OCTOBER 2019

ISSN 2053-7190

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Sigma Stretch expands

US-based Sigma Stretch Film has bought a new cast stretch film production line from SML.

The new line will be installed at its Shelbyville facility in Kentucky, and will help expand production capacity there.

At the same time, new winding technology will help Sigma produce high-quality hand-wrap films direct off the line, helping to streamline production and reduce lead times.

The line – its third from SML – will be delivered in the third quarter of 2020. With automatic roll handling allowing sustained high outputs – even on hand-wrap – annual production is expected to reach around 45 million lbs (20,000 tonnes) of stretch film.

› **www.sigmastretchtools.com**
› **www.sml.at**

Covestro exits PC sheet with sale to Serafin

Materials manufacturer Covestro is to sell its European polycarbonate sheets business to Serafin Group.

The sale comprises manufacturing units in Belgium and Italy, central management operations and sales support in Europe. The business generates total revenues of around €130 million (US$141m).

The move is part of Covestro's ongoing portfolio optimisation process, which includes the divestment of its entire polycarbonate sheets business. The sale of the European outlets concludes this – after earlier divestments of facilities in North America and India in 2018, and the conversion of its production in Guangzhou, China, into a speciality films site.

Covestro and Serafin have not disclosed financial details of the transaction. The completion is subject approval by antitrust authorities and is expected to close by the end of this year.

Munich-based Serafin aims to strengthen its new polycarbonate sheets business. Operations, which involve 250 employees, will be maintained at all sites, it says.

Covestro will continue to supply raw materials to it for the foreseeable future.

› **www.covestro.com**
› **www.serafin-gruppe.de**

Emsur opens new facility at HQ

Spanish flexpack producer Emsur has opened a new facility at its headquarters in Alcalá de Henares near Madrid.

The 5,000 sq m facility includes new printing and laminating machinery, which it says will improve the efficiency of its production processes and allow it to expand its portfolio of flexible containers.

A high-speed rotogravure printing line provides higher quality print registration and speeds up work changeovers thanks to the line ergonomics – while working with improved energy efficiency. The new facilities also include a laminator that allows lamination with or without solvents, depending on the technical requirements of each product.

"This investment allows us to keep extending our portfolio of products in Spain," said Santiago Sebastián, managing director of Emsur Madrid.

› **www.emsur.com**

Masterbatch with 30% recycled content

UK-based Silvergate Plastics has launched a new white masterbatch that contains at least 30% recycled content – which would help it circumvent a planned tax on plastic packaging.

Subject to consultation, the Government's proposal – to tax packaging does not contain at least 30% recycled content – could be implemented by April 2022, as part of its strategy to overhaul the UK's waste system.

Instead of waiting for the regulations to come into force, Silvergate has developed this masterbatch – which is suitable for food contact applications.

"Despite the current focus on plastic waste dominating headlines, plastic will continue to play a major role in all our lives," said Tony Bestall, CEO of Silvergate. "While our initial development has been for high volume whites, we can implement this technology into almost any colour."

› **www.silvergate.co.uk**

Silvergate's has developed a new masterbatch with recycled content ahead of proposed UK legislation

Constantia buys pharma packaging plant in Russia

Constantia Flexibles has acquired a majority stake in a Russian pharmaceutical packaging plant, owned by TT-Print.

The plant, in Voskresensk, becomes Constantia's second in Russia, alongside one in in Timashevsk. The new site employs more than 100 people, and produces flexible pharmaceutical packaging for the domestic market and neighbouring countries.

The pharma product portfolio from the plant comprises printed blister foil as well as sachet and coldform material. The company's second business pillar consists of packaging materials for customers in the food and dairy industry.

Bruchon: "We are the perfect partner to pharmaceutical producers in Russia, Kazakhstan and Uzbekistan"

The site recently finished construction and validation of cleanroom facilities to classification D of the Good Manufacturing Practice (GMP) standard at European Union level. Process steps range from goods handling, slitting of raw materials, and printing on various packaging solutions for pharma products.

"By implementing this concept, we have become pioneers in the Russian market," said Pierre-Henri Bruchon, executive vice president of pharma at Constantia Flexibles. "Our dedication to clean and stable production conditions makes us the perfect partner to pharmaceutical producers in Russia, Kazakhstan and Uzbekistan."

Ruslan Chuev, the previous owner, added: "This acquisition is a logical step towards creating a successful future."

› **www.cflex.com**

Adding capacity in the UK

Tech Folien, a UK blown film extruder based in Liverpool, recently added a 30,000 sq ft warehouse to its facility. The £1.2 million (US$1.4m) project adds to the company's existing 100,000 sq ft manufacturing facility.

The warehouse, built by Triton Construction, will help Tech Folien hold greater amounts.

Tech Folien is a part of MDV, a German niche manufacturer with a group turnover of €40m.

Prior to this expansion, the company added extra production, with the addition of recycling, slitting and winding machines.

› **www.techfolien.co.uk**

Gathering data boosts plastics performance

Aimplas, the Spanish plastics research organisation, is to host a series of demonstrators at its pilot plants to show Industry 4.0 for data collection, monitoring, sensorisation and control.

The installations are part of the G4ND4LF project, which aims to develop a smart system for the plastics sector – offering a comprehensive vision of materials performance all along the value chain, including manufacture of raw materials, the synthesis and compounding processes, and subsequent transformation by extrusion or other methods.

Aimplas will install demonstrators on various production lines. The data collected will be used to carry out further research and optimise the design and development times of different materials and products. The data can also help predict the performance of new materials inside the machinery without the need for production trials.

Aimplas will use Industry 4.0 equipment to gather data on several of its pilot plant lines

The aim is to provide companies in the sector with a demonstrator that enables them to identify the technologies that could be introduced into production processes at their own companies. The data will also feed the system and generate a robust, reliable structure in terms of the response to end users, says Aimplas.

In the first year, the project will focus on automated, centralised collection of manufacturing data. The final aim is to be able to apply the results obtained from these data.

› **www.aimplas.es**

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Italy's machinery imports and exports dip in first half 2019

Italy's imports and exports of plastics machinery took a dip in the first half of this year.

Imports of core machinery were 17% lower than the same period in 2018, while exports fell by 5% in the same time.

Amaplast, the trade body that represents machine makers, revealed the trend but did not release specific figures. It analysed foreign trade statistics published by ISTAT.

Amaplast added that trade with its largest historical trading partner, Germany, has also contracted this year. The supply of Italian machines to Germany fell by 26%, while imports of German machinery fell by one-third.

In the first six months of 2019, Italian processing companies imported less machinery from their major European suppliers – Germany, Austria, France and Switzerland – than they did from Asian suppliers, especially China and Japan.

Europe, which remains the largest export market, fell in market share due to a 9% dip in overall value. This was caused mainly by reduced sales in markets outside the EU, especially Turkey – which fell by 37%.

NAFTA remains the second-largest export market, though while sales to the USA grew by 15%, those to Mexico (-12%) and Canada (-39%) fell. Overall, exports to South America fell by 6%, though there were positive results for Brazil, Argentina and Colombia.

Exports to Asia grew by 10% overall, with positive results in China (+39%), Thailand (+55%) and Indonesia (+110%). Sales to India slowed slightly by 1%.

Opinions collected by Amaplast over the summer – from companies in this sector – showed a less than optimistic outlook. Overall, there is concern for the tendency towards a postponement or reduction in customer orders.

"Current market conditions are not encouraging, but companies in the sector have great hopes for K2019, where there will be many Italian exporters," said Dario Previero, president of Amaplast.

› **www.amaplast.org**

Formosa in major PVC expansion

Formosa Plastics Corporation, Louisiana (FPC) is to invest $332m to expand PVC resin production by around 136,000 tonnes/yr at its site at Baton Rouge, Louisiana, US.

The project will include new machinery and equipment for the PVC resin unit, according to Louisiana Economic Development, as well as the upgrade of a halogenated acid unit for internal production of vinyl chloride monomer and utilities for the new operations. These should be launched in late 2021 or early 2022.

› **www.fpcusa.com**

Maguire's new Taiwanese subsidiary will serve the growing local market for plastics ancillaries

Maguire opens subsidiary in Taiwan to serve local demand

Maguire Products has established a new subsidiary in Taiwan to serve the growing local market for plastics ancillary equipment.

The new company will serve local customers with sales and technical support for a range of products, including blenders, dryers, gravimetric feeders, loading systems. It will stock a number of fully assembled machines and a complete range of spare parts.

The subsidiary, in Taichung City, will include a demonstration facility.

"We have created Maguire Taiwan to provide direct service to a market of considerable size and importance that until now we have served through agents," said Hubert Nerlich, managing director of Singapore-based Maguire Asia.

The new company's general manager, Danniel Hsieh, will head a staff of factory-trained sales and technical service specialists.

› **www.maguire.com**

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We carried a detailed preview of the polymer materials and additives of interest to extruders in the September edition of Film & Sheet Extrusion (you can read it here). Here, we take a look at some of the latest introductions that missed last month's publication deadline.

Baerlocher will showcase its expertise in plastics recycling during K2019.

Its stand will feature its Baeropol T-Blend products, which can help solve various recycling issues. These dust-free additives are based on Baerlocher's RST-platform that works with traditional antioxidants. The company will also share its latest RST advancements – including new grades that offer enhanced properties previously not associated with traditional recycling.

The company will also share successful case studies in a range of areas. One example highlights the improvements that Baerlocher's additives had on the bubble stability and increasing recycled content in an LDPE film.

Live demonstrations by recycling specialists Erema and APK will show how Baerlocher additives can enable the upcycling of low-value, difficult-to-recycle consumer film waste into a material suitable for profitable products used in the construction sector.

