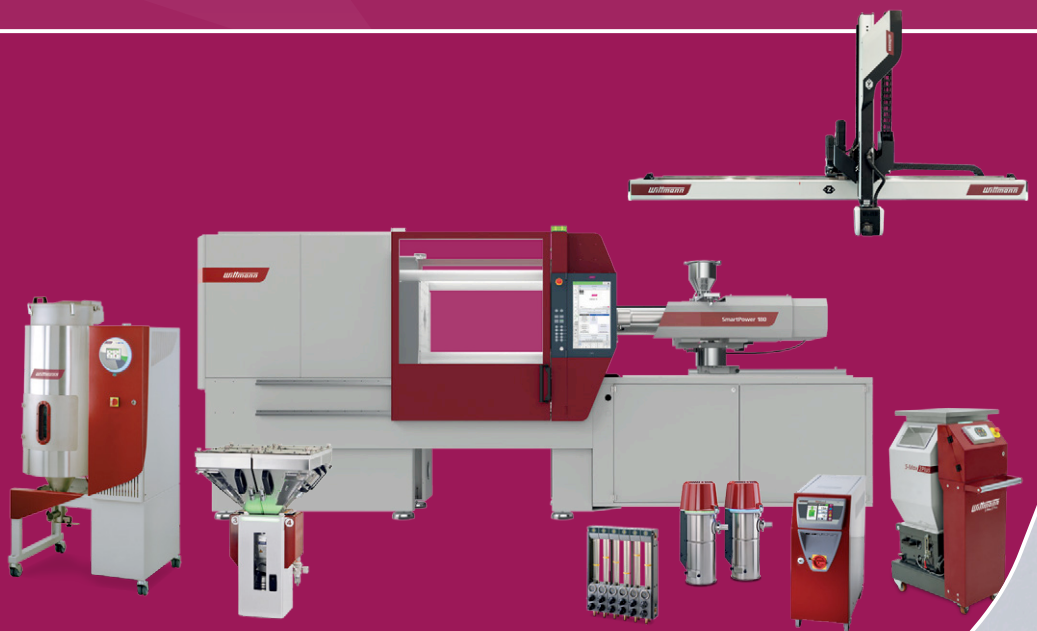

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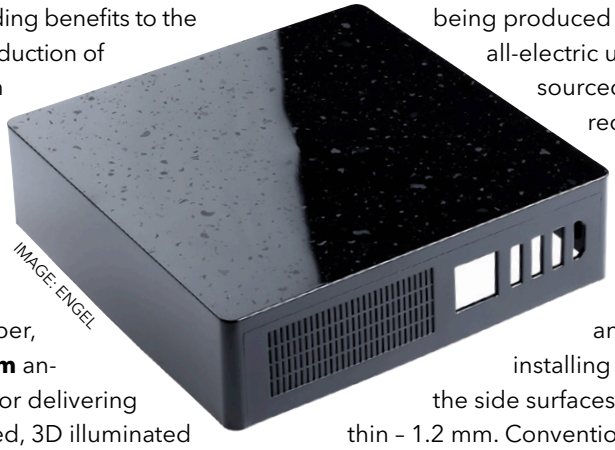


**Right: The rABS used to produce the electronic boxes is sourced from post-consumer recycled plastic**

sustainable choice, providing benefits to the entire process through reduction of assembly steps, reduction of number of structural parts, reduced supply chains, recovery of parts, rethinking of product variants, and recyclability of parts."

At the end of September, TactoTek and **AMS Osram** announced a cooperation for delivering thin, seamlessly integrated, 3D illuminated structures for car interiors. They have developed a demonstrator, the OSIRE E5515 RGB side-looker LED, which incorporates TactoTek's IMSE technology and which is designed for in-mould processes.

"Driven with modern controllers, illuminating the surface from within, the LED sets the mood, informs, guides, and adapts to the designer or user's needs," says TactoTek. "The broadest colour gamut on the market means design freedom without compromising colour quality and performance."

According to Gerald Broneske, VP Global Product Marketing Automotive at AMS Osram, the package design of the unit is optimised for the low height required for in-mould applications.

TactoTek's Paavo Niskala says: "We trust that user interface functions and light will become an integral part of natural and plastic automotive surfaces without sacrificing sustainability. Incorporating OSIRE E5515 from AMS Osram into our IMSE technology enables designing very low height applications with reduced weight, specifically of interest to the automotive industry."

## Eco-moulding with style

Films are of course not the only way to obtain special surfaces. An example of what is possible with enhanced mould temperature control, for example, even when processing recycled material, can be seen on the **Engel** stand at K2022. In collaboration with partner companies, Engel is demonstrating production of high-end visible components made with rABS. Integrating **Roctool** induction technology and digital solutions, high-quality housing parts with state-of-the-art surfaces are being produced from post-consumer recycled plastics, it says.

"To achieve premium surfaces directly from the mould surface using injection moulding without secondary operations, a high proportion of virgin material is usually required, if recycled material can be added at all," the company notes; but it is out to prove that there is now an alternative.

On the Engel stand, electronic boxes in black being produced on an E-mac 465/160 all-electric unit are made from rABS sourced from post-consumer recycled plastics. The surface is high-gloss. The cavity is laser engraved to create innovative patterns on the top side of the box, and there are fixtures for installing fans and connectors on the side surfaces. The part is also ultra-thin – 1.2 mm. Conventional moulding would require thicker wall sections. The latest energy-efficient, compact air-cooled Roctool generators are being used at the K show.

**KraussMaffei** is showing how its ColorForm solutions enhance the automotive interior and how functions are integrated into premium quality design elements. ColorForm combines injection moulding with reaction injection moulding to give a high gloss, high performance surface. After injection moulding of the thermoplastic substrate, the body is flow-coated with polyurethane (PUR) or polyurea (PUA).

"ColorForm technology holds great potential for a lower $CO_2$ footprint in the production of components with a finished multifunctional surface," says Michael Fuchs, Global Application Owner Surface & Lightweight.

One ColorForm user is **Techniplas**, which produces sophisticated plastic components for the automotive and plumbing industries in Treuen, Germany (Techniplas subsidiary Nanogate in Fohnsdorf, Germany is also a licensee of TactoTek's IMSE manufacturing technology). It recently acquired two KraussMaffei MXW 1000 ColorForm systems for the series production of components with a transparent surface.

The RimStar Flex ColorForm reaction process machine, which was designed specifically for this process, and the mixing head feed the surface material (PUR/PUA) directly into the cavity. "RimStar systems take up very little space and meter even small amounts precisely and at a high clock frequency," says Philipp Strasser, Global Application Owner RPM & Automotive at KraussMaffei.

"Our customers, large OEMs from the automotive industry, have stringent requirements regarding quality. There must not be any deviations greater than 0.2 mm on any part of the transparent component. Using the MXW 1000 in combination with the RimStar Flex for PUR metering, we fully meet these requirements," says Techniplas Process Developer Toni Luckner.

At Techniplas, the technology is called Color-


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IMAGE: KRAUSSMAFFEI

**Above: At Techniplas, the MXW 1000 ColorForm from KraussMaffei produces premium-quality automotive components in cleanroom conditions**

Fuse. The company has several ColorForm systems in Treuen and in Rüti, Switzerland. "We run this production process under cleanroom conditions. Not a grain of dust can sneak in between the coating and the substrate surface while the mould is open," says Luckner. "In this way, we achieve very low scrap rates."

Initially, ColorForm was developed for greater production efficiency and specific effects for vehicle interior components. KraussMaffei says that now though, aspects such as workplace safety and the $CO_2$ footprint of the technology compared to other production methods are becoming more and more important. It says the ColorForm process scores points here in multiple areas. "Moreover, ColorForm components are increasingly used even in the exterior area because here as well, a classy appearance is a selling point for end customers."

ColorForm technology eliminates the need to transport and paint components, and produces components that are ready for installation as soon as they are discharged from the highly automated production cell.

## Packaging IML

While IMD and functionalisation of technical parts may steal the limelight at K 2022, versions for thin-wall packaging are also advancing. **Muller Technology**, which specialises in moulds and automation solutions for thin-wall packaging, is unveiling its latest in-mould labelling (IML) automation technology for injection moulded packaging at the show. The turnkey, fully optimised system is running on a 7,000 kN injection moulding machine on the BMB stand.

The production cell is producing an all-PP round container in an eight-cavity mould with vision inspection and downstream automation. Labels are from **MCC Verstraete**. The high-volume manufacturing cell can produce over 40m containers per year for food, dairy, and other consumer packaging. One system has already been sold to a leading European packaging manufacturer.

At MCC Verstraete, Sales & Marketing Director Frederik De Clercq points to a rise in the application of barrier IML. "It is the most efficient and sustainable technique to produce plastic packaging with a barrier function, and this doesn't go unnoticed," he says. "Take into account the one-step production process, the optimised supply chain, and the minimal investment to transform existing IML packaging into an active Barrier IML packaging." MCC Verstraete offers IML labels with barrier to oxygen (films incorporate a layer of EVOH) and also to sunlight and/or UV radiation.

"The fastest growing market for in mould labels with barrier function is North America where we see a lot of new packaging projects that adopt it to decorate tubs and containers for products such as soups, sauces, salsa, and the like," says De Clercq. "In Europe we also notice a growing trend in barrier labels for products that are sensitive to light, for example fresh cheese. Existing markets like guacamole are also still popular."

African packaging producers and brand owners are also coming round to barrier IML. MCC Verstraete was involved in an award-winning beetroot packaging project in collaboration with Polyoak Packaging in South Africa, for example. "This tub extends the shelf life of perishable goods by preventing oxygen ingress for up to 18 months. It gives the customer the perfect match between technical function and visual appeal," says Lorena Kleintjes, purchasing specialist at Polyoak Packaging.


IMAGE: POLYOAK

**Right: MCC Verstraete was involved in an award-winning beetroot packaging project in collaboration with Polyoak Packaging in South Africa**

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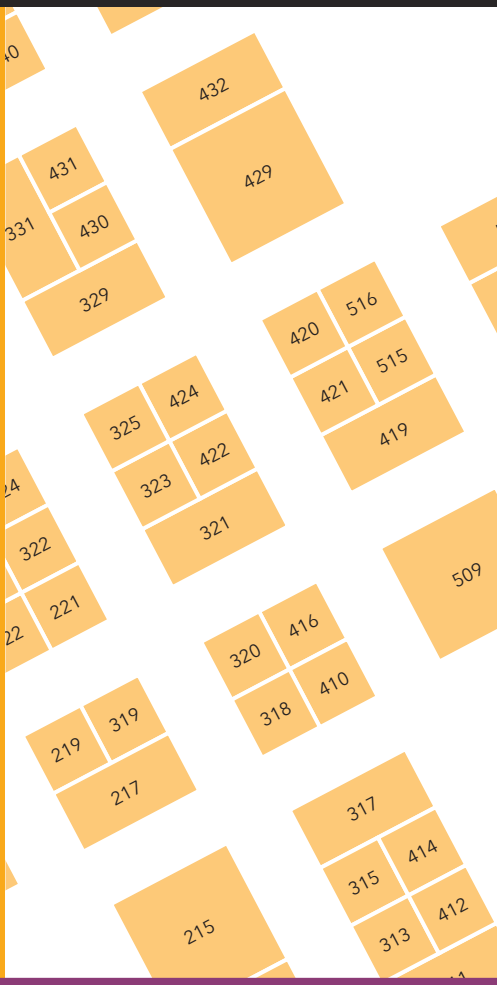