› **www.baerlocher.com**

Above: Baerlocher will highlight its expertise in plastics recycling at K2019

Clariant will focus on products designed to simplify the recycling of plastics. These include a new range of black colorants that are compliant with the near-infrared (NIR) scanning and sorting systems used in current automated recycling plant. The CESA-IR pigments have been developed to enable IR-detectability of black HDPE and LDPE in injection and extrusion blow-moulded products, black polypropylene (PP) in films and injection-moulded products, and black PET and CPET in sheets and film.

Newly-developed AddWorks PKG 906 Circle stabiliser for polyolefin films allows producers to increase the reuse of waste materials in their films, recycling their own reground scrap, without any loss of performance or processing efficiency. It is particularly well-suited for BOPP film, says Clariant, but is also applicable to cast and blown film processes. With Clariant's additive, the reuse content of the post-production waste in the final film can be increased by up to 30%, the company says.

The company will also launch a new oxygen scavenger masterbatch for production of PET food and beverage packaging that uses a new chemistry that the company claims allows it to outperform existing options. The idea is to eliminate the need for barrier packaging in some applications, which could result in easier recycling of the used packages. Clariant says that initial customer trials have gone well.

› **www.clariant.com**

PHOTO: CLARIANT

Above: Clariant says its AddWorks PKG 906 Circle stabiliser helps packaging film producers recycle their polyolefin production waste without compromising the packaging film quality

DuFor Resins has developed CumaPET L04 100, which improves recyclability and sealability of PET thermoforming sheet compared to standard PET grades. When re-extruding APET sheet which is coextruded with a CumaPET L04 100 top layer, the end-product will be completely homogeneous with the same clarity as 100% virgin material, says the company. CumaPET L04 100 is characterized by lower melting and glass transition temperatures, which widen the processing window for sealing. Packaging which is produced with CumaPET L04 100 is fully recyclable, along with the trim waste which originates during tray production.

› **www.dufor.nl**

Oman Oil and Orpic is to outline its plans for polyethylene (PE) and polypropylene (PP) expansion.

An investment by Liwa Plastics Industries Complex (LPIC) will see production of PE and PP increase to 1.4 million tonnes by 2020. The portfolio will include LLDPE, HDPE and PP.

"We are shaping possi-bilities across the packag-

Above: Palsgaard's Einar range, including its anti-fogs, is sourced from vegetable oils, and is food-grade and food-approved

ing, infrastructure, household and appliances, agriculture, and health-care industries," said Talal al Awfi, chief commercial officer at the company.

› **www.orpic.com**

Palsgaard will highlight the benefits of food-grade polymer additives at K2019.

Everything in its Einar range are food-grade and food-approved – as they are sourced from sustainably produced vegetable oils.

Solutions on show will include anti-fogs and anti-statics. Its anti-fogs include Einar 1122, a water-based, solvent-free dispersion of food-grade additives. Ideal for stretched polyolefin and polyester films, it delivers anti-fogging performance at low coating concentrations and compares well with competing products, says the company.

At the same time, its anti-statics include Einar 601, an amine-free solution for anti-static protection in polyethylene (PE) applications.

In addition, it will show Einar 201, a reliable general-purpose mould release and de-nesting additive for PP applications; and dispersing aids including Einar 101, which disperses pigments more effectively than industry-standard waxes.

"We'll be demonstrating that anti-fogs, anti-statics and dispersing aids can be safe enough to eat," said Christina Normann Christensen, product and application manager for non-food at Palsgaard. "Furthermore, using food-grade solutions doesn't mean sacrificing on quality – in fact they commonly outperform fossil-based alternatives."

› **www.palsgaard.dk**

French compounder **Polytechs** is to unveil a new range of products at K2019.

The company has extended its PW range of cling masterbatches for polyolefin stretch film. Its new PW S range helps to increase the 'clinginess' and 'noise' of agricultural silage films. Polytechs is also developing products that extend the shelf life of foods wrapped in monolayer PE film.

Polytechs will also introduce two new products that raise productivity, called Flow Xpress and Clean Xpress.

Flow Xpress covers two different technologies: the first is a viscosity modifier for polypropylene (PP), and the second is a combination of various process assistance products that reduce the friction and pressure exerted on materials in the extruder.

Clean Xpress is a set of purging compounds for both injection moulding and extrusion, which delivers high efficiency – especially for material and colour transitions, says the company.

› **www.polytechs.fr**

Struktol will discuss its full range of additives at K2019, including products to enhance recycled plastics. Its additives can be used for various

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purposes: compatibility improvement, homogenous blending, improved processing, melt flow/viscosity control, odour elimination and increased throughput. Compatibilisers for homogenising polymers include RP 28, TR 052, TR 219 and TR 229. Additives used for odour control include RP 17, RP 53 and RP 59. The company's range of polypropylene viscosity modifiers includes RP 06, RP 11, RP 23 and RP 38.

› **www.struktol.com**

Above: Total Corbion will be serving coffee in these heat resistant PLA cups from Pacovis

Total Corbion will show examples of current applications for its Luminy series of PLA bioplastics. A key focus of the display will be its high heat resistant grades, which it will be demonstrating by serving coffee – or tea – in thermoformed Naturesse cups produced by Pacovis. Other exhibits include PLA-based Nespresso coffee capsules from ATI, thermoformed packaging items from Pack & Proper, Danone and Cuki Professional, and PLA-coated paper cups and drinking straws from EcNow Tech and Shanghai Xinxin.

› **www.total-corbion.com**

Grupa Azoty will highlight its two latest non-phthalate specialty plasticisers. The Polish chemical firm is introducing the Adoflex and Oxovilen plasticisers alongside its existing Oxoviflex products, launced in 2015.

The two additions to the company's plasticiser portfolio are manufactured in a new 10,000 tonnes/yr multifunctional plant at Kędzierzyn-Koźle. Adoflex is a bis(2-ethylhexyl) adipate that is said to provide very good plasticising properties and is recommended for production of food-contact materials due to its good toxicological profile. It maintains its properties at low temperatures and can be used as a main or functional plasticiser along with Oxoviflex. Oxovilen is a di(n-butyl) terephthalate that is said to offer fast polymerisation and low migration. A key target market for the product is flexible PVC liners, where it can be used as a functional plasticiser with Oxoviflex.

Both of the new plasticisers comply with the requirements of the EU REACH regulation. According to Grupa Azoty, they are not subject to any restrictions nor authorisation while their safe profile means they are not subject to CLP classification.

› **www.grupaazoty.com**

Repsol's main features at K2019 will focus on its sustainability activities, including the first products from its Reciclex line of olefins with recycled content and its Zero chemical recycling initiative. Repsol 50RX2805 is an LDPE containing 50% post-consumer waste that is formulated for production of films for secondary packaging applications such as collation. The Zero project aims to use pyrolysis oils obtained by chemical recycling of plastic waste. The company says it has incorporated these products into its petrochemical plant at Puertollano in Spain on an experimental scale.

› **www.repsol.com**

Sartomer, part of Arkema, has arange of resins and materials that lift performance of LED-, thermal, UV- and EB-cured materials for packaging inks, plastic coating and other applications. Featured products include low-migration resins for packaging inks, for use in flexible packaging.

› **www.arkema.com**

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Some of the most impressive displays at K2019 will be the film and sheet extrusion lines. Here, we look at some of the extruder developments that will be on show

Down the line: extruder developments at K2019

Extruders sit at the heart of extrusion lines – and manufacturers traditionally save up many new developments for presentation at major shows such as K2019.

Macchi will present a seven-layer blown film line, with a net width of 2700mm, belonging to its new POD Flex series.

The new technology helps meet growing market demand for flexible extrusion lines, capable of extruding both lamination and barrier materials, as well as bio-materials.

The new POD Flex series allows rapid job changes while minimising production waste. The line on display will show how simple it is to shift from high-capacity production (for lamination film) to technical film productions – where control of layers related to barrier materials is fundamental.

A new design and combination of extrusion screws allows greater flexibility in processing different materials as well as a greater extrusion capacity – thanks also to the innovative PVD technology. At the same time, a new TE572 series extrusion head – complete with PVD treatment – is designed to manage both polyolefin and barrier film formulations on the same line. A double no-contact film thickness control system – capacitive and optical – is suitable for real-time detection of barrier layers.

The line also features: an integrated, continuous gravimetric system, for rapid material changes and reductions in production waste; a new take-off unit (ST426R) with reduced height design, for safer operation; and a new BO Plus winding system, complete with reel unloading and handling units with telescopic connecting rods and innovative cutting system. The new reinforced structure allows perfect winding of reels up to 1200 mm diameter, says Macchi.

Main image: Macchi will present a 2700mm-wide, seven-layer blown film line belonging to its POD Flex series at K2019

Stretching performance

Colines of Italy recently launched its new generation AllRollex 3000 6UP, a stretch film production line that the company will demonstrate live at K2019.

The line configuration uses seven extruders and nine layers, with a net output of 2100 kg/h and a consistent production speed up to 750 m/min. Colines has engineered innovative and definitive technologies to reduce energy consumption and

Above: Reifenhäuser's Reicofeed PRO measures the thickness of multi-layer films on the fly and adjusts them automatically

film thickness (down to 6 microns), and improve control of process parameters by using Industry 4.0 procedures.

The company says that the line is user-friendly and cheap to run – with a low specific power consumption rate in kWh/kg.

The new system has a number of new technical features that have improved the quality of high performance films (extreme down-gauging of stiff films – metallocene-rich-recipes) and consistency in overall line performance in terms of reliability and throughput, says Colines.

Some of the new features behind the enhanced performance include:

- a newly designed gel-free extrusion screw profile;
- a fourth-generation Big Mouth re-feeding system, which reclaims up to 40% of material;
- infrared heaters on Perform-Ex extruders, providing energy savings of around 22% compared to conventional ceramic heaters;
- a new die (Reflex, from **Cloeren**) with an improved automation system; and,
- redesigned edge pinning devices that can achieve high stability and grip of low-gauge films.

Developments in the automation system also allow a dramatic reduction in the need for operator interaction, says the company.

Thickness on the fly

At K2019, **Reifenhäuser** will show an array of technologies that help to improve production on a variety of film and sheet extrusion lines.

For instance, it has developed a technology that can measure the thickness of multi-layer films on the fly – and adjust them automatically.

"Our patented Reicofeed-Pro achieves this even for high-tech products," said Johannes Müller, managing director of Reifenhäuser Cast Sheet Coating. "Single-layer thicknesses can be set across the width in the feedblock – even during ongoing production. As a result, line stops for product changes become unnecessary, which means that we maximise the machine run time."

By using innovative measuring systems, the line can continuously and reproducibly measure the thickness of the functional layers during production. Deviations from the target value are detected in real time and trigger an immediate modification of the parameters, which the Reicofeed feedblock then implements. The line is in a closed loop, optimising itself.

"Automation means that the know-how is located in the machine, removing the burden from the operator," said Müller. "This smart solution enables us to make the individual layers one or two microns thinner, thus optimising cost efficiency."

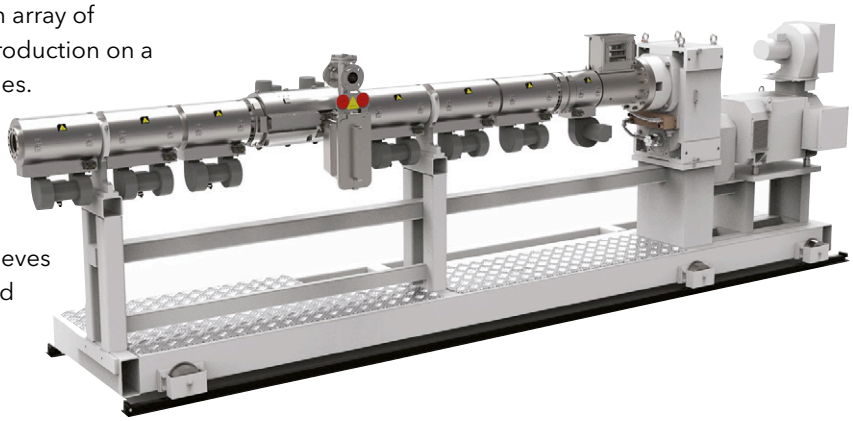
He says that raw material savings in the "mid-six-figure range" can be saved each year.

The company will also reveal how its Evo Ultra Stretch system is being used to make recyclable, mono-material packaging. It will present a new solution for processing polyethylene (PE). Its MDO film stretching system is already being used in plant to make breathable backsheet films in the hygiene sector.

Eugen Fredel, sales director at Reifenhäuser Blown Film, said: "The positioning of the MDO in the haul-off unit is a key factor. The advantage lies in the fact that the plastic can be stretched using initial heat by a four- to six-fold extent. This enables us to achieve a much higher process stability and lower shrink values due to the longer cooling path. The result is a recyclable film with improved sealing properties, which can sustainably replace PET."

The film's simple heat-sealing property also allows a high degree of efficiency in the later finishing process, as it can be further processed on existing finishing equipment with no adaptations needed.

"By adapting the Evo Ultra Stretch to mono-material laminates, we can offer a high-performing alternative within packaging production," he said. ❯



Right: Battenfeld-Cincinnati's StarExtruder series of machines is aimed at PET processing

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Compared to conventional film stretching systems, the investment costs for the components are significantly lower – as are energy consumption levels due to the use of initial heat, said the company. The application has already been field tested by a Reifenhäuser customer.

During K2019, the company will also run an open house at its nearby technology centre in Troisdorf.

Star performer

Battenfeld-Cincinnati has developed its StarExtruder series of machines, aimed at PET processing – though it can handle other materials.

The StarExtruder series marks an expansion of its PET processing product range. It is suited for processing up to 1,000 kg/h of PET, with a screw diameter of 120mm. The entire series comprises four extruder sizes covering outputs from 600 to 1,800 kg/h.

A single-screw extruder with a degassing zone made up of a planetary roller unit forms the basis of the StarExtruder. In this zone, the melted material is rolled out into very thin layers and a large surface area is created. This helps generate the ideal conditions for high degassing and devolatilisation performance – a crucial factor for ensuring maximum product quality when processing PET and other materials.

A further advantage is the large degassing opening on the side of the extruder, which is both accessible and easy to clean. Both virgin and recycled materials (ideally those which have been pre-conditioned) can be processed. The new extruder range can also process other materials that require a high level of degassing.

"Sheet manufacturers can produce new or optimised formulas and material combinations under production conditions and become more familiar with our machine engineering expertise," said Henning Stieglitz, CTO of Battenfeld-Cincinnati.

At the show, the company will exhibit a StarExtruder 120.

Data retrofit

KraussMaffei says that all extrusion machinery – no matter its age – can be given a 'digital retrofit' to make it 'fit for Industry 4.0'.

The company's Digital & Service Solutions (DSS) business unit will showcase a retrofitted machine.

Industry 4.0 describes the way in which machinery can become more interconnected with its environment. For instance, fitting a variety of sensors to the machine – and instantly sharing the information from them – allows operators and managers to improve performance.

With its retrofit program, KraussMaffei says it creates the technical prerequisite for connectivity– across processes, generations and, later, even across manufacturers.

"Wherever data arises, it also needs to be stored," said the company. "This can take place entirely in the cloud – via a gateway computer – or near-network, by means of Edge computing."

Advantages include quality improvement, production control, and greater efficiency – thanks to the reduction of maintenance, energy, material and personnel costs.

"In the future, businesses will be competitive only if they have a networked system of production," said KraussMaffei.

KraussMaffei already offers tools such as the DataXplorer, which stores up to 500 signals per second as continuous curves, to reveal details about the production process. These signals can originate from sources such as the machine itself, from the tooling or from peripherals. DataXplorer opens the door to status and process monitoring for extrusion, said the company.

Above: DataXplorer is now available for all types of KraussMaffei machinery, including extruders

Because some companies do not want to get involved with data analysis, DSS offers the option to outsource specific analysis knowledge. Using the available information, experts can help to boost process optimisation, generate customer-specific reports and provide data-driven guidance in order to make better decisions. ›

SAM of South Korea has won some important contracts in Europe this year

European contracts

Sung An Machinery (SAM) of South Korea will be showcasing its expertise at K2019 – having won some important contracts in Europe this year.

Lohmann of Germany has ordered a twin converting machine for double-sided adhesive tapes. The €9m investment will help the company to expand its portfolio and acess new customer groups. It also improves efficiency by adding a resource-saving coating process. Production with the machine will begin in early 2021.

Earlier this year, Loparex of the Netherlands – which manufactures liners – bought a high speed tandem extrusion coating machine in order to boost capacity. The machine begins operation early next year and will double the company's manufacturing capacity in Europe for poly-coated release liners.

As well as South Korea, SAM has bases in Italy and the USA.

Cast line for stretch film

Amut will show its new ACS 2000 cast line for stretch film production at K2019 – including its newly patented Q-Catcher system.

Q-Catcher permits the repetition of previously saved parameters with the reproduction of the film having exactly the same mechanical properties. It has previously been presented at other events – including Plastics Extrusion World Expo in Cleveland, USA – but this is its first live demonstration.

The ACS 2000 has a seven-layer, five-extruder configuration and a useful width of 2000mm. The output is around 1300 kg/h and film thickness range from 6 to 25 microns. Production speed of 850 m/min and mechanical speed up to 1000 m/min is possible.

The upgraded technology includes the Amut-branded T-Die Essentia with die splitter, movable vacuum box for cleaning without dismantling, jumbo type chill roll unit and Prowind 4.0 super-fast winder for hand, machine and jumbo rolls without any hydraulic components.

Below: Amut's ACS 2000 cast line for stretch film production will be showcased at K2019

Clean and dry

Extruders from **Meaf** are now available with a **Kreyenborg** IR-Clean system, to dry and decontaminate post-consumer PET flakes making food packaging in compliance with food safety regulations.

Meaf will show the relevant extruder – a 90mm APET extruder with inline IV measurement device.

The combination helps PET sheet producers meet their customers' strict recycling demands and take a step towards 100% circular PET production.

Due to the recycling and cleaning process, post-consumer PET flakes usually have a relatively high humidity. For food grade PET, it is vital that the material is crystallised, dried and decontaminated before being extruded.

Later this year Meaf will install a complete R-PET production line, combining its 90+50 co-extruder with an IR-Clean system for test purposes.

"We are investing in this line to allow our customers from the food packaging industry to run trials with their specific grades and gain knowledge and experience in processing R-PET," said Ardjan Houtekamer, technical director at Meaf.

PET recycling is also important in an application with EconCore of Belgium – which recently chose a Meaf 50-H34 extruder for its trial production of R-PET ThermHex honeycomb sandwich panels. The R-PET honeycomb core is made of 95% recycled post-consumer PET from bottles. The extrusion technology will also be seen at the show.