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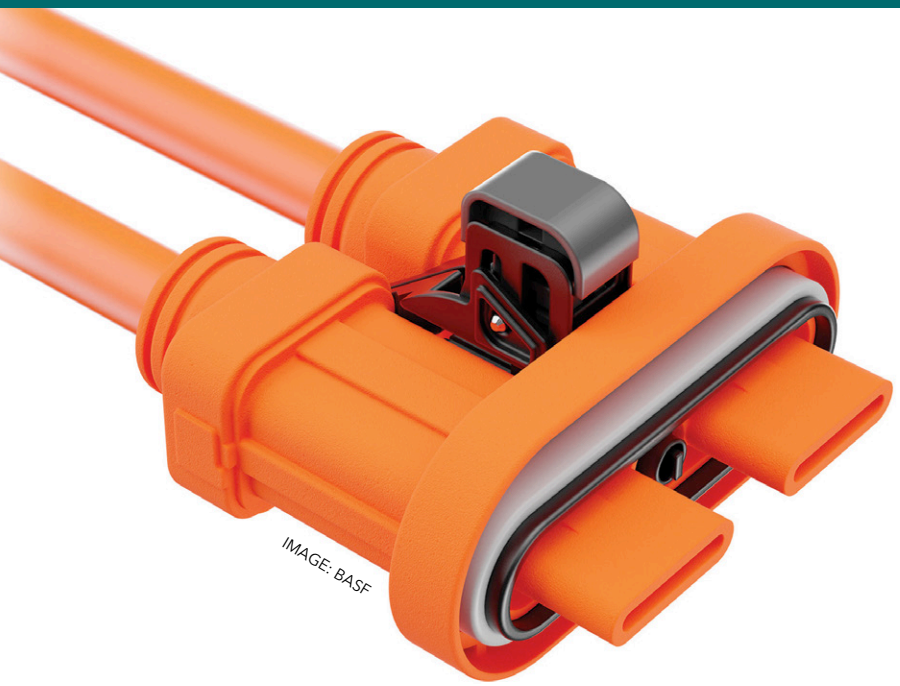



***Materials producers have been launching E&E grades based on bio-sourced feedstock at the same time as innovating to deal with new challenges in e-mobility applications. By David Eldridge***

# E-mobility leads the way in E&E materials

Engineering thermoplastics producers have targeted electrical and electronic (E&E) applications in much of their development work over the years. For components in uses as varied as hand-held devices, white goods and automotive electronics, solutions have been developed for performance and safety challenges such as insulation and fire retardancy. Recently, development activity has turned to the needs of E&E components in electric vehicles (EV), particularly parts in and near the drive battery, where thermoplastics need to deal with increasingly higher voltages.

New materials for EV and other E&E markets that will be shown at the K2022 show were revealed at a preview in June by executives at a number of plastics producers, who highlighted the trends behind their development work. **DSM Engineering Materials** is well established in supplying automotive and consumer goods markets with high-performance engineering plastics, such as its Stanyl family of polyamide products. Now it is bringing sustainability into its product development at the same time as responding to new pressures from customers in its core markets (and also while DSM divests the business unit to a joint venture between Lanxess and private equity firm Advent International). DSM Engineering Materials sees itself as one of the plastics industry leaders in sustainability, said Caroline Mitterlehner, VP Specialty Business Lines, at the preview event in Rotterdam. She also highlighted the breadth of the company's portfolio for customers in automotive and consumer electronics to deal with evolving E&E trends.

One of those trends is the convergence of the automotive and electronics industries. "Cars of the future will be treated as appliance products," said Tamim Sadiki, Global Marketing Director Mobility, at the event. "Safety is super critical." The number of electronic components in cars is growing, demanding higher performance in plastics in electrical and heat insulation. With the advent of EVs and high voltage lithium ion batteries there also comes tougher demands in fire retardancy, due to the potential for thermal runaway in the event of a battery fire.

At the event in June, DSM Engineering Materials announced the launch of a sustainable version of its flagship product Stanyl. The new Stanyl B-MB (Bio-based Mass Balanced) materials are produced from up to 100% bio-based feedstock, with the exact percentage included in a grade determined by the mass balance approach. DSM claims Stanyl is the most widely used high-temperature PA, so it sees a large potential for Stanyl B-MB to help its customers meet sustainability goals as the material generates a carbon footprint up to 50% lower than the fossil-based original. DSM Engineering Materials has committed to providing bio- and/or

**Main image: Orange is the new black: EV high voltage connectors are coloured orange for safety reasons**

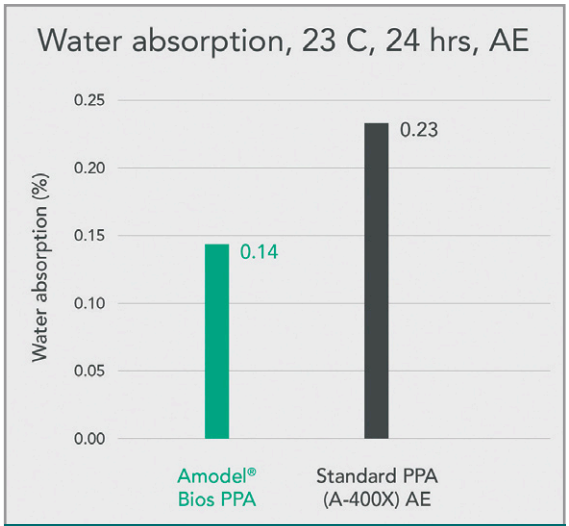
recycled-based alternatives for its entire portfolio by 2030.

Also delving into bio-based feedstock is **Solvay**, which has developed Amodel Bios, a new family of partially bio-based long-chain polyphthalamide (PPA) products targeted at demanding E&E applications in e-mobility. Nicolas Batailley, who is e-mobility Marketing Manager at Solvay, said at the pre-K event in June that, at launch, the materials will have 22% bio-based plastic using castor oil as it source, and this proportion is expected to rise to 75% in 2025. Amodel Bios is produced with 100% renewable electricity, which Solvay says minimises its global warming potential well below the level of other bio-based PPA materials.

There are other comparisons that Solvay makes between Amodel Bios and other bio-based PPAs. "Most notably, it offers the highest glass transition temperature (Tg 135°C) of all bio-based PPA in the market and a melting point (Tm) of 315°C," says the company. It is intended for components in e-motors, power electronics and other high-end electrical systems.

Amodel Bios also has limited moisture absorption versus standard PPA which results in a high level of dimensional stability at a low risk of stress corrosion, which is particularly important with regard to miniaturised electrical connectors. Solvay says Amodel Bios PPA also provides superior impact strength even in halogen-free flame-retarded grades complying with UL94 V0, and is well-suited for applications requiring colouration. Further notable properties include high elongation, weld-line strength and good surface aesthetics.

Solvay has also launched mass balance recycled versions of Amodel PPA and Ryton PPS, which are ISCC Plus-certified. Omnix HPPA ReCycle contains 70% mechanically recycled material obtained from used fishing nets. The company is developing ReCycle materials with upwards of 25% content from post-consumer and post-industrial sources for use in demanding e-mobility applications. The reason it has launched grades from both mechanically recycled and chemically recycled plastics is because "no one size fits all", said Batailley. The performance needs of each application influence the selection of the right type of sustainable material.




**Solvay's Amodel Bios has lower moisture absorption than standard PPA**
***Source: Solvay***

In e-mobility, one of the major safety concerns is the possibility of electric shocks to technicians. The RAL 2003 shade of orange is mandatory as a safety feature for high-voltage components and is increasingly being used to mark live cables in electric and hybrid vehicles as well as components for high-voltage applications. This orange coloration is being made available by various masterbatch suppliers and also by Lanxess in the form of a soluble organic dye. Lanxess says its halogen-free Macrolex Orange HT is suited for use in PA materials and also for other common plastic types such as PC and PPS (*Injection World* July-August 2022).

**BASF** has developed a new colour-stable Ultramid PA grade for e-mobility, Ultramid A3U44G6 DC OR, a PA66 with 30% glass reinforcement. The new grade meets all the criteria of colour stability (confirmed in tests after 1,000 h at up to 130°C) and heat ageing resistance. Tina Weller, in BASF Product Development, said: "High-voltage components are usually exposed to significant temperature fluctuations. This repeatedly leads to strong discoloration in conventional polyamides. Our newly developed type Ultramid A3U44G6 DC OR closes the innovation gap in terms of colour stability and mechanical strength."

The new Ultramid grade, with Comparative Tracking Index (CTI) 600, provides high electrical insulation. In fire retardance, the grade has very low total halide content (less than 50 ppm), and it

**Below: DSM Engineering Materials has launched Stanyl B-MB (Bio-based Mass Balanced) materials which are produced from up to 100% bio-based feedstock**

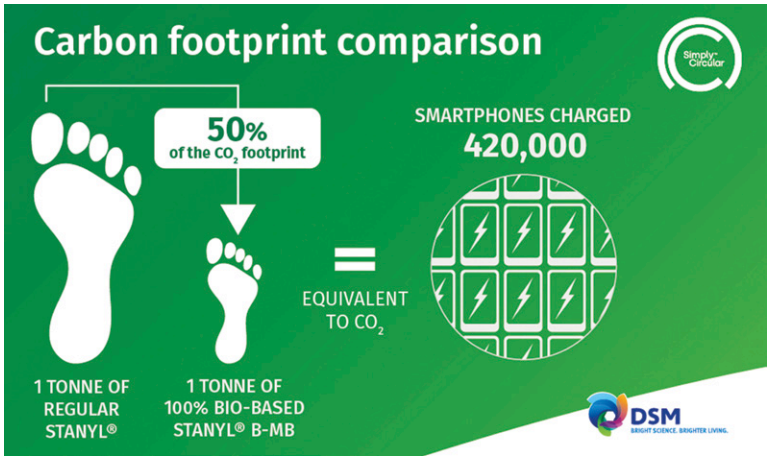



IMAGE: DSM

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achieves fire protection class UL94 V0 at 0.4mm. It features a special organic heat stabilisation package to meet the technical market requirements.

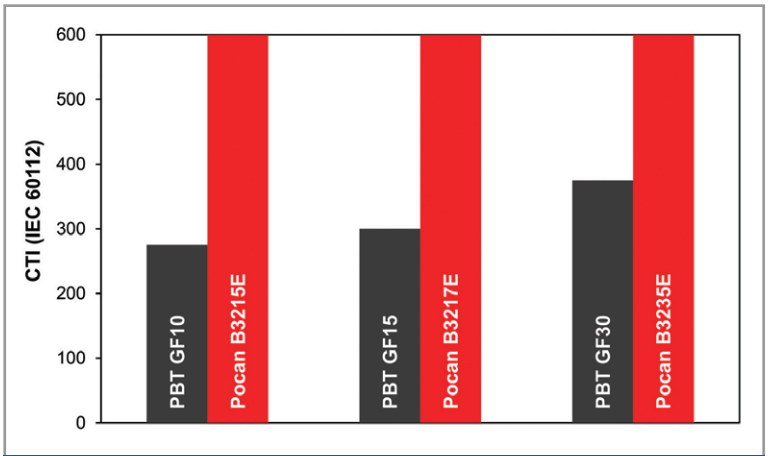
**Ascend Performance Materials** has developed a colour-stable orange grade of its Starflam 525K flame-retardant PA 66. It says the material is laser-markable, withstands long-term heat aging over 5,000 hours and retains its electrical properties. It has a UL 94 flammability rating of V-0 at 0.2 mm. The new colour-stable grade is designed for use in high-voltage connectors and busbars.

At the K2022 preview event in June, Ian van Duijvenboode, Senior Director for E-mobility at Ascend, said there are three priority areas in developing materials for EVs: a safe power infrastructure including exposure to high voltages; reliable thermal management; and a secure and comfortable ride. Any noises inside in the cabin are more apparent to occupants due to the quieter drive compared with internal combustion engine (ICE) cars, he said. NVH (noise, vibration and harshness) is a priority development area as EVs emit noises with much higher frequencies of up to 4,000-5,000 Hz, compared with levels around 400 Hz in ICE cars. Vibration mounts are usually made of aluminium, adding weight to the vehicle.


IMAGE: ASCEND

Ascend is addressing the NVH problem with Vydyne AVS PA 66, its new anti-vibration material for dampening the high-frequency vibrations from EV motors and compressors. Van Duijvenboode said Vydyne AVS is a modified PA 66 designed by Ascend specifically to work better than traditional PA 66, which is less effective at dampening the high frequency noises inside EV cabins. Using Vydyne AVS to reduce vibration at the mounting location lowers cabin sound on average by 7 dB. That translates into a 75-84% improvement in cabin noise when comparing cabin sound pressure with traditional PA 66 dampening parts. There is a 30-40% weight reduction when compared to die cast aluminium dampeners.