"We want to bring a smart, innovative and sustainable product to market that contributes towards the circular economy of plastics," said Wouter Winant, technical manager at EconCore. ❯

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Above: In blown film, Davis-Standard will show the Vector air ring, which can improve uncorrected film gauge by up to 80%

Predictive maintenance

Davis-Standard and its subsidiaries – including **Brampton Engineering** and **Thermoforming Systems** – will showcase a range of extrusion and converting technologies at K2019.

It will also show a number of control and maintenance products, including its DS Activ-Check. This helps processors take advantage of real-time predictive maintenance, by providing early notifications of potential machine failure. Machine operators are alerted to issues before they happen, reducing unplanned downtime while also collecting operating data. Users receive notifications via e-mail or text, and continuous monitoring of production machine status is available on smart devices and remote PCs. Key parameters monitored include extruder reducer, lubrication system, motor characteristics, the drive power unit, barrel heating and cooling.

A new extrusion die for extrusion coating, the 510A, will show the advantages of a short lip design and edge bead reduction (EBR) functionality. The die features an exchangeable lip optimised for specific resin types, a motorised internal and external deckling system for safe operation, an internal die channel for optimal melt flow and deckling adjustment, and an internal rod for edge bead reduction and leakage-free operation.

In blown film, the company will highlight its partnership with Gloucester Engineering and Brampton Engineering – which offers customers with GEC Extrol control systems the chance to upgrade their control systems to Italcys 5. Also, the Vector air ring will show how new air control technology can improve the uncorrected film gauge by as much as 80%.

The air ring provides stable air velocity resulting in consistent cooling to minimise variations in gauge across the width of the film.

Live demos

Graham Engineering will showcase live demonstrations of a range of its extrusion systems – equipped with its Navigator control system – to make end products including and sheet.

Real-time graphical display is a feature of the Navigator control system, said the company. High visual correlation between the touchscreen and machine function ensures an intuitive user experience for ease of use and rapid learning, it added. Control is delivered via hardware that is designed to withstand harsh industrial conditions such as vibration, electrical interference, high temperature, and humidity.

Originally developed for Graham's extrusion blow moulding systems, Navigator controls were later adapted for Welex sheet extrusion lines. There are three levels of functionality: XC100 for stand-alone extruders; XC200 for one or more extruders in simultaneous operation; and XC300 for integrated production lines with the extruder and other components such as a winder.

During the show, Welex will produce thin-gauge polypropylene on an Evolution sheet extrusion system, equipped with Navigator control. More broadly, the system can be customised for widths of 36-90in (90-230cm), gauges of 0.008-0.125in. (0.2-3.2mm) and throughputs up to 10,000 lbs/hr (4,535 kg/hr).

Monolayer and co-extrusion systems are available, with up to nine extruders. In addition to a customised roll stand, the Evolution system can also be equipped with screen changers, melt pumps, mixers, feedblocks and dies.

The line on display at the show will also include a proprietary roll-skewing mechanism for thin-gauge applications, maintaining quick roll change and electric gap adjustment under full hydraulic load without interrupting production.

CLICK ON THE LINKS FOR MORE INFORMATION:

- **www.macchi.it**
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- **www.reifenhauser.com**
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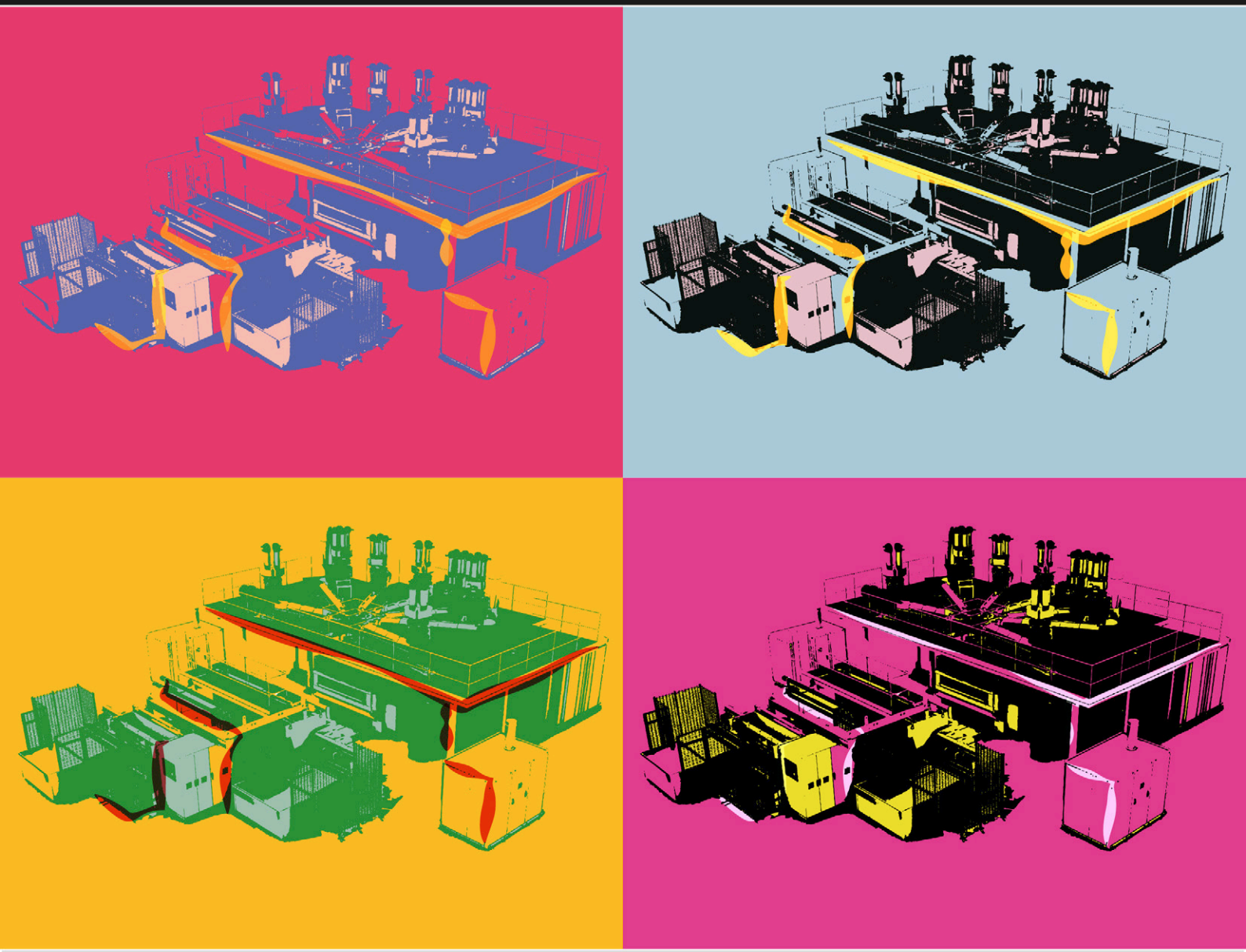

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Extruders' guide to K 2019

Part 2: Machinery and ancillaries

The world's biggest and most international plastics trade fair opens in Dusseldorf in Germany this month. K2019 is the place to see the latest innovations in plastics materials and processing but it is a big event that's best approached with a plan – our pre-event coverage aims to help you get the most from your time there.

This month we take a look at some of the planned machinery and ancillaries introductions likely to be of interest to extrusion companies. In this section, we provide details on some of the newest developments in extruders, dies, control systems, recycling systems and many ancillary products.

K2019 will be a big show. The previous event in 2016 attracted 3,285 exhibitors and set a new attendance record of 232,053 (up by 5.5% on 2013 numbers). The mood among visitors back then was very positive – the plastics industry had been going through a seven-year investment boom.

The picture for 2019 is quite different: global markets are slowing, protectionist economic policies are emerging, the impact of the UK's departure from the EU remains unclear, the automotive industry is facing a technological upheaval, and plastics are finding themselves in the environmental firing line.

Against such a background, it is no surprise that machinery makers have dialled down their expectations: VDMA, which represents German machinery manufacturers, is forecasting at least a 10% decline in production value across its members this year, reversing a decade of growth. That said, the K show has always been a shop window for the latest technologies and a place where business is done – whatever the prevailing market conditions. That is likely to remain the case for K2019.

If you are planning to attend the show but are yet to finalise your travel and accommodation, it is not too late. But you should act fast. There are some useful weblinks at the foot of this page and plenty more in the 'First Look' article in our August edition that may prove helpful **http://bit.ly/2lCcm5X**

The Film & Sheet Extrusion and AMI magazines team will be at the show for the full eight days 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 20,000 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 new North American and European expos available. Some of our industry experts will also be giving daily presentations covering compounding, masterbatch and recycling. You can learn more about those here **https://go.ami.international/book_ami_k2019demo/**

Dates: 16-23 October 2019
Venue: Messe Dusseldorf, Dusseldorf, Germany
Hours: 10:00-18:30 daily
Tickets: One-day €75, three-day €155 (€49/€108 online). All include free local transport and on-site wifi
Organiser: Messe Dusseldorf
Website: www.k-online.com

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

K2019 hotel booking – http://bit.ly/k2019hotel
K2019 online ticket purchase – http://bit.ly/K2019tickets
K2019 exhibitor search – http://bit.ly/K2019exhibitorsearch
K2019 iOS/Android apps – http://bit.ly/K2019mobile

Right: Addex is to unveil the next phase of its 'intensive cooling' technology for blown film lines

US-based **Addex** is to unveil the next phase of its 'intensive cooling' technology for blown film lines. It says that its "revolutionary approach" to bubble cooling can lead to increased stability and output. The company has now refined its existing system, allowing further improvement, it says.

To date, Addex has typically replaced a conventional dual flow's low-velocity, diffused-flow lower lip with a high-velocity, upwardly-directed, and focused air stream. This is mounted flat to the die to create a new lock point, about 25mm above the die lip. It is supplied as part of Addex's industry-standard laminar flow air ring.

Addex's first phase of R&D work in intensive cooling has helped it develop systems to run both high- and low-melt materials. In its next phase of research, it will look at the design of other components within blown film cooling – with an eye towards optimising total system performance in combination with intensive cooling.

"Intensive Cooling allows us to push output so far that we start to see where other parts of the cooling system begin to break down, such as the main air ring lip designs, air collars, and IBC – so that's where our R&D is focused now," said Bob Cree, president of Addex.

Intensive cooling operates over a range of configurations and materials, supporting fast changeovers and enhanced bubble stability, even at higher output rates. It can yield a broader range of processing parameters such as BUR (blow up ratio), thickness, and melt strength. Combining it with Addex's auto-profile External Gauge Control (EGC), processors can also reduce thickness variation.

Addex guarantees a minimum of 10% increase in output rate, though customers have reported higher: a 30% increase in output is typical, especially for stiffer materials, while one customer reported an 80% output, says Addex.

"The only drawback to retrofitting a line with intensive cooling is that the customer may need to make further investments in blowers and extruders to handle the increases in output rate," said Cree.

› **www.addexinc.com**

Amut is highlighting three of its innovations for plastics recycling on its stand at K2019. It is showing a bottle-to-packaging recycling line concept it has developed in collaboration with Erema. The extrusion line is designed to process 100% post-consumer PET bottle flakes into single layer foil, food grade certified, for thermoforming. The line involves a direct FDA extrusion process.

The company is also exhibiting a patented friction washer designed for intense PET/HDPE/LDPE washing and contaminant removal. Due to the strong cleaning force of the friction washer, flakes have the quality required to be re-used in many applications.

Tetrapak polymer-aluminium (POAL) waste can be converted into Ecoallene material for reuse using a recycling line incorporating Amut equipment. Ecoallene pellets are suitable to be extruded and thermoformed or processed by injection moulding.

› **www.amutgroup.com**

Materials testing specialist **Atlas** will demonstrate its suite of advanced weathering test instruments for polymeric and plastics materials at K2019.

These include Atlas' Ci4400 Weather-Ometer – which features design modifications for user convenience, more intuitive operation, and improved chamber uniformity – as well as its XenoCal for Ci, a more accurate process for irradiance calibration that improves repeatability and reproducibility.

The Xenotest 440, a versatile weathering instrument is suitable for a variety of materials including plastics. The Xenotest 440's twin-lamp test chamber with XenoLogic technology enables faster testing. Powered by two 2200W xenon lamps, it can reach 2-sun irradiance levels for significantly shorter test times, says the company.

The Suntest XLS+ is a compact, benchtop instrument for weathering and colour lightfastness testing of plastics. The test chamber offers a 1170cc test area and is specially designed for testing 3D specimens.

› **www.atlas-mts.com**

Atlas Converting will unveil a compact turret slitting rewinding machine at K2019.

The Titan ER610-DT promises to raise productivity,

Milliken presents

At K 2019, WM Thermoforming to make a clear case for using Milliken-modified PP

Switzerland-based **WM Thermoforming Machines** will use its new Flex 92 machine at K 2019 to produce square polypropylene container lids made from NX® UltraClear™ PP sheet.

Italy's MP3 Srl extruded the sheet, which can only be made by using **Milliken Chemical's** Millad® NX® 8000 clarifier. NX UltraClear PP sheet offers transparency and strength, while also helping converters to boost their sustainability and productivity.

On its K 2019 booth (Hall 3/A16), WM plans to run the Flex 92 with a tool made by Germany's Marbach Group that features in-mold cutting technology, marking the first time WM will show this special equipment on a thermoforming machine.

Milliken, occupying Booth A27 in Hall 6, will use its presence at the Oct. 16-23 trade fair in Düsseldorf to demonstrate how Millad NX 8000 is just one of the many products in its portfolio that are "Enhancing plastics with Color, Care, Clarity and Performance. Together."

Millad NX 8000 clarifier for polypropylene — a key component in nearly 80% of the world's clear PP today — transforms the resulting NX UltraClear PP into a lightweight, crystal-clear replacement for alternative materials. The resulting thermoformed packaging coming off the WM machine will serve to showcase the clarity that this additive brings to thermoformed packaging.

At the same time, the Flex 92 will highlight how it provides more flexibility and freedom of choice to thermoformers. The machine can accommodate an extensive number of mold types without the need for any major modifications. The machine's technology, says WM, improves parallelism stability, cutting resolution and steel-rule die longevity — all of which can be monitored though a new remote machine viewer interface.

*Visit us at **Booth A27 in Hall 6** or WM Thermoforming Machines at **Booth A16 in Hall 3** to see how you can gain a clear advantage with Milliken. Learn more at **k-2019.milliken.com** and at **www.wm-thermoforming.com**.*

WM Thermoforming Machines

Milliken™

Right: Atlas Converting's Titan ER610-DT slitter rewinder promises faster speeds with enhanced operator safety

processing web widths up to 1650mm (65in) at up to 600m/min (2000ft/min).

The company spent three years developing the new model. It offers increased productivity, reduced machine download times and improved operator safety, says Atlas.

The model has four rewind shafts – two in each turret – for high productivity. Turrets are of cantilevered design, which eliminates the need for centre cross shafts.

Winding is performed on two rewind shafts. While this is being done, the other two shafts can be loaded with cores, to enable a fast changeover when winding is complete.

A new control system uses a flat touchscreen terminal to allow simple operation. This is used to input the most commonly used functions, such as speed, tension and lay-on pressure. It uses symbols rather than words – so is not language-sensitive.

A line-laser guide core positioning system enables the operator to reload new cores quickly and accurately, which minimises set-up time. Individual laser alignments can be set as low as 25mm.

An auto crosscut facility means there is no need for manual cutting, which helps to boost safety. At the same time, laser scanner and guard fences ensure that operators cannot enter the work area while the machine is running.

› **www.atlasconverting.com**

Baldwin Technology will showcase a range of cleaning, surface treatment, coating and drying innovations at K2019.

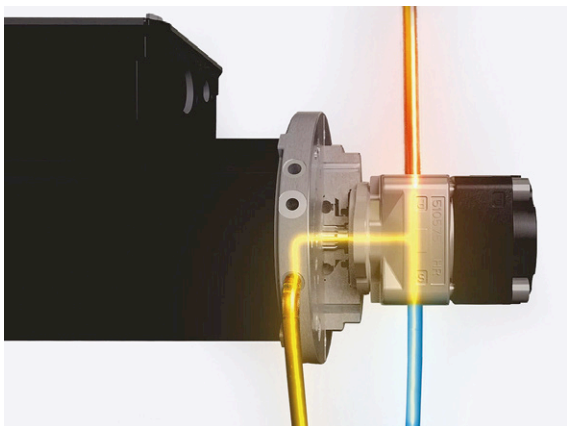
"These are ideal for flexible film extrusion, lamination and printing systems," said Peter Hultberg, CCO of Baldwin Technology. "We will show how you can gain additional hours of extra production time a year thanks to our automatic cleaning system."

The company will present a new generation of its energy efficient Ahlbrandt Corona surface treatment technologies – which ensure enhanced ink and glue adhesion for high quality printing and laminating. Electrodes can be changed in a few seconds, to maximise production uptime.

The Ahlbrandt rotor spray coating secures a film quality with long term anti-fog properties and release for demoulding thermoformed parts. Using non-contact application technology, it saves both chemistry and energy consumption and unlike other processes, there is no harm to any recycling of the finished film. Ahlbrandt hot air dryers are designed for drying of plastic films at low temperature and at top production speeds with optimum edge-to-edge evenness.

Its Film Cylinder Cleaning system offers automated and efficient cast and chill cylinder cleaning during operation, enabling maximum uptime and enhanced film quality. Manual cleaning of chill rolls can take 30-60 minutes, often with the extrusion line being stopped, while automated cleaning can take just three minutes.

› **www.baldwintech.com**



Right: The leakage flow of Baumüller's new servo pump can be used to lubricate the gear tooth system

Baumüller has introduced its latest servo pump onto the market, which will be seen at K2019.

The pump can be attached directly to the engine with a gear tooth system. This dispenses with the need for a traditional coupling and pump support. This results in a shorter installation length, and smaller machine installation area. Direct attachment also eliminates the need for mechanical parts. In this way, the machine manufacturer benefits from lower storage costs.

Another advantage lies in its use of hydraulic oil. The latest version has new connections for both the motor and the constant pump so that the leakage flow of the pump can be used for the permanent lubrication of the gear tooth system. This eliminates the need for grease lubrication of the internal toothing.