**Left: Ascend's Vydyne AVS PA 66 is an anti-vibration material for dampening the high-frequency vibrations from EV motors and compressors**




**Lanxess has developed new Pocan PBT compounds for improved tracking resistance and insulation**
***Source: Lanxess***

"Ultimately, the success of EVs relies on overcoming the barriers of adoption," said van Duijvenboode. "We are focused on improving the passenger experience while simultaneously creating solutions that reduce complexity and weight."

Materials producers' development work continues, of course, in all automotive materials, not just those intended to answer EV-specific problems. BASF has developed a new grade of its Ultradur family of PBT materials, Ultradur B4335G3 HR HSP, which protects sensitive electronics in automotive applications. The company provides the example of sensors that are exposed to tough driving conditions.

BASF says: "In automotive electrics, many small components are of great importance. Delicate wheel speed sensors, for example, play a crucial role in the safe functioning of a vehicle. They detect the wheels' number of revolutions and pass on the information to the ABS and ESP. This is critical in driving situations such as an emergency break as it enables the systems to take preemptive actions to maintain vehicle stability and steering ability. Because they are positioned next to the wheels, the sensors are exposed to extreme climatic conditions and media such as splash water and salt."

Ultradur B4335G3 HR HSP is a compound that contains effective additives that greatly delay hydrolytic degradation. This makes the material resistant to damage by water at elevated temperatures. Ultradur's standard low moisture absorption of 0.2% is retained, which helps towards electrical insulation and good dimensional stability. The compound is also resistant to stress cracking caused by alkaline media. The HSP designation in the compound's name means it is a "high-speed product", reducing the melt viscosity and enabling the moulding of thin-walled components.

In April, BASF announced it was expanding its Ultramid PPA materials with new flame retardant products. These combine high thermal stability with high electrical insulation and low water uptake. It says they are characterised by high electrical RTI (relative thermal index) values above 140°C while being halogen-free according to EN 50642. The addition of the new flame retardant grades has helped towards BASF's intention to offer a tailored E&E materials portfolio with a wide range of possibilities for automotive applications and also non-automotive areas.

"With our new optimised grades we have developed our broad PPA FR portfolio into a one-stop-shop for all kinds of our customers' needs when it comes to E&E materials," says Abdullah Shaikh, who heads BASF's global PPA team.

In September, **Lanxess** announced new Pocan PBT compounds for use in E&E assemblies. The Pocan E range comprises short-glass-fibre-reinforced grades that are especially suited to applications in e-mobility and the wider E&E industry due to good tracking resistance and insulation properties. The company says the new compounds score the best possible rating of 600 in the CTI A test (in accordance with IEC 60112) and therefore meet the requirements of the highest insulation class in the IEC 60664-1 standard.

With the aid of design guidelines in accordance with IEC 60664, it is possible to "translate" the CTI test result accordingly and optimise the component design for higher voltages. Claudia Schmid-Daehling, who shares the responsibility for PBT product development at Lanxess, says: "This means that our new Pocan E product range can also be used with the significantly higher rated voltages that are required for rapid charging of electric vehicles, for example."

She says: "Previously, glass-fibre-reinforced PBT compounds with such high tracking resistance were not readily available on the market. We have now closed that gap. We have also succeeded in providing the materials with further advantages such as optimised mechanical properties as well as excellent flowability, hydrolysis resistance, and flame-retardant properties. In addition, they are highly suitable for colouring – orange, for example, [in high-voltage applications]."

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# Injection moulders' guide to K2022

## Part 2: Machinery and equipment

The world-leading K Show opens its doors to the plastics industry once again on 19 October in Dusseldorf, Germany. Shortly after K2019, the world was hit by the Covid 19 pandemic, damaging health and economies to an extent that repercussions continue to be felt. K2022 takes place against a backdrop of further economic challenges brought about by supply chain problems, inflation and geopolitical issues including the Russia-Ukraine war. Nonetheless there is a resilience in the plastics industry among processors and suppliers, and this could be bolstered by business done during the eight-day K2022 event.

Last month's preview of K2022 focused on materials of interest to injection moulders. This month we turn our attention to machinery and equipment. Over the subsequent pages we provide details on some of the newest developments in injection moulding machinery, auxiliary equipment and related technology. Major machinery companies have demonstrations that are just as extensive as in previous years and which indicate the deep reach of injection moulding into markets as diverse as automotive, packaging and medical products.

A major theme among exhibitors at K2022 is the circular economy and how suppliers are helping moulders work with the growing amounts of recycled polymers that are being specified in new products. At K2022, large machinery groups continue to make the circular economy a main focus and they are teaming it with digitalisation: how digital assistance and machine communication can lead to the seamless use of recycled plastics, improved efficiency and lower energy consumption. Add to this the further development of light-weighting, thin-walling, IMD/IML and many other technologies and moulders can see that exhibitors have a lot of innovation to show them.

If you are planning to attend the show but are yet to finalise your travel and accommodation you need to act really fast. There are some useful weblinks at the foot of this page and plenty more in the visitor information article in our **July-August** edition that may prove helpful.

The Injection World and AMI Magazines team will be at the show and will be gathering information for our post-event coverage in the November-December edition. We will also be reporting on the biggest news and innovations as they happen via our @PlasticsWorld feed on Twitter. If you want to be sure you keep in touch with developments join the more than 23,400 people already following us.

You may also be able to catch up with our editors and sales team on the AMI stand at the show – you can find us on Stand C11 in Hall 7. We will have information about our magazines, conferences, databases, consulting services and our North American and European expos. Be sure to find out about AMI's **Injection Molding and Design Expo** which takes place for the second time in the USA in September 2023. At the AMI stand you can also to chat to our industry experts in AMI Consulting.

**Dates:** 19-26 October 2022
**Venue:** Messe Dusseldorf, Dusseldorf, Germany
**Hours:** 10:00-18:30 daily
**Advance tickets:** One-day €55, three-day €155.
Note: ticket price no longer includes free local transport
**Organiser:** Messe Dusseldorf
**Website:** www.k-online.com

**Use the following links to go direct to essential show information:**

- **K2022 hotel booking**
- **K2022 online ticket purchase**
- **K2022 exhibitor search**
- **K2022 iOS/Android apps**

IMAGE: ARBURG

**Right: A turnkey system centred on a hybrid Allrounder 1120 H with 6,500 kN clamping force and size 7000 injection unit is producing a toolbox with overmoulded 3D film decoration**

**Arburg** has adopted a clear message for its appearance in Dusseldorf around its renewed commitment to finding solutions for sustainability, the circular economy and carbon reduction using digitalisation. For example, the Gestica control system makes it easier for customers to manage the fluctuating material quality of recyclates.

Arburg will also be showcasing solutions with a small footprint, process control and networked peripherals, as well as completely new technologies and configurations. A total of eight hydraulic, hybrid and electric Allrounders with a clamping force of between 350 and 6,500 kN and two Freeformers for industrial additive manufacturing will be on display at its stand. All injection moulding machines will be automated with robotic systems, in some cases integrated into complex turnkey systems and connected to the ArburgXworld customer portal.

Three exhibits will be equipped with the Arburg recyclate package: an electric Allrounder 470 A produces PP handles using PCR, while a hydraulic Allrounder 270 S compact machine uses glass-fibre-reinforced PPS recyclate to make tweezers. Another networked, compact turnkey system is based on an Allrounder 375 V with a six-axis robot and Arburg Turnkey Control Module (ATCM) producing a bicycle tool from recycled PA66/6 (with 50% glass fibre).

Other machine exhibits include a hybrid Allrounder 630 H in a cleanroom design that produces around 18,000 transparent PET blood tubes per hour. A highlight in terms of mould technology will be the Allrounder Cube 1800 with an 8+8+8-cavity cube mould producing functional components from PP, TPE and POM.

› **www.arburg.com**

The Molding Solutions business at **Barnes Group** will be showing new products from Männer, Foboha, Synventive, Thermoplay, Priamus and Gammaflux. At its own booth, the Molding Solutions network will show packaging made of a certified bio-based material, containing a digital watermark so that recycling centres can automate the separation of these digitally marked products in the waste stream. The mould inserts are laser engraved to apply the digital watermark onto the mould, which then applies it to the part when moulded.

MoldMIND is a recording system that documents relevant process data and events of an injection mould in real-time throughout the entire life cycle of the mould. The intelligent monitoring system detects problems quickly to minimise downtime. The data can be accessed directly on the device or in the Barnes Connectia Cloud, which will celebrate its premiere at the K Show.

Synventive will showcase a new electric valve gate. Its new compact eGate Sync will complement the legacy eGate system. Quality is improved by increasing shot-to-shot consistency. Männer and Thermoplay have expanded their range of valve gate nozzles.

Barnes' hotrunner.shop is a new hot runner configurator, with which 3D data of 2-, 4-, or 8-drop hot runner systems with nozzles from Männer and Synventive can be created within minutes. The step-by-step configuration can draw on a material database of more than 12,000 resins.

KraussMaffei will demonstrate how material can run through several product life cycles in the future at its booth. Medical consumables are produced from PP in Männer's 96-cavity mould, after which the material is granulated and fed to the production of automotive parts, also at the KraussMaffei booth.

Cube Inclusive Turning Inserts (CITI) is a technology patented by Foboha that is particularly suitable for producing multi-component parts, where the second material is desired on both sides of the basic body. A 3-component functional part is produced in an 8+8+8 cavity cube mould, where a frame of PP is first injected into the moving nozzle side. After a 2 x 90-degree rotation of the cube, the component is sealed with TPE on both sides of the fixed nozzle side and a functional element made of POM is moulded on the part.

› **www.onebarnes.com**

**B.IRD Machinery Stricker** in Aachen, Germany is highlighting drying of plastic resins in infrared rotary drums for injection moulding at K2022 (on the joint stand of the German State of NRW in Hall 6). The B.IRD units dry materials to the desired residual moisture in a single-stage, continuous process within just two to eight minutes. The rotary drum technology enables inline process control without intermediate storage of the material in

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IMAGE: BOY

**Right: The new Boy XS E uses a servo-motor pump drive**

hoppers and silos.

Depending on the material, B.IRD says energy savings of 20-60% or more can be achieved compared with conventional processes for the same drying performance. The inline operation with a Stop&Go option and fast changeover options for the rotary drums give new perspectives for the flexible handling of smaller jobs in injection moulding operations.

The B.IRD equipment is manufactured entirely at a traditional German company. The proprietary control system is equipped with OPC UA interface.

› **www.birdmachinery.de**

**Boy** says the new Boy XS E, which it will present for the first time at K2022, has a clamping force of 100kN and is the natural successor to the globally successful Boy XS, which has been in continuous industrial production since 2009. The main difference between the Boy XS E and its predecessor is the servo-motor pump drive. It also offers a more ergonomic and service-friendly design, as well as a significantly improved accessibility and an extractable drawer which has been integrated into the machine frame for service and cleaning purposes.

The Boy XS E is available in standard design configurations for conventional mould sizes up to 160mm and with a special 75 x 75mm mould holder for micro moulds, both of which will be on display with a new screen visualisation.

Boy will also present a new cooling water distribution system which will soon be offered as standard for all its injection moulding machines. The set flow rate is digitally recorded and shown on the machine display, while target quantities and tolerances can be set, displayed, and monitored.

Also available is an electro-mechanical ejector.

In contrast to previous hydraulic ejectors, the electro-mechanical version offers an operating mode whereby rotational and axial movements are carried out independently of the machine hydraulics by two servo motors. This is particularly advantageous for short cycle times and high dosing volumes.

› **www.dr-boy.de**

**CMG** will be showing its new range of granulators at K2022, including the EV916 and EV616 for wet or dry granulation, which feature high performance characteristics and rank highly in the fields of versatility, efficiency and sustainability. All the Evoluzione granulators are equipped with advanced controls making them fully monitorable and manageable.