The structural change also offers a further customer benefit. Since the holes for the connections are on both sides, the motor can be installed

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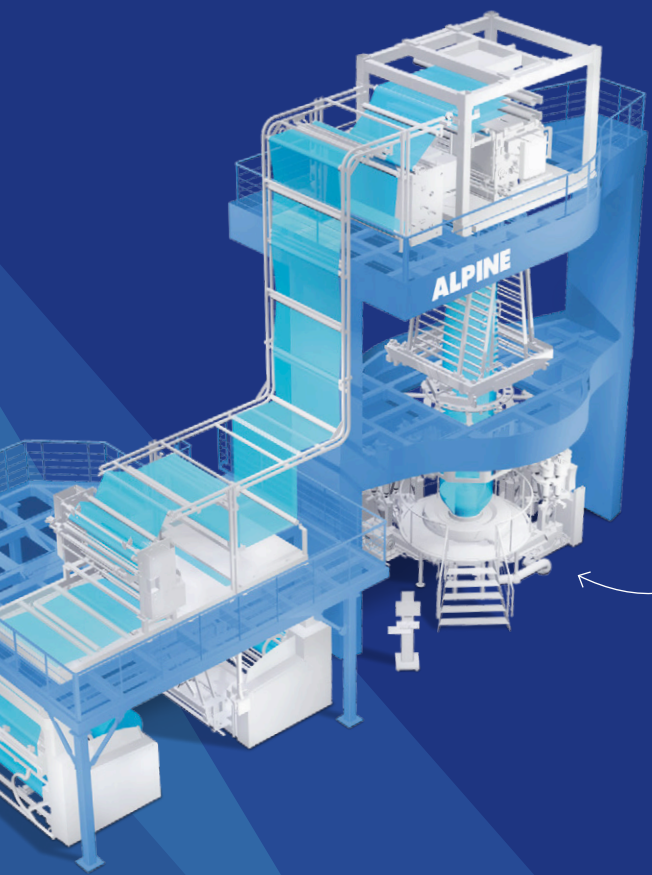

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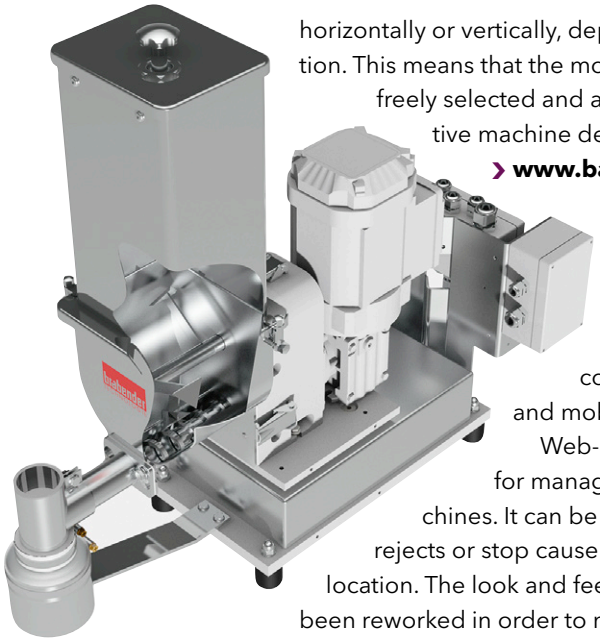


Above: Brabender has redesigned two of its feeders, including the DSR28

horizontally or vertically, depending on the application. This means that the motor position can be freely selected and adapted to the respective machine design.

› **www.baumueller.com**

BMSvision will exhibit its developments in the fields of smart factory, machine connectivity, Industry 4.0 and mobile MES solutions.

Web-DU is a web application for managing a group of machines. It can be used to remotely enter rejects or stop cause information from any location. The look and feel of the Web-DU has been reworked in order to match the smart phone lookalike user interface used for all other BMSvision data capture terminals.

MyMES is the first real MES App available on Apple and Play Store. It includes a cockpit view and an alert module. The cockpit shows the KPIs and most important production and quality data of the plant while the alert module highlights problem areas that need immediate attention.

Smart Bracelet is a wearable device that tells operators when there is a need to intervene on a machine. As soon as the MES software detects a warning or alarm condition, the operator's bracelet starts vibrating – and the machine number and type of alarm is displayed on its screen.

› **www.bmsvision.com**

Brabender Technologie has redesigned two of its feeders – the DSR28 and DDSR20. As well as having a new type of gearbox, the machines use a number of new components that allow easy cleaning.

Both will be displayed at K2019, and also demonstrate the possible motor types – such as the new motor with extended adjustment range (1:100).

"We don't want to reveal too much about these two feeders before the trade fair," said Bruno Dautzenberg, managing director of Brabender.

The company has also developed a new OPC-UA interface, which it says is a key step towards Industry 4.0. The new interface transmits process and control data in a service-oriented

architecture, opening up new possibilities for customers, says the company.

The expansion to upstream machines, such as vacuum conveyors, is also now available in the feeder control and the OP16 control unit. This provides customers with a control for both machines from a single source, allowing them to optimise refill processes.

› **www.brabender-technologie.com**

BST Eltromat has developed new options for web monitoring and inspection.

Its QLink workflow and TubeScan systems can be integrated with customer ERP systems. Expanded options include a new, 4k high-resolution area scan camera, and Contour Light illumination option. This laterally directed light source can be used to make the outlines of transparent labels visible on paper or plastic carriers.

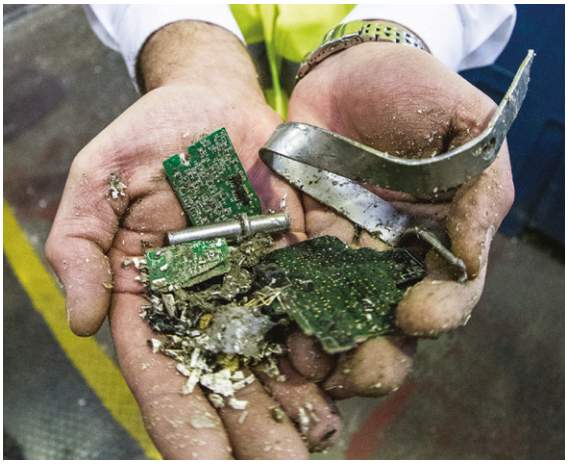
The TubeScan range is known for diffuse standard background illumination, background illumination through the web, and UV illumination for security features. In addition to the new contour light, it also features three other independent illumination sources that cover a number of different web monitoring and 100% inspection requirements.

Above: BST Eltromat's QLink workflow and TubeScan systems offer new options in web monitoring and inspection

The TubeScan range was developed by Nyquist Systems, which became part of BST earlier this year.

"Nyquist now has access to additional resources for continuing to evolve the TubeScan range," said Anne-Laureen Lauven, head of marketing at BST Eltromat. "This will generate a flow of new opportunities for our customers to optimise their production processes."

› **www.bst.group**



Right: Bunting will showcase its expertise in magnetic separators and metal detectors

Bunting Europe will showcase its expertise in magnetic separators and metal detectors for the recycling and plastics industries.

In virgin plastic manufacturing processes, metal damages processing equipment and the quality of the end-product. Recycled plastic commonly has both ferrous and non-ferrous metal contamination, and removal is vital to enable the reuse of the waste material, says the company.

Bunting's portfolio includes a wide range of magnetic separators and metal detectors to detect and remove metals.

Its FF and HF drawer filter magnets are the most commonly used magnetic separators in the plastics sector. Visitors will see both standard and manual-clean (MSC) designs, which all use high strength neodymium iron boron (rare earth) magnets. In operation, plastic beads or shredded plastic waste falls through the drawer filter under gravity, while ferrous metal contamination is attracted to the surface of the magnets.

The company will display its new FF350 drawer filter magnet in Europe for the first time. The FF350 enables processing material at higher temperatures. High heat is damaging to standard rare earth magnets and the new design maintains magnetic strength at temperatures up to 350F (175°C). There are also changes to the housing, window and access fixings to provide trouble-free operation at these temperatures.

The company will also display the plate magnet (with and without tapered step) and grate magnets (round and square).

"Our experience in solving metal contamination issues in the plastics sector is second to none," said Simon Ayling, managing director of Bunting Europe. "Without removing metal from waste, the recycling of plastic is simply not possible."

› **www.buntingeurope.com**

Cannon of Italy will showcase a new thermoformer at K2019. It says that the machine, a CREA 1510-06, features fast model change, flexible use of different plastic sheets and closed-loop controlled heating. It provides high efficiency in terms of energy consumption and cycle time, combined with a superior surface aspect and overall quality of formed parts.

› **www.cannon.com**

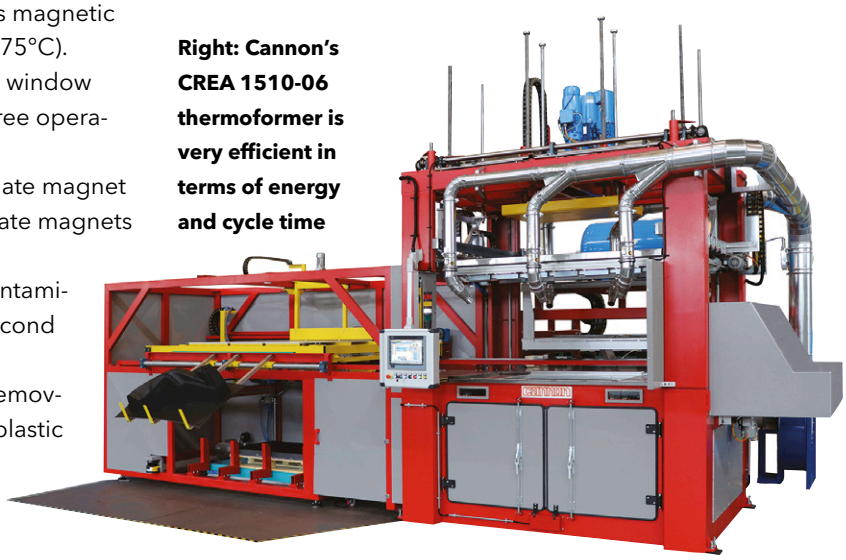
CMG is launching the new Evoluzione series of granulators for post-consumer recycling. The model on display at K2019 is the 9-tonne EV616. All the Evoluzione granulators are equipped with advanced Industry 4.0 controls to make the machine operation 100% monitorable and manageable. These cover operating temperature, blade wear, productivity, operating efficiency, energy usage, and all functional parameters managed on the machine or remotely with OPC-UA protocol connectivity.