The newly designed GT series for in-line scrap recycling comprises four models, suitable for small to medium capacities, to cover applications

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IMAGE: ENGEL

**Right: Engel says it is showing a first: thin-wall moulded packaging using recycled PET content**

ranging from 200 to 1,000 kg/h. The signature feature is the blade set-up design which guarantees the best cutting precision, the highest dimensional homogeneity of the regrind, and absence of powder. The cutting chamber is "bolt & dowel" assembled, does not utilise cast or welded component and all parts are CNC machined to obtain the highest precision. All the GT models are low profile and sound enclosed.

CMG also presents the new G26 granulator line, made of three models: G26-30, G26-45 and G26-60, all featuring integral sound enclosure and an innovative feed hopper designed to accommodate a wide variety of shapes and dimensions. All models operate in high-efficiency conditions, are equipped with EISA premium-efficiency motors, and can have Adaptive Motor Power (AMP) function controls. Standard configurations of the new series cover capacities from 50 kg/h to 300 kg/h.

› **www.cmg-granulators.com**

LSR equipment manufacturer **Elmet** will be showing a new production cell at K2022 called SMARTcaps, the result of a collaborative project with several partners, in which lids for beverage and food cans will be made.

The lids are manufactured by a special four-cavity Elmet injection mould featuring an all-electric SMARTshot E valve-gate cold-runner system which guarantees precise filling of every cavity, while the newly developed Elmet SMARTmix Top 7000 Pro dosing system is responsible for precise and reliable material dosing. Development work focused on reducing the unit 's footprint to 1,150 x 790 mm, making it the smallest liquid-silicone dosing system for 200-l container units on the market. The SMARTmix TOP 7000 Pro, boasting a material utilisation level of up to 99.6%, features a completely new pump system which is easier to clean, and drums are changed automatically to increase ease of use.

› **www.elmet.com**

At K2022, **Engel** is ranging over a wide number of applications, many of them having a sustainability focus. An Engel E-speed 280/50 injection moulding machine is at the centre of a production cell in which it will demonstrate the possibility of thin-wall packaging moulding using recycled PET content. In cooperation with partners Alpla Group, Brink and IPB Printing, Engel says this is the first time that thin-walled injection moulded containers made of PET can be produced in a single injection moulding process step.

The 125-ml containers have a wall thickness of 0.32 mm and include in-mould labelling, making them ready-for-filling as soon as they leave the production cell. Engel says the thin-walled containers are produced directly from rPET in a single step. Up to now it has only been possible to process PET in thick-walled parts such as bottle preforms in injection moulding, it says.

Engel is showing its expertise in other markets, including medical products. Two-component moulding of sample vessels for medical diagnostics is carried out on an all-electric E-motion 160 combi M injection moulding machine. The M horizontal indexing table technology saves valuable floor space, especially where multiple-cavity moulds are used. A comparable 32-cavity mould with a vertical rotary table would have needed a larger E-motion machine with at least 280 tonnes clamp force. In this application, the horizontal indexing table technology reduces the injection moulding machine's footprint by more than 20%.

A new member of the iQ product family is being launched at K2022: a smart assistant for nominal values called iQ hold control, which automatically determines the optimum holding pressure time to help process technicians achieve big time savings. The holding pressure time is determined objectively, meaning that even less experienced process technicians can adjust the process parameters at the push of a button in case of a batch change.

› **www.engelglobal.com**

**Frigel** will be introducing the Microgel Syncro at K2022, a new temperature controller which allows up to a 40% reduction in cycle time. Digitally synchronised with the moulding process, Microgel Syncro provides cold water only during the cooling phase, drastically reducing the cooling time while keeping the mould cavities hot during the injection phase. The product line features more than 10 models, with cooling capacities from 16 kW to 56 kW and heating capacities from 1 kW to 24 kW.

Also on show will be an example of the Microgel RS for injection moulding. These single-zone (RSM) and dual-zone (RSD) machine-side temperature control units are designed for moulding throughputs ranging from 10 to 240 kg/hr. The range

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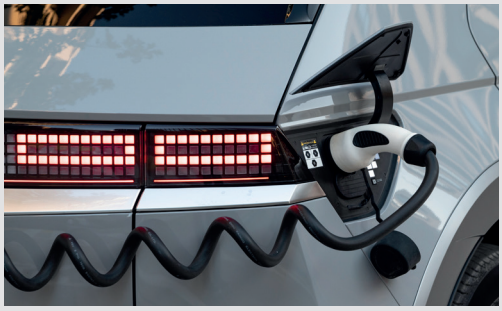

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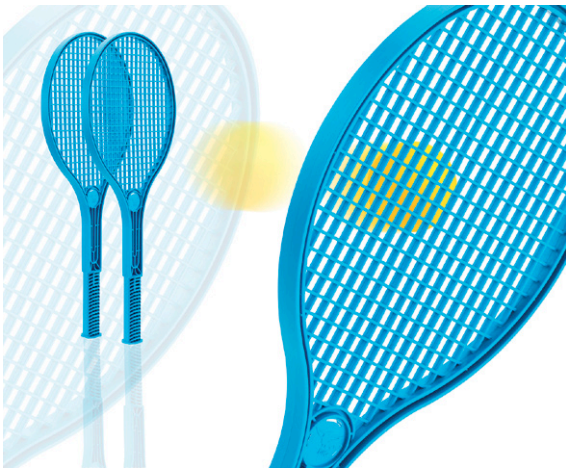

IMAGE: KRAUSSMAFFEI

**Right: A soft tennis ball racket made with bio-based PE is being produced on a KraussMaffei PrecisionMolding 160-750 machine**

incorporates advancements in temperature accuracy, functionalities, pumping performance and overall energy efficiency, all key factors in mould cooling applications.

Frigel's high-performance booster TCU line will be presented with upgraded digital controls to allow full connectivity with MiND and other Industry 4.0 architectures. The Turbogel RB range offers a wide spectrum of productivity and process improvement options for centralised cooling plants. The company also introduces advancements in its popular direct injection pressurised water TCUs for applications in sectors where accuracy, repeatability and process control are crucial.

› **www.frigel.com**

**Hasco**, leading manufacturer of high-quality modular, standardised components, as well as individually planned hot runner systems, will present a large number of new developments at K2022.

A comprehensive temperature control program offering several constructive solutions has recently been extended to include a range of new products in stainless steel, plus a new flow meter. The US standard temperature control system allows a reliable link between different connections and systems beyond national borders.

In the field of demoulding, new ejector pins for ventilating the cavities and ejector pins of HSS quality steel now supplement the portfolio. In future, more than 700 further ejector sizes spread over all product variants will offer even greater flexibility.

At the centre of hot runner technology is the innovative Streamrunner, the world's first additively manufactured hot runner system. As a needle valve version, it offers completely new, space-saving possibilities. Colour changes can be carried out faster through the flow-optimised design and new nozzles with variable gating areas and contact surfaces enable application-specific temperature management.

› **www.hasco.com**

**Kistler** will introduce ComoScout at the K Show, its new process monitoring system. ComoScout monitors signals coming from the injection moulding machine as well as those from any sensors that deliver voltage outputs up to 10V, opening up a whole new range of applications for manufacturers that previously shied away from investing in process monitoring.

While the initial investment is described as moderate, ComoScout offers the same look and feel as Kistler's ComoNeo system and features many of the same functions. The investment can be recouped when retrofitting older machines with a modern data gateway. ComoScout creates a direct OPC UA interface to deliver data from analogue machines to MES systems or higher-level software systems thereby making machines "smart".

› **www.kistler.com**

**KraussMaffei** is introducing its new PrecisionMoulding and PowerMoulding basic machine categories in Dusseldorf. PrecisionMolding is the basic, all-electric PX series machine with a reduced number of options, while PowerMolding is the counterpart of KraussMaffei's hydraulic GX series. The basic machine concept offers customers fast reaction times and short delivery times.

At K2022, a PrecisionMolding 160-750 machine with a clamping force of 1,600 kN is producing a soft tennis ball racket from bio-based PE from FKUR. A PowerMolding 1300-11900 machine with a clamping force of 13,000 kN is part of the circular economy demonstration at the KraussMaffei stand. It is producing car door modules using 100% recycled PP. The recycled material, in turn, comes from caps for insulin pens produced on a PX 200-1400. The material is shredded and then, in an upcycling process, prepared on a ZE 28 BluePower twin-screw extruder with different additives such as bonding agents and liquid dye.

› **www.kraussmaffei.com**

Chinese company **LK IMM** will show the Elettrica EL130T, with 1,300 kN clamping force, fitted with a 16-cavity hot runner mould. The all-electric Elettrica EL130T can be used in the production of precision parts for the toy, medical device, pharmaceutical, cosmetics, optics and electronics industries. The machine is equipped with features including a process control with thousands of production parameters, which can be reactivated for a follow-up product ensuring absolute repeatability. The exhibition programme also features

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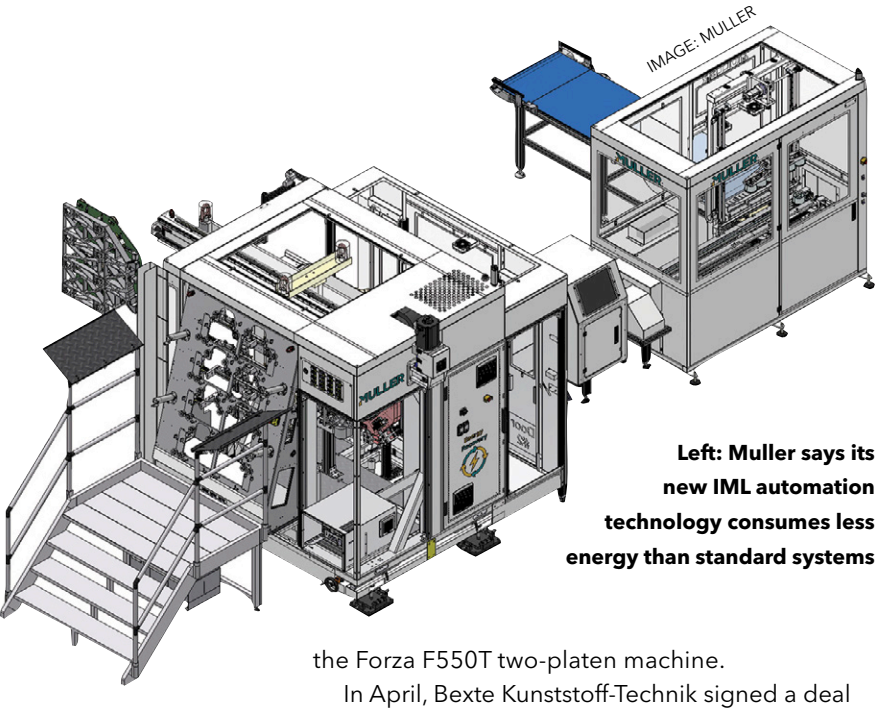


**Left: Muller says its new IML automation technology consumes less energy than standard systems**

the Forza F550T two-platen machine.

In April, Bexte Kunststoff-Technik signed a deal to distribute LK Machinery equipment in the German market. BKT will also take care of the commissioning and follow-up services such as technical support, training, maintenance, wear and spare parts supply for the machines manufactured in Ningbo and Zhongshan.

› **www.lk.world**

**Maguire** will be introducing a new feeder line MGF+ that can be configured to accommodate various processing requirements and allow for up to four different size auger feeders, all located on one mounting frame. The company's latest, most economical version of its volumetric feeder (MVF) has been designed for simple volumetric dosing of colour concentrate and/or additive material. Maguire will also debut the new Weigh Scale Blender (WSB) 600 series. (Read the Materials Handling feature in this issue for more details on Maguire's new products.)

› **www.maguire.com**

**Meusburger** will have a focus on its standardised mould bases at K2022. The mould parts manufacturer will also present its products for injection moulders and both standardised and customised solutions for hot runner systems. A highlight promises to be the Engel injection moulding machine on its stand where visitors can watch a bread box being produced. The stand will also feature a special area for designers, where the functions and areas of the Meusburger online world are presented. Visitors will have the opportunity, for example, to take a closer look at the wizards and configurators for mould bases, which make it possible to assemble compatible plates, calculate the corresponding components, and export the CAD data.