› **www.cmg.it**

Cold Jet will present its new dry ice blaster, which promises to improve the way in which metal components such as screws are cleaned.

"The PCS 60 is the highest performing dry ice blaster available, and features many technological advancements that are firsts in our industry," said Gene Cooke, president and CEO of Cold Jet. The PCS 60 continues Cold Jet's tradition of leading the way and guiding our industry forward."

It features Cold Jet's patented Particle Control System (PCS), which cuts dry ice into diamond shaped particles in the exact dimensions chosen by the operator (3mm to 0.3mm – and 28 sizes in between). This gives users a greater degree of versatility in cleaning applications. With the PCS, a plastics processor can use one machine to clean many types of surfaces, such as the surface of tools, deburring and deflashing, and screws. Previously, a



Right: Cannon's CREA 1510-06 thermoformer is very efficient in terms of energy and cycle time

HALL 1 / STAND C91

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Right: ColdJet's PCS 60 dry ice blaster promises to improve the way in which metal components such as screws are cleaned

facility would need multiple machines with different aggression level capabilities to clean each, he said.

The machine is also easy to use: with a 7in LCD colour screen and digital controls, it provides an intuitive display that allows the user to easily view and adjust blasting parameters and machine settings. It also features programmable and password-protected application recipes, allowing users to set and save parameters such as blast pressure, particle size and feed rate. This increases efficiency and ensures the right settings for each application. A plastics processor can save one application recipe for one tool and another application recipe for a different tool, for instance. This prevents user error and ensures the right parameters are used for each unique application.

The company claims that the machine cleans more effectively and requires less dry ice and air pressure than competing machines. An optimised design, including a 'straight through' air system and redesigned SureFlow feeding system, minimises air pressure loss and dry ice sublimation within the machine. This allows the user to maximise air supply yield and reduce dry ice waste.

The model is also IoT-enabled via Cold Jet

Connect – which provides remote monitoring and diagnostics while allowing users to collect and manage data and use tools for optimum performance and productivity. It can also be combined with a Cold Jet dry ice production unit and a robot for continuous and fully automated blasting.
› **www.coldjet.com**

US-based **Commodore Technology**, part of Dolco Packaging, will highlight its line of expanded polystyrene meat tray, plate and hinged-lid container thermoformers at K2019.

The company manufactures five different narrow web thermoformers ranging from 16in to 44in platen size. The equipment is designed for quick changeover, ease-of-access and flexibility.

Another benefit of the design is that all the tooling (mould sets) is interchangeable across the line. This gives manufacturers a high degree of flexibility. Also, the 22in to 30in wide web enables fast changeover in less than 2.5 hours – against an entire day needed for a wide web machine. This gives smaller producers more flexibility to change container types and colours.

"Because we are equipment operators, as well as equipment manufacturers, we have used our production experience to engineer the best possible units," said Chuck Gallagher, vice president of business development at Dolco.
› **www.tekni-plex.com/dolco**

Above: Commodore manufactures five different thermoformers with platen sizes of 16in to 44in

Coperion K-Tron will exhibit a variety of plastics processing technologies at K2019.

The show is the European premiere for its redesigned K3 vibratory feeder line – and its V200 model will be shown as part of a running system. ›

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The K3-ML-D5-V200 vibratory feeder will be shown in action as part of a recirculating system – with automatic refill provided by a P-series vacuum receiver and a compact vacuum pump. Vibratory feeders are ideal for feeding recycled material or flakes as well as for the addition of glass fibre in compounding processes. They are nearly maintenance-free, as there is no wear on the mechanical parts. P-series vacuum receivers can be used to convey a wide range of bulk materials – in conveying only applications such as hopper loading, as well as loss-in-weigh feeder refill applications. The receivers are made of stainless steel, and their features include steep cone angles – to ensure efficient discharge – and band clamps for quick disassembly.

Also on display, the company's SWB-300 weigh belt feeder is a comparatively simply constructed, reliable gravimetric feeder for high accuracy and efficient process control. Weigh belt feeders of this type can feed large volumes of bulk materials with various flow properties and are well suited for, among other things, processing recyclates.

Another materials handling solution is Fluidlift Ecoblue, a pneumatic conveying process for plastic pellets that increases efficiency and minimises degradation. In contrast to conventional designs, it reduces abrasion – which cuts the generation of dust or strands to maintain product quality and reduce waste accumulation. It also enables plastics manufacturers to lower costs and increase throughputs, thanks to low energy consumption.

› **www.coperion.com**

DR Joseph has developed a range of products for blown film bubble control – including layflat calibration and neck height control.

Its DRJ 3G-IBC – which can be retrofitted to existing blown film lines – helps to improve the layflat tolerance and increase cooling rates, which helps to raise production rates. It uses a flat width measurement device placed near the winder, which automatically calibrates and compensates for film stretch and shrink as it makes its way down the tower.

Many factors cause degrees of stretch and shrink,which affect the width as it is wound: using automatic layflat calibration ALC boosts the precision of layflat tolerances, simplifying width management operations via automation and improving user safety.

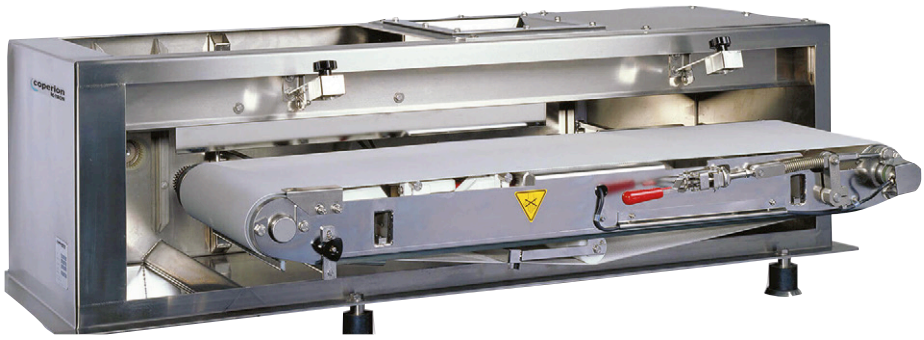
For production where job orders change often, ALC speeds up job change time and improves long term accuracy, says the company.

Neck height variance on high stalk bubbles can lead to variance in dart impact properties. As process conditions such as ambient temperature change, so will the neck height – resulting in off-spec dart impact and layflat. DRJ has solved the issue of drifting neck height with a new neck height control feature, which can be integrated with its width control systems.

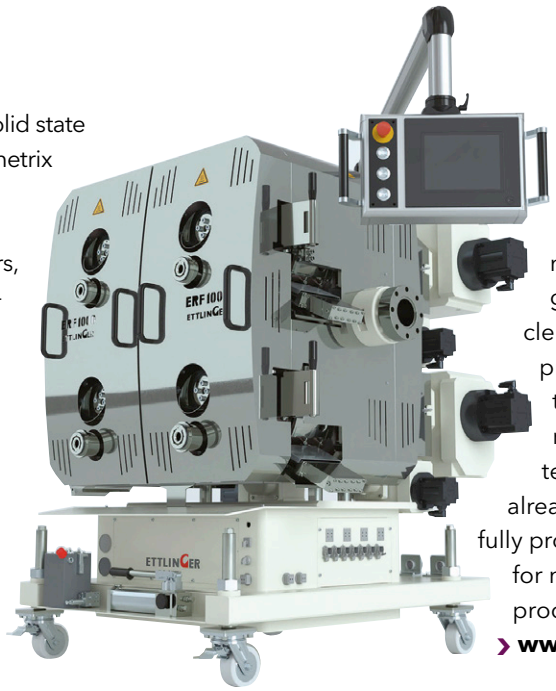
An ultrasonic sensor faces the bottom of the bubble flare to measure neck height, then maintains neck height by automatically regulating air ring blower speed.

› **www.drjosephinc.com**

Erema is showing the latest developments in the group's recycling technologies, including the Vacunite bottle-to-bottle technology. This is a combination of Erema's Vacurema process with newly



Above: Coperion K-Tron's SWB-300 weigh belt feeder promises high accuracy and efficient process control



Right: The ERF 1000 high melt filter is Ettlinger's largest to date and can handle up to 10,000 kg/h

patented, vacuum-assisted solid state polycondensation from Polymetrix for the production of food-grade rPET pellets. In the in-house and industrial sectors, the new Intarema ZeroWaste-Pro system is a compact system designed to meet the requirements of recycling production waste. Erema subsidiary Pure Loop will display the new ISEC Evo series shredder-extruder as a supplement to its existing product range. In future, this will enable output rates of more than 1,500 kg/h to be achieved for the first time, says Erema.

The group is presenting a new Industry 4.0 platform or the first time during K2019. BluPort is a customer portal which presents decision-relevant information and service offers for customers in a clear and user-friendly way. "The networking of virtual data levels with real process sequences will create new solutions for plant operation and new smart service offerings in the future," says Erema Group CEO Manfred Hackl.

Erema Group now comprises seven companies and business units – Erema, Pure Loop, Powerfil, Keycycle, 3S, Umac and Plasmac – which will all be presented at K2019. Erema will also be recycling injection moulded and film waste collected during the trade fair for recycling on site, as it did at the last K show in 2016. The process waste will be recycled in an outdoor area called the Circonomic Centre. Also in the Circonomic Centre, Erema is collaborating with raw material companies, processors, branded goods companies and recyclers, to present a number of projects that demonstrate the different starting materials and recycling technologies that have already been used to successfully produce recycled materials for new, high-quality plastic products.