› **www.meusburger.com**

**Mold-Masters** will be showcasing numerous new hot runner systems, controllers, and auxiliary injection units at the K Show. These solutions include: comprehensive bio-resin/PCR processing solutions (including co-injection) for producing high-quality parts related to sustainable applications; PET-Series 2-stage PET preform hot runner systems; AXIOM TG single stage bottle hot runner systems; FusionG3 hot runner systems for automotive; and the latest generation of auxiliary injection units.

In addition, customers can view recent innovations such as SYMFILL Technology, TC-Connect Technology, and Manifold Plastic Leakage Detection. Mold-Masters will also be showcasing its latest control products that incorporate enhanced integration options, modernised functionality, and smart capabilities.

› **www.moldmasters.com**

**Muller Technology** will unveil its latest in-mould labelling (IML) automation technology at K2022. The turnkey, fully optimised system will run on a 700-tonne injection moulding machine. The IML production cell will produce a 100% mono-material container consisting of a fully recyclable PP structure and a wrap-around and bottom PP label.

Muller's IML solution features a modular design for flexibility and versatility and can be enhanced with a case packaging system. The automation system consumes less energy than standard systems, and a dynamic entry feature uses AI programming for self-optimisation of the robot intrusion and the total cycle time, while the mould design minimises maintenance and increases mould life, providing quick changeout capability and allowing for fast, safe, and damage-free product changeovers.

› **www.muller-technology.com**

K2022 will be the first event to showcase the collaboration between **Negri Bossi** and **Nissei Group**, which acquired the Italian company in January 2021. Key points of Nissei Group's demonstration at K2022 include: the debut of a new all-electric injection moulding machine, which will be the flagship model to be released in the European market; an advanced solution for processing PLA; solutions for the automotive industry to meet rapidly shifting demands for electric vehicles; Nissei Group's machine line-up from micro to very large.

› **www.negribossi.com**

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IMAGE: NETSTAL

**Above: An all-electric Netstal Elion 1200 is producing pipette tips at K2022**

Swiss machine producer **Netstal** is producing pipette tips in 64 cavities on an all-electric Elion 1200. The system solution includes a precision mould from Otto Männer and a high-speed handling system from Micro Automation. An electrically conductive compound from Premix, which was specially developed to produce pipette tips for in-vitro diagnostics, will be processed. The machine is equipped with the 4-button Smart Operation control system which enables users to achieve additional productivity gains through automation, standardisation and shortening of recurring process steps in shift operation.

A new Netstal Elios 4500 has all-electric mould closing, meaning the dry cycle could be accelerated by 0.1 s. Users benefit not only from increased productivity, but also from optimised energy efficiency: in relation to the dry cycle, the average power consumption of the machine is reduced by 7kW. Another bonus point is provided by the 450 mm shorter machine length. At the Netstal stand, the Elios 4500 will produce thin-walled 150 ml IML yogurt cups from a certified renewable PP from SABIC.

› **www.netstal.com**

**Oerlikon HRSflow** will present its extensive range of hot runners tailored to small shot weights, and the new Xp nozzle series for use in thin-wall injection moulding, both of which help reduce energy consumption. Having expanded its portfolio to include components for injection moulding of demanding parts with small shot weights in stable and reliable processes, the company now offers complete systems for the market segment requiring tight nozzle pitch solutions. These include nozzles with small dimensions, as well as the associated manifolds and actuation mechanisms. For multi-cavity applications, an MVP provides perfectly synchronised control of the injection channel for high part-to-part weight consistency. These systems offer optimal colour change performance and easy system restart, reducing waste and increasing efficiency.

Oerlikon has recently produced operating software which makes the FlexFlow hot runner systems even more intuitive. With the revised HMI 4.0, systems with different nozzle types can be integrated and several parameter sets can be stored per mould. In addition, specific user accounts can be set up and managed.

› **www.oerlikon.com**

**Piovan** will present a complete overview of its most advanced technological solutions. Among the highlights will be: Winfactory 4.0, the production process control and management software developed to ensure automatic recipe setting, prevention of human errors, production repeatability and product traceability; Winenergy, the energy efficiency monitoring and analysis system able to provide a complete analysis of real consumption; and Winflo, for monitoring and control of Aquatech's industrial cooling solutions.

Other items on show include the CAPchiller, a water-cooled chiller designed for applications requiring very high temperature precision and high pressures. Vulkano is a new portable instrument for measuring the presence of VOCs in process air and monitoring filter saturation. Odor Minder is a compact in-line electronic nose designed to verify the effectiveness of the post-consumer plastic deodorisation processes.

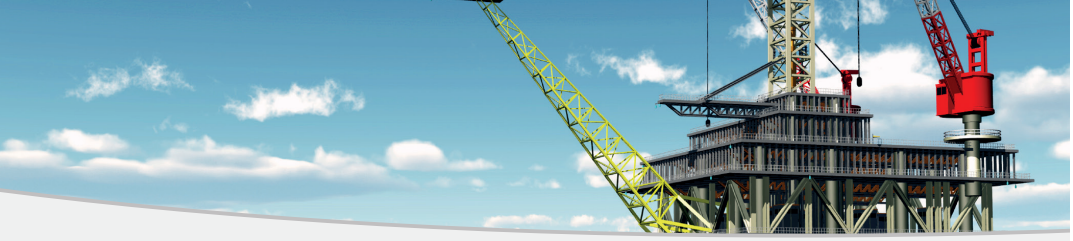
› **www.piovan.com**

**Polyplastics** will be showing new 3D printing technology it has developed for production of Duracon POM products. The technology, known as Material Extrusion (MEX), delivers physical properties close to those of injection moulded articles. It can also be applied in preliminary evaluations of physical properties, functions, durability, and other properties without a mould, thus helping to accelerate the product development cycle.

The MEX process is designed for thermoplastic materials in the form of filaments. It produces three-dimensional structures by repeatedly tracing and layering while depositing melted material extruded through a tiny nozzle. Typically, only amorphous resins or resins with low crystallinity had previously been suitable for use in the MEX 3D printing process.

› **www.polyplastics-global.com**

**Sepro Group** will present several examples of injection moulding automation, giving visitors hands-on experience with future technological concepts including novel man-machine interface



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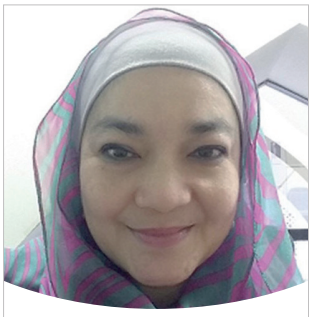

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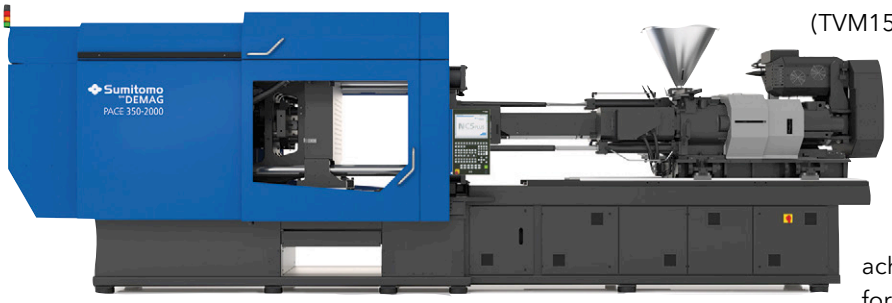


IMAGE: SUMITOMO (SHI) DEMAG

**Above: Sumitomo (SHI) Demag is unveiling the PAC-E all-electric high-speed machine for the packaging market at K2022**

devices, total-system integration, and artificial intelligence. Each of the demonstration cells have been designed to be both informative and easy to use and attendees will be encouraged to take control of the robots and peripheral equipment.

A highlight promises to be the debut of a new modular software architecture that enables the control of multiple pieces of robotic and auxiliary equipment via a single central control system. In one moulding cell, for instance, the system will not only control a Sepro 5X-25 Cartesian robot and a 6X-140 six-axis articulated-arm unit, but also manage all additional peripheral devices as diverse as a conveyor, quality check equipment and an ink-marking machine.

› **www.sepro-group.com**

**Shibaura Machine**, supported by industrial robot distributor TM Robotics, will exhibit its latest technology at K2022, including the TVM1200, a six-axis robot from the expansive TVM range.

The TVM1200, a vertically articulated robot series, will be operating in a cell servicing application working in partnership with three injection moulding machines. It can be used in a multitude of industries but is particularly advantageous for loading and unloading applications. The robot can be used in collaboration with injection moulding machines from any manufacturer and can achieve a reach of 1,418 mm and payloads of up to 15 kg, but is also available in smaller (TVM900) and larger (TVM1500) options. The range can be customised to meet clean room specifications and be delivered with a ceiling mount if required.

The TVM1200 can also be combined with Shibaura Machine's robot vision recognition package TSVision3D, which uses two integrated high-speed cameras to achieve model registration without the need for complex CAD data. This can be especially useful for increasing the efficiency and accuracy of bin-picking applications.

› **www.shibaura-machine.co.jp**

**Sumitomo (SHI) Demag** is unveiling the PAC-E all-electric packaging machine at K2022, designed specifically for manufacturers of beverage closures and thin walled packaging applications. The high-speed machine builds upon the success of the company's El-Exis SP, which it claims is the fastest packaging machine on the market. It will initially demonstrate the new machine's capabilities and sustainability credentials on a 350 tonne model. Three additional clamp force variants – 420, 250 and 300 tonnes – will subsequently follow in this order.

In the PAC-E series, the toggle levers, plates, tie bars and plasticising elements, including the screws and cylinders, were developed in Germany, while the electric drives and the newly developed injection unit were derived from the group's Japanese parent company.

Sumitomo (SHI) Demag says the electric-driven axes deliver up to 50% in energy savings. Additionally, the lubrication of the toggle lever no longer causes cleanliness issues; being a completely closed circuit design it is leak free. Oil is instead extracted, filtered and recycled. This eliminates the need to clean the toggle lever, which has the added benefit of reducing oil consumption for customers.

› **www.sumitomo-shi-demag.eu**

**Wilmington Machinery** celebrates 50 years in plastics machinery at K2022. The company's line of general-purpose structural foam machines has had a major overhaul with new elevated designs which allow for large overhanging moulds to clear the floor and part removal under the platen. The updated controls package offers large touch screens with configurable split screens, multi-function trend analysis screens, and OEM trends that monitor the process.

The company is expanding its lab/trial capabilities with a new Lumina 2400HE injection moulding machine which has 500 tons of clamping force and will be equipped to trial gas assist, structural web, gas counter pressure, and high-pressure moulds looking to make the switch to structural foam.

Plastic pallet manufacturing is still a key market, and its Pallateer series of machines have been equipped to handle optional gas assist, structural web, and upgraded controls packages. The machines are a less expensive alternative to general-purpose machinery and are offered as a complete turnkey solution.

› **www.wilmingtonmachinery.com**

**Wittman Battenfeld** will underline its green credentials at K2022 by demonstrating how the continuous current generated by solar cells placed on company roofs can be used to power injection moulding lines, and by showing its newly-developed reusable coffee-to-go cup.

In this application, a lid made from Borealis' Bornewables renewable raw materials is manufactured on a servo-hydraulic SmartPower 400/750H/210S/525L Combimould with a rotary unit. The cup, produced in clear optic in the first cavity, is over-moulded in the second cavity with a shell and provided with an additional insulating effect by foaming the melt with Cellmould technology. The can be re-used and is also 100% recycled.

Two more applications where renewable materials are used will also be presented. One of these is a bio-degradable ice-cream cup made from Baopap, which consists of water, vegetable oils and fats, starch, vegetable thickening and swelling agents and natural fibres. The material is said to decompose without residues within 50 days.

The second application is a bio building block made of Fasal material manufactured on an EcoPower 110/350 with the new B8X control system, using an eight-cavity mould. This raw material is a compound from wood flour and post-industrial PP. The equipment is designed as an Insider cell, which has a W918 robot and an S-Max 3 screenless granulator, along with a conveyor belt and the protective housing, all integrated in the production system.

IMAGE: WITTMANN

**Above: Wittmann Battenfeld SmartPower 120 machine**

Wittman Battenfeld will also present its latest innovations in the field of injection compression moulding, which creates thinner wall thicknesses, demonstrating the technology on a high-speed EcoPower Xpress 160/1100+. With a four-cavity mould, a 230 ml PP cup with a wall thickness of 0.28 mm can be produced within a short cycle time due to the dynamic drive technology of the high-speed EcoPower Xpress.

The machine is equipped with a four-fold IML system featuring automatic label positioning. Regardless of its position inside the magazine, every label is placed in exactly the same position on the IML core reducing both reject rates and operating effort since manual adjustment of the label magazines is not necessary.

Silicone processing, one of Wittman Battenfeld's core competencies, will be demonstrated on two key exhibits. With a servo-hydraulic SmartPower 120/350 LIM, four different closing caps for beverage cans and bottles will be produced from liquid silicone in a single injection-moulding process, the open design of the injection unit enabling easy integration of the LSR metering unit.

The second LSR application is a membrane for a high-quality micro loudspeaker made of thermoplastics and liquid silicone, manufactured on a MicroPower15/10H/10H Combimould with a single-cavity mould serving to demonstrate the high precision of the mould in combination with the machine, which is specially designed to produce micro parts. The MicroPower is equipped with two-step screw-and-plunger thermoplastic and LSR aggregates and the LSR metering pump is a one-litre cartridge system.

› **www.wittmann-group.com**

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SULZER

# New products offer more control over materials

## *A variety of technology developments enable injection moulders to improve materials handling. **Mikell Knights** reports on the latest products*

Injection moulding companies have many new features to consider when selecting materials handling products. The newest products convey or feed with less resin damage or loss, dry while monitoring the moisture resin content, minimise errors when a material changeover occurs, and improve space or operating efficiencies with mobile and modular devices that operate at-the-press or easily move and connect to a centralised operation while combining capabilities. The latest advances incorporate improved controls, energy efficiency concepts and portability.

**Conair's** new portable multiple hopper drying system enables small or large amounts of different materials to be dried offline then easily wheeled where needed to supply production machines with press-ready material.

At the core of the mobile drying system is the Multi-Hopper Cart (MHC) technology, a pre-plumed and pre-wired caster-mounted pushcart available in different sizes to support two, three or four Conair CH series mass-flow hoppers.

The Multi-Hopper Cart is designed with built-in isolation/shut-off valves at each hopper station. Welded air-distribution manifolds built into the frame eliminate air loss, kinked hoses and loose hose clamps and directs dehumidified air to each hopper. Insulation incorporated into the manifold further reduces heat loss, thus saving energy.

The shut-off valves turn off and on to control the integral air supply and return air from the manifold to each hopper. This allows an individual hopper to be removed from the drying system for clean-out or for energy savings when not in use, without shutting down the entire system. Each MHC requires only a single power drop rather than individual drops to each hopper, for cost savings.

The MHC is designed with hopper mounting plates that can be adjusted to several pre-configured positions allowing the cart to fit multiple different sized hoppers.

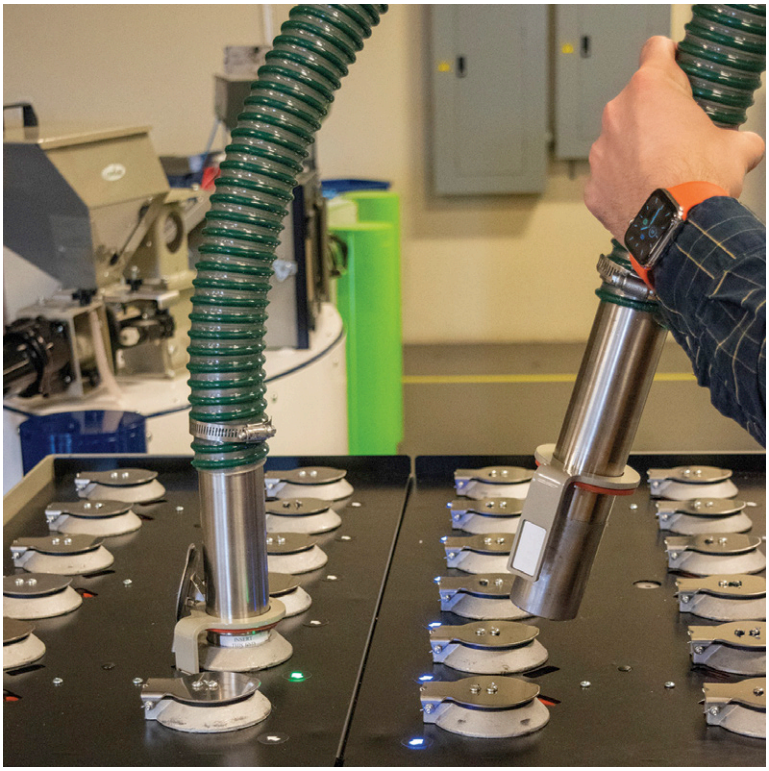


IMAGE: CONAIR

**Conair has developed a wireless RFID line-proofing technology that prevents errors in resin distribution. Pic: Conair**

The CH mass-flow hoppers range in volume from 0.5 $ft^3$ to 6 $ft^3$ and are fully insulated to preserve heat and energy. The hoppers are available in carbon or stainless steel and are designed for exceptional air distribution. A removable air spreader cone and large access door minimise clean-out time. A long sight glass incorporated into the hopper provides at-a-glance views of the material level and material mass flow. An optional sensor bracket and sensor kits indicate material level and enable adjustment.

The Multi-Hopper Drying system is offered in two configurations. The first design mounts hoppers only and connects to a central drying system through the manifold system to circulate dehumidified air for material heating or drying.

The second option is suited to larger throughputs of material or higher-temperature applica-


**Right: Conair's Multi-Hopper Cart allows small or large amounts of different materials to be dried offline**

tions. This option connects the drying system to a Conair D series Carousel Plus dryer that incorporates the company's DC-C Premium touchscreen and web enabled control package. The DC-C Premium control can monitor each hopper and control individual heaters that manage temperature in each hopper.

The control of the D series Carousel Plus dryer has several additional features to enhance drying control, including a temperature setback function that prevents over drying. Conair says the dryer also sports an industry first dewpoint control option that is built into the microprocessor control system and allows for the selection of a particular dewpoint value. The control adjusts various dryer functions to precisely hold the selected dewpoint, saving energy.

The Carousel Plus dryer series has an upgraded design, with the weight of the desiccant assembly reduced by 70% and part/component count reduced by 90%. Indexing bed plates and 4-ways valves and desiccant beads have been eliminated, resulting in fewer parts and a lighter structural mass. The desiccant wheel assembly heats and cools more easily than prior technology, curbing energy consumption by up to 35%.

The TouchView technology displays critical process settings on a 7-in graphical touchscreen layout. Individual screens show how the process is running and ways to improve it. The DC-C Premium control connects to Conair's SmartServices platform – the company's cloud-based Industry 4.0 solution for auxiliary equipment monitoring – to provide a user with centralised, real-time monitoring and control of key performance indicators, such as actual temperatures and process trends.

Conair says the revamped Carousel Plus line of desiccant dryers features the new common control platform as standard. This provides a common user experience for all dryers in the Carousel Plus line, including its small X series portable dryers, dX series mobile drying/conveying systems and D series large central dryers. Users trained on Conair's blender control or other equipment see a similar control layout and configuration, as well as names and color schemes.

The control is offered in a Plus version for operators that keep their operations simple and use the X series or dX series dryers, which deliver throughput rates from 15-400 lb/hr. The Plus version features a 4-in touchscreen, push buttons, LCD controllers and toggle switches. Start/stop, dewpoint and temperature settings can be conducted from the main screen, while other screens can show text alerts and alarms, current data and status. The smaller dryers utilise a new air-to-air aftercooling function that sustains drying efficiency while managing return-air temperatures up to 190.5C and dewpoints of -40C.

A Premium DC-B control is standard on the larger D series dryers in the Carousel Plus line, which have throughput from 600-5,000 lb/hr. An optional energy-saving Optimiser package is ideal for PET processing and adds a variable frequency blower drive, drying monitor probe return-air dewpoint monitor, volatile trap and process-filter monitor.


**Right: The latest Carousel Plus dryers from Conair have several additional features to enhance drying control**

Conair has also developed a wireless RFID line-proofing technology that prevents errors in resin distribution when changing the source or destination of material. Conair's SmartFLX conveying control technology and an RFID-capable Resin Selection System (RSS) table communicate to prevent errors in material changeover.

Each material port on the RSS table is fitted with an RFID antenna that is beneath the tabletop and hence protected from damage. Each RSS port and unique RFID antenna is

tracked in the material source/destination database of the SmartFLX control. Flexible material conveyance tubes, which connect to an RSS port and send material to a destination receiver, each contain a uniquely coded RFID chip. Each flex tube and unique RFID chip is associated with a specific destination receiver, with that information also stored in the SmartFLX database. The wireless signals from the RSS port and from the Flex tube are analysed by the SmartFLX control to proof each connection.

When an operator initiates a material change using the RSS table, the SmartFLX control consults its material/source/destination database to identify one or more RSS ports linked to the correct resin source and identifies the one or more flex tubes that are linked to the desired destination. The HMI screen of the SmartFLX control translates the correct port and Flex tube connection into what Conair calls a "light-guided instruction" by activating LEDs that are embedded in the surface of the RSS table and the Flex tube. The Flex tube to be unplugged from its current location and moved is indicated by a flashing yellow LED on the Flex tube. The new RSS port where the Flex tube is to be moved to is indicated to the operator with a flashing blue LED. When the RFID chip in the Flex tube is aligned with the dedicated RFID antenna of a specific RSS port, the tabletop LED flashes green to indicate a correct connection. The SmartFLX control then unlocks the destination receiver and initiates the conveying cycle.

IMAGE: CONAIR

**Left: Conair's Moisture Minder sensor detects residual moisture levels of the polymer in the dryer**

The RSS port will flash red if the wrong port or tube is connected, while the LED for the correct port continues to flash blue until the correct tube/port connection is made. The Smart FLX HMI also displays numbers that correspond to markings on the Flex tube and RSS port positions for additional guidance.

Conair also introduced a Clean Cycle program for the RFID line proofing system that ensures non-purged materials lines are purged. The process uses a filtered purge-air source port on the RSS table combined with the colour-coded LED indicators to guide an operator through the correct purging sequence.

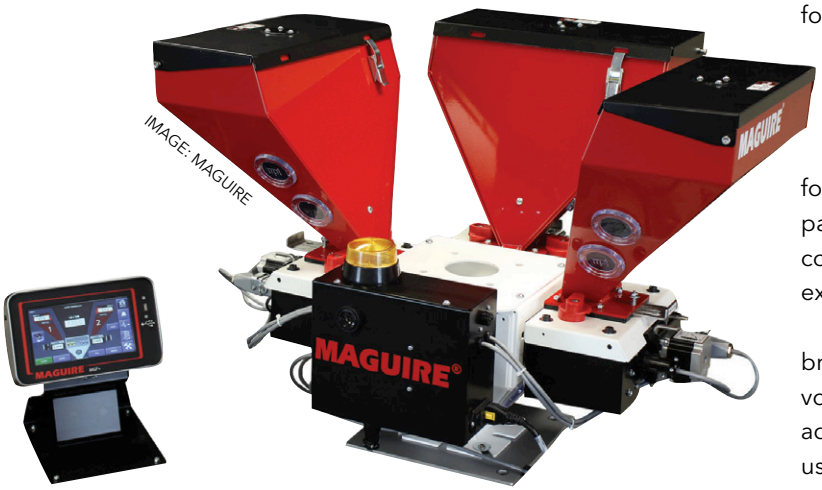
Clean Cycle is managed by the SmartFLX conveying control system and automatically activates it as soon as an operator completes a material conveying cycle from a non-purged source. The HMI of the SmartFLX control switches the colour of the RSS port where material conveyance is completed from flashing green to flashing yellow, indicating the flex tube needs to be moved. At the same time, the filtered purge-air source port (the Clean Cycle port) flashes blue. When the Flex tube is connected to the Clean Cycle port the SmartFLX system error-proofs the port/tube connection and if correct, the RSS port flashes green. The destination receiver is unlocked and the filtered air from the port purges the Flex tube line, pushing remaining resin through to the receiver. The process is validated by the SmartFLX control and recorded for traceability in the event log of the controller. LEDs associated with the process remain lit until the purge operation is completed.

### Monitoring moisture

Conair also introduced its new Moisture Minder sensor which detects residual moisture levels of the polymer in the dryer to nullify quality problems stemming from incomplete material drying. The device detects residual moisture levels as low as 10 ppm in a broad range of polymers at throughput rates from 20 – 5,000 lb/hr. The device features a colour touchscreen for setup and can monitor up to eight drying hoppers. The unit can be configured to issue an alert when the specified moisture level drifts outside of prescribed limits. Readings are stored for historical trending and analysis. Data from the unit can be pulled into a plant-supervisory system using ModBus TCP/IP communications or optionally with OPC/UA protocol.

The Moisture Minder attaches to the outlet of the drying hopper and is available in two models, including the M5 unit which detects moisture levels in the range between 10 and 100 ppm, while the M10 unit tracks moisture in the 300 to 3,000 ppm band. The sensors are fully electric, with no moving parts to maintain or change.

The Moisture Minder can be used in conjunction with Conair's Drying Monitor probe, which is placed vertically in the drying hopper to measure temperature at multiple levels in the bed of the material being dried. It can detect anomalies that may result in higher than acceptable moisture levels in the resin.




**The new MGF+ addition to the Maguire Gravimetric Feeder series has new options that allow flexibility and increased performance. Pic: Maguire**

New challenges for the use of post-consumer content, surcharges on virgin resin and global legislative policy proposals and adoptions are being enforced around the globe, which have plastics processors looking for economical solutions to incorporate additional materials, more diverse materials and changing material content in their final product, says **Maguire**.

Maguire has introduced a gravimetric feeder line based on its standard Maguire Gravimetric Feeder (MGF) series but with new available options that allow flexibility and increased performance for all types of moulding and extrusion processes. The new feeder models allow for up to four different size auger feeders, all located on one mounting frame and using a single common touchscreen control. The options are retrofittable with current Maguire feeder equipment. The standard MGF is offered in auger sizes of 3/8 in, ½ in, and 1 in.

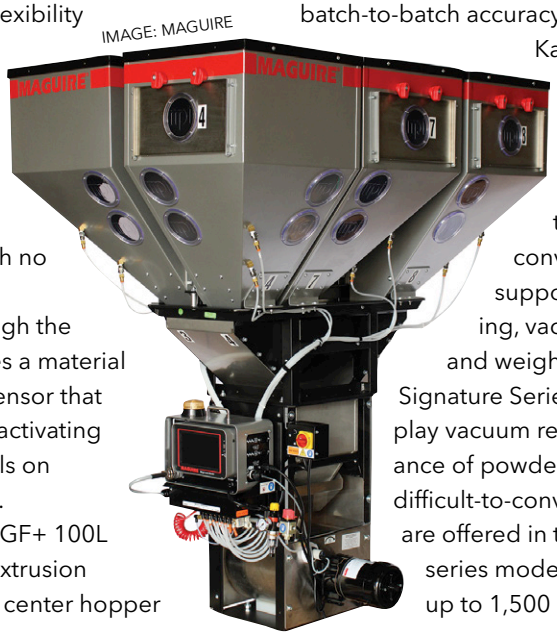
The new MGF+ line incorporates the standard gravimetric feeder options with the added ability to mount four different sized auger feeders to a single frame, allowing the flexibility to dispense multiple additives/materials within one frame and one controller. The MGF+ B model is suited for use in injection moulding applications, which is designed with no centre hopper, so that all materials must be run through the feeders. This model includes a material collection bin with a level sensor that maintains material level by activating the dispense of the materials on demand, says the company.

Maguire also offers an MGF+ 100L model that is primarily for extrusion applications and includes a center hopper for virgin material that is on a pair of load cells to control and weigh the material, using the one control. Each unique feeder in the configuration is measured accurately and dispensed using the touchscreen controller. The MGF+ 100X is also for extrusion and features an extrusion control package and a loss-in-weight (LIW) hopper and control that monitors the actual throughput of the extrusion line.

Maguire also updated its economical MVF brand volumetric feeder, designed for simple volumetric dosing or colour concentrate and/or additive material. A simple digital push button is used for setpoint control while a stepper motor provides consistent letdown ration without any use of load cells.

Maguire will debut a new addition to its gravimetric Weigh Scale Blender series for mid-range throughput applications, which precisely dispenses up to 12 materials of widely diverse types and can be configured to dose up to six major ingredients. The new Weigh Scale Blender (WSB) 600 series has a throughput range up to 2,500 lb/hr and is suited to injection moulding, extrusion, blow moulding and central blending applications. It can dispense pellets, powders, and liquids as well as poorly flowing ingredients like regrind, flake, wood flour and talc filler.

The WSB 600 series joins the larger WSB 1200, 2400 and 3000 series units in the product line. Like the larger models in the WSB family the new blender model can be outfitted with up to six large-component slide gates for dispensing major ingredients. It can be designed with any combination of large corner valves, 2- or 4-in vertical valves, auger feeders and liquid colour pumps. More than 150 configurations are available, but all provide batch-to-batch accuracy of 0.1%, says Frank Kavanagh, Vice President of Marketing and Sales.




**Right: Maguire has added to its gravimetric Weigh Scale Blender series for mid-range throughput applications**

**Pneumatic**

**Vac-U-Max**, a manufacturer of custom pneumatic conveying equipment and support equipment for conveying, vacuum conveying, batching and weighing materials, offers its Signature Series pre-engineered plug and play vacuum receiver line for the conveyance of powders, fibres, flakes and difficult-to-convey materials. Two models are offered in the line, including a 1500 series model that can vacuum convey up to 1,500 lb/hr (680 kg/hr) and

features a 12-in diameter receiver with a 6-in discharge valve in a stainless-steel construction. An offset cone or tube design are options. The 3500 series offers conveying rates up to 300 lb/hr (1,600 kg/hr) with a 16-in diameter receiver and an 8-in diameter discharge valve. The system consists of five parts, the receiver, vacuum producer, conveying wand, tubing and controls.

Vac-U-Max has also developed vacuum conveying systems that provide an automatic refilling of volumetric or gravimetric feeders used in batch and continuous processes "Many times the feeder is purchased without consideration of how the feeder will get filled and refilled," the company says.

Vacuum receivers integrate easily for volumetric refill applications and meters material to the feeder by immediately discharging material into the hopper when the feeder reaches a low-level signal. The Vac-U-Max receiver always maintains a charge of material ready for dispensing into the feeder, allowing the refill process to occur in seconds. The process repeats until all the material has been conveyed or when the operator turns off the control panel.

Its mobile vacuum conveying systems offer ease of mobility for applications requiring access to hard-to-reach processing areas. The unit is furnished with a rolling frame that can lift the receiver to accommodate varying discharge heights or lowered to the operator level for maintenance, disassembly, and transport. The unit can be rolled to and positioned at the desired discharge point. The vacuum power source and the control panel are mounted onto the rolling frame and can convey up to 5,000 lb/hr (2,268 kg/hr) of granules or powders and manages the conveying, discharge, and filter cleaning functions of the system. The system incorporates an adjustable suction wand which the operator uses to introduce material into the vacuum system.

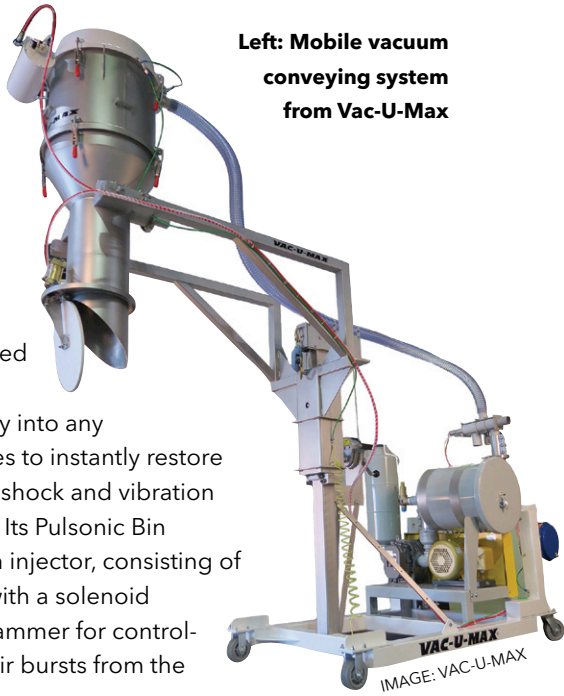



IMAGE: VAC-U-MAX

**Left: Mobile vacuum conveying system from Vac-U-Max**

The company also designed a pulsonic system that introduces sonic air bursts directly into any compacted mass flow devices to instantly restore material flow without severe shock and vibration which can damage hoppers. Its Pulsonic Bin Activator is designed with an injector, consisting of a compressed air reservoir with a solenoid operated valve, and a programmer for controlling the pattern of multiple air bursts from the injectors.

The system consists of a single programmer and one or more injectors to instantly clear bins, hoppers, and other mass flow devices of compacted solids, removing disruptive materials from channels, ducts, or recesses. The system breaks up arching, bridging, and clinging to restore free flow even with difficult materials.

**Coperion K-Tron** has introduced its new ProRate Plus line of compact gravimetric feeders for feeding pellets and other free-flowing bulk materials in plastics applications. The single-screw feeder is designed to be space saving. It can be installed as an individual unit or in groupings where up to six feeders, occupying a radius of 1.5 metres, are clustered together around a single process intake.

ProRate Plus is offered in three feeder models, including the Plus-S, Plus-M and Plus-L which cover feeding rates from 0.12 to 400 $ft^3$/hr depending on material. Theoretically a feeding system with six ProRate Plus-L feeders can feed up to 1,017 $ft^3$/hr in a footprint of only 75 $ft^2$.

Each feeder is equipped with a pre-wired ProRate Plus PCM control module, which is mounted to the feeder stand with adjustable height positioning. Coperion K-Tron offers the PCM module in a basic control unit (PCM-MD) or an advanced version (PCM-KD) with integrated user interface and line control functionality and host communication port (Ethernet IP or Profinet). In a group of feeders one feeder must be equipped with the advanced control while the standard PCM module is sufficient for the remaining feeders, the company says.

Coperion K-Tron's new patent pending ProClean


IMAGE: VAC-U-MAX

**Left: Installation of Vac-U-Max equipment**

**Right: Koch-Technik has updated its EKO-N dry air dryer**


IMAGE: KOCH-TECHNIK

**Koch-Technik** has updated its EKO-N dry air dryer further with respect to energy efficiency, combining it with the company's Koch-ÖKO energy control system to save up to 50% energy. Koch-Technik created the EKO-N by combining its CKT and EKO dryer concepts into one dryer unit. In the updated design the heat exchanger concept in the pipe system adopted from the EKO dryer has been improved in the EKO-N series and is used here even more efficiently, the company says. The thermal energy recovery reduces the energy consumption by 20 to 30% depending on the drying temperature of the material. The result is a reduction in average energy consumption while maintaining drying quality.

The firm's patented Koch-ÖKO energy system adapts to the drying process in an energy-saving, material-friendly and intelligent way. The system also features frequency-controlled drying fans and energy-saving dew point control with a Siemens S7 control and 10.4-in touch panel display. The drying parameters of 28 materials are preconfigured in the material database and a further 212 customer-specific recipes can be saved.

The KKT mobile granulate dry air dryers from Koch-Technik, which allow for drying of hygroscopic granules right next to the processing machine, feature a new touch control and new colour displays that are larger than before. Operability is said to improve due to the redesign, and the KKT mobile granulate dryer is Industry 4.0 ready as a result of compliance with the OPC UA communication standard.

Rail system allows for maintenance and cleaning of the ProRate Plus feeder while keeping the feeder in position. The system makes it possible to retract the base unit toward the rear of the feeder and rotate it for access to the feeding section and screw element. The bellows and screw use magnet technology for simple but robust mounting that can be released without tools, while at the same time providing the required holding force for optimal and safe operation.

Coperion K-Tron also introduced its redesigned K3 line of vibratory loss-in-weight feeders, with a patent pending drive system and advanced control unit that achieves feeding accuracy that is 35% higher on average than conventional models.

Designed for gentle handling of difficult-to-feed pellets or regrind – generally to a plastic extrusion line – the vibratory drive of the K3 model operates a completely new shock absorber design that delivers a continuous, even mass flow with minimal pulsations that is unlike rubber or spring shock absorbers used in conventional models. Its unique flexible pendulum technology provides shock absorption only parallel to the desired direction of motion to ensure an even material flow of product along the entire length of the tray, making it able to manage brittle, abrasive materials with irregular forms and glass fibres.

The feeder also features a fast-acting coil drive module featuring integrated sensors to measure key parameters such as acceleration, current and temperature.

The feeder is offered in three models, the K3-CL-SFS-V100 model for feed rates from 0.035 to 17.66 $ft^3$/hr. A V200 provides feed rates ranging from 0.28 to 141.25 $ft^3$/hr, and the V300 has feed rates of 0.6 to 300 $ft^3$/hr. The modular design and quick-release design allow for easy exchange of feed trays or hoppers for fast adaptation to new processes and formulations while also allowing for easy cleaning and maintenance.

IMAGE: COPERION

**Below: Coperion K-Tron has introduced its new ProRate Plus line of compact gravimetric feeders**

**CLICK ON THE LINKS FOR MORE INFORMATION:**

- **www.conairgroup.com**
- **www.maguire.com**
- **www.vac-u-max.com**
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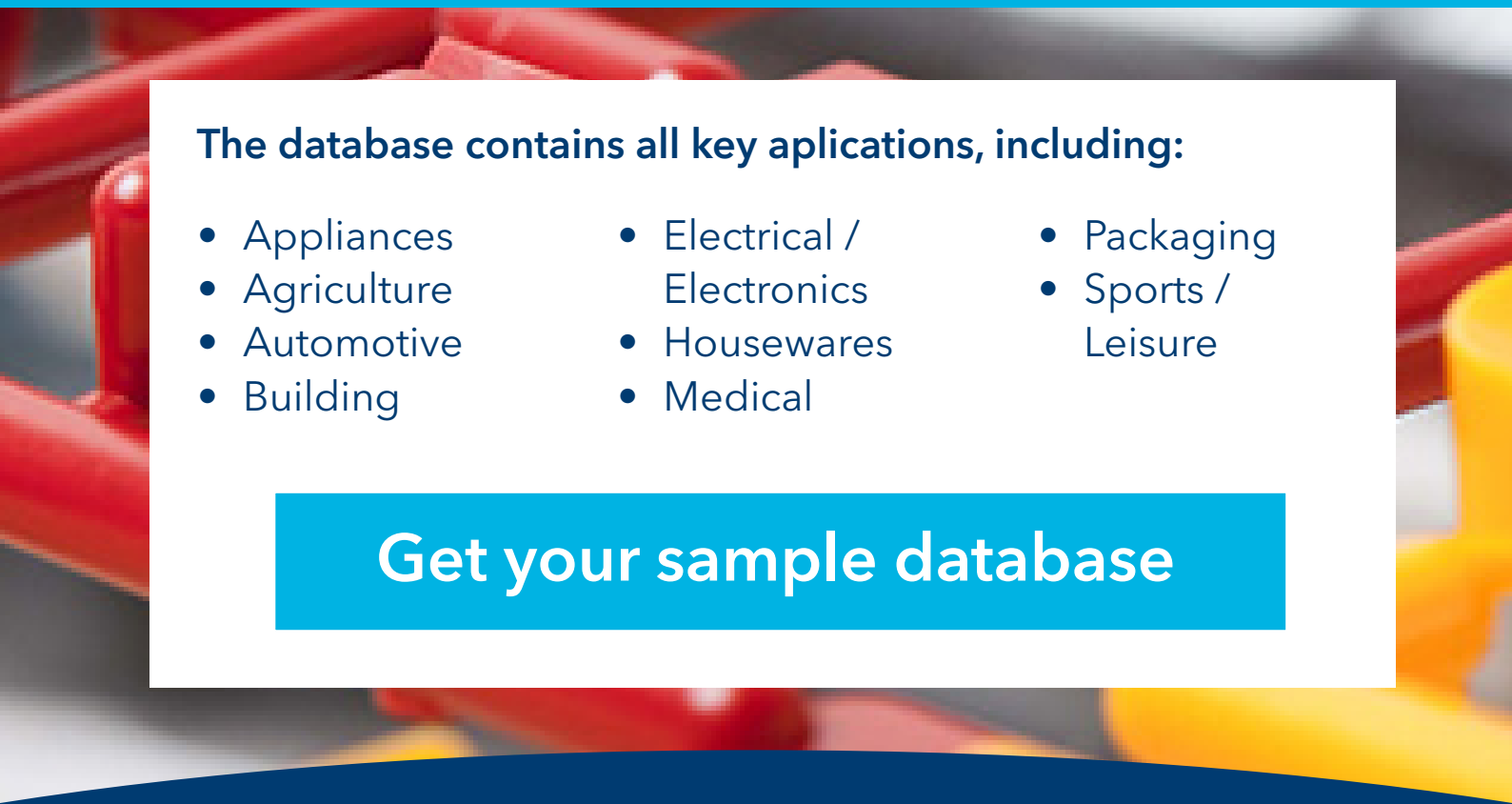

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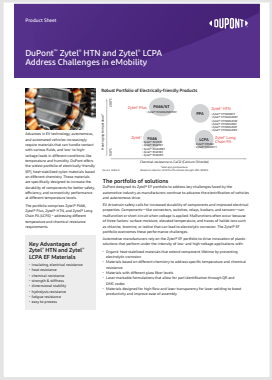
## DUPONT: E-MOBILITY POLYMERS




DuPont's Zytel HTN and Zytel LCPA polyamides are electrically-friendly (EF) materials designed to increase the durability of components in e-mobility applications. Find out about the features of DuPont's EF materials in this company brochure.

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## TISAN: ENGINEERING COMPOUNDS


Tisan Engineering Plastics has more than 40 years of experience developing injection moulding compounds for applications in automotive, home appliances, E&E and other sectors. Find out more about Tisan's wide range of materials in this brochure.

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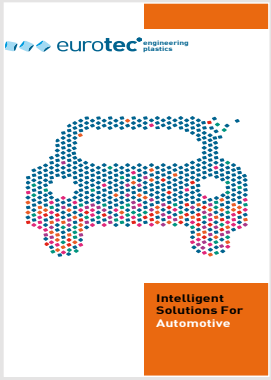
## EUROTEC: AUTOMOTIVE COMPOUNDS




This brochure presents the full range of Eurotec's engineering polymer compounds for automotive applications, including interior, exterior and under the hood. Read all about Eurotec's innovative products and tailor made services.

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## STRUKTOL: CREATIVE RECYCLING


Struktol Company of America offers a range of polymer additives designed to simplify the process of recycling plastics. Learn about its latest options for viscosity modification, odour control and compatibilisation.

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**If you would like your brochure to be included on this page, please contact Claire Bishop claire.bishop@amiplastics.com. Tel: +44 (0) 1732 682948**

# Keep informed: read our latest editions

**AMI publishes five process-specific FREE plastics industry magazines. Simply click on the cover below to read each magazine. Or download the issue in the relevant Apple or Android app**


**Injection World September 2022**
The September issue of Injection World looks at an ownership shake-up going on in the engineering plastics production sector. Other features are on digital production and medical moulding, plus there is a K2022 preview on injection moulding materials.

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**Injection World July/August 2022**
The Injection World July-August issue contains features covering optical injection moulding, new packaging developments and a colour masterbatch update, plus there is a review of Arburg Technology Days 2022 and a K2022 visitor guide.

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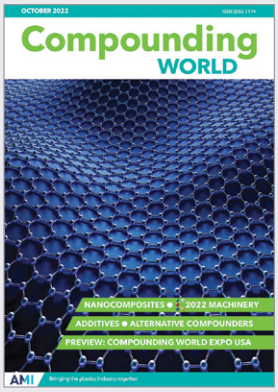


**Compounding World October 2022**
Compounding World delves into nano additives in the October edition. The cover story looks at new developments in graphene and CNTs. Other features cover additives for recycling and alternative compounding technology. Plus a preview of K2022 machinery exhibitors.

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**Plastics Recycling World September 2022**
The September edition of Plastics Recycling World looks at innovations in sorting technology. It also explores developments in granulation and food grade PP recycling. Plus, a preview of planned material introductions at K2022.

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**Pipe and Profile October 2022**
The October edition of Pipe and Profile magazine looks at the latest advances in pipe inspection. This issue also explores new developments in material handling equipment and PVC-O pipe technology. Plus, a preview of some of the new material introductions to see at K2022.

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**Film and Sheet September 2022**
The September 2022 edition of Film and Sheet Extrusion provides an update on thermoforming developments and explores innovations in plasticisers, multi-layer film recycling, and lab extruders. Plus, we preview some of the new machinery to see at K2022.

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Pipe and Profile EXTRUSION
Injection WORLD
Plastics Recycling WORLD

## GLOBAL EXHIBITION GUIDE

| | | | |
|---|---|---|---|
| 2022 | **19-26 October** | K2022, Dusseldorf, Germany | www.k-online.com |
| | **9-10 November** | Compounding World Expo USA, Cleveland, USA | www.compoundingworldexpo.com/na/ |
| | **23-26 November** | PlastEurasia, Istanbul, Turkey | https://plasteurasia.com/en/ |
| | **1-3 December** | Plast Print Pack West Africa, Accra, Ghana | www.ppp-westafrica.com |
| 2023 | **17-19 January** | Swiss Plastics Expo, Lucerne, Switzerland | https://swissplastics-cluster.ch/ |
| | **1-5 February** | PlastIndia, New Delhi, India | www.plastindia.org |
| | **17-20 April** | Chinaplas 2023, Shenzhen, China | www.chinaplasonline.com |
| | **30 May – 2 June** | Equiplast, Barcelona, Spain | www.equiplast.com |
| | **14-15 June** | Compounding World Expo Europe, Essen, Germany | www.compoundingworldexpo.com/eu/ |
| | **5-8 September** | Plast 2023, Milan, Italy | www.plastonline.org/en |
| | **26-28 September** | Interplas, Birmingham, UK | www.interplasuk.com |
| | **20-21 September** | Injection Molding & Design Expo, Novi, MI, USA | www.injectionmoldingexpo.com |
| | **17-21 October** | Fakuma, Friedrichshafen, Germany | www.fakuma-messe.de |
| | **8-9 November** | Compounding World Expo USA, Cleveland, USA | www.compoundingworldexpo.com/na/ |

## AMI CONFERENCES

| | |
|---|---|
| **28-30 November 2022** | Fire Resistance in Plastics, Cologne, Germany |
| **29 Nov-1 Dec 2022** | Polymers in Footwear **VIRTUAL** |
| **6-7 December 2022** | Thin Wall Packaging, Cologne, Germany |
| **7-8 December 2022** | Oil & Gas Non-Metallics, London, UK |
| **7-8 February 2023** | Reinforced Thermoplastics, Cologne, Germany |
| **28 Feb-1 March 2023** | Compounding and Masterbatch Asia, Bangkok, Thailand |
| **7-8 March 2023** | Single-Serve Capsules, Tampa, FL, US |
| **21-22 March 2023** | Chemical Recycling, Houston, TX, US |

**For information on all these events and other conferences on film, sheet, pipe and packaging applications, see**

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