› **www.erema.com**

Ettlinger will use K2019 to unveil its new ERF 1000 high performance melt filter for very high throughputs in plastics recycling operations. This is Ettlinger's largest melt filter to date: the four filter drums provide a total of 6,280 cm² of filtration surface – twice as much as the ERF 500, the previous top-of-the-range model. The ERF 1000 removes foreign particles from polymer feedstock containing up to 18% contaminants. The filter can handle a maximum of 10,000 kg/h throughput depending on the application. Ettlinger says ERF filters are now available in four different sizes, starting with the ERF 200 for throughputs up to 800 kg/h.

The new ERF 1000 is self-cleaning and works with a rotating, perforated drum, through which there is a continuous flow of melt from the outside to the inside. A scraper removes the contaminants that are held back on the surface and feeds them to the discharge system. As a new feature, the ERF 1000's four filter drums can be individually replaced without disrupting production. This allows the filter to run continuously and fully automatically, often over a period of several months at a time, and Ettlinger says its advantages include low melt losses and good mixing and homogenising of the melts.

Ettlinger is part of Maag, the manufacturer of gear pumps, pelletising and filtration systems and also pulverisers.

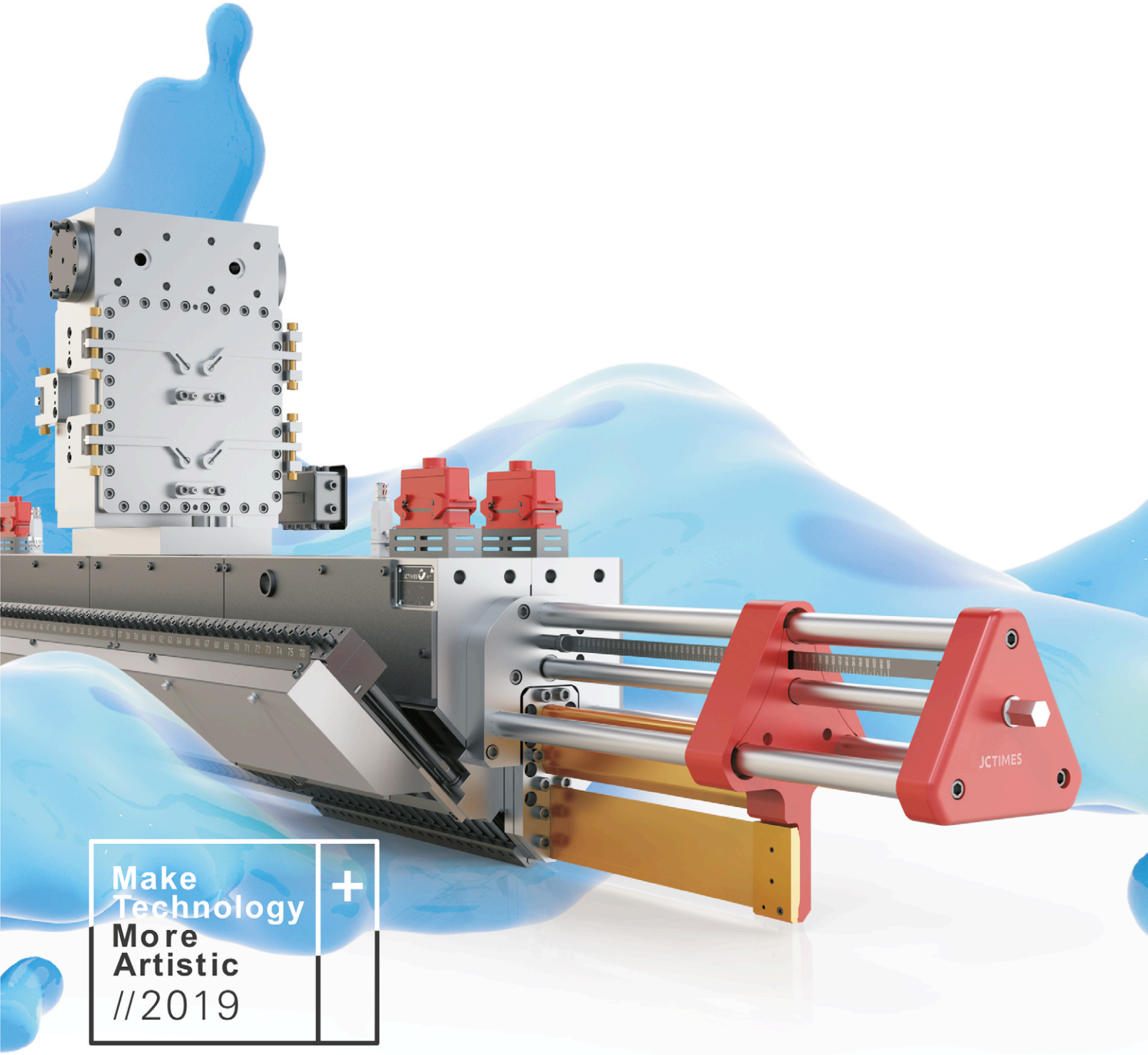
› **www.ettlinger.com**

Right: Farrag will show its Card E/S, Card M and Card L/XL bulk materials dryers at K2019

FarragTech of Austria says it has continued to refine the design of its compressed air resin dryer (Card) – and will show a number of variants at K2019.

The dryer, first developed in the 1990s, relied on a new method of drying.

"In extrusion blow moulding, it was standard for a long time to vent the dry blower air at the end of



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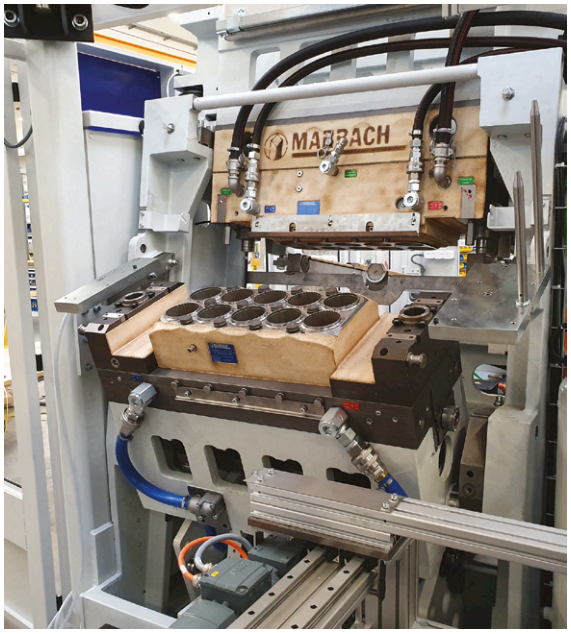

Right: Gabler's Swing 3 thermoformer includes high quality tools from Marbach

each cycle," said Rainer Farrag, founder of the company. "As a result, a lot of unused air – and energy – was lost, which I found was a pity. The idea struck me to use this air for resin drying."

Using compressed air from an upstream process to dry resins made it possible to dehumidify material with minimal extra energy – and no moving parts. It proved a cost-effective, reliable alternative to adsorption drying.

Although the basic design is the same, improvements continue to be made: better process integration, modern controls – such as the Sleep mode – and the reduction of the amount of air after reaching a particular temperature in the upper range of the drying hopper all help to reduce energy consumption further. The heat recovery from the air compressor has meanwhile led to resin drying which can mostly dispense with additionally supplied energy.

At K2019, the company will show its Card E/S, Card M and Card L/XL bulk materials dryers. These variants can, among other things, be combined with systems for condensation water protection and for internal mould cooling. This way, they make the whole process more efficient, says the company.

"It has to be assumed that resin drying using compressed air will become the standard in the plastics industry in the years to come," said Farrag.

› **www.farragtech.com**

Fimic has developed the new GEM melt filter which it is showing on its stand at K2019. This is the first filter from Fimic equipped with two screens to guarantee a greater filtering surface than that of its established RAS700 filter. At the show it will display a GEM unit with two screens and two discharge valves, enabling a filtering area of 5,552 cm² on a single machine.

Fimic says this innovation will increase production from recycling lines while keeping the highest quality of the final product. It is also simple in operation and contributes to reduced operation costs. The company says the GEM filter enables shorter residence time of the material, lower energy consumption and lower consumption of spare parts, and additionally leads to less waste and a more efficient and faster replacement of the screen.

› **www.fimic.it**

Gabler will present a range of thermoforming solutions, including the debut of its Swing 3 model.

It offers maximum flexibility due to fast, simple product changeover. Thanks to a unique stacking and counting mechanism, deep products such as cups – and flat products such as trays and lids – can be produced within one machine type. An integrated system allows fast, effective tool changing.

By increasing the forming area to 600 x 271mm the productivity has been increased. The Swing 3 can produce up to 31,500 cups per hour – a significant increase compared to the previous generation.

It was specifically developed for processing PET materials and biodegradable material. Thanks to the combination of high cutting forces in the forming area and high-quality tools, from its supplier Marbach, recyclable materials can be processed without loss of quality or productivity.

It has a compact design so can easily be integrated into any production environment.

"The Swing 3 is a powerful addition to our portfolio," said Carsten Stöver, sales director at Gabler. "Thanks to its flexible design, it can meet almost any product requirement and with its trim-in-place technology it forms cups, trays and lids equally well."

› **www.gabler.eu**

GAP, which specialises in simultaneous multi-bubbles orientation systems, will present an innovation for processing transparent, high-barrier oriented recyclable materials.

The simultaneous bubble orientation system available up to 4000mm and 1000 kg/h offers an intelligent solution for high barrier recycle oriented structure to convert laminate foil to homogenous oriented mono barrier multifunction materials.

The company will also show a new annular microlayer die for performance multiplication. In order to reduce thickness, improve film characteristics and squeeze maximum performance from

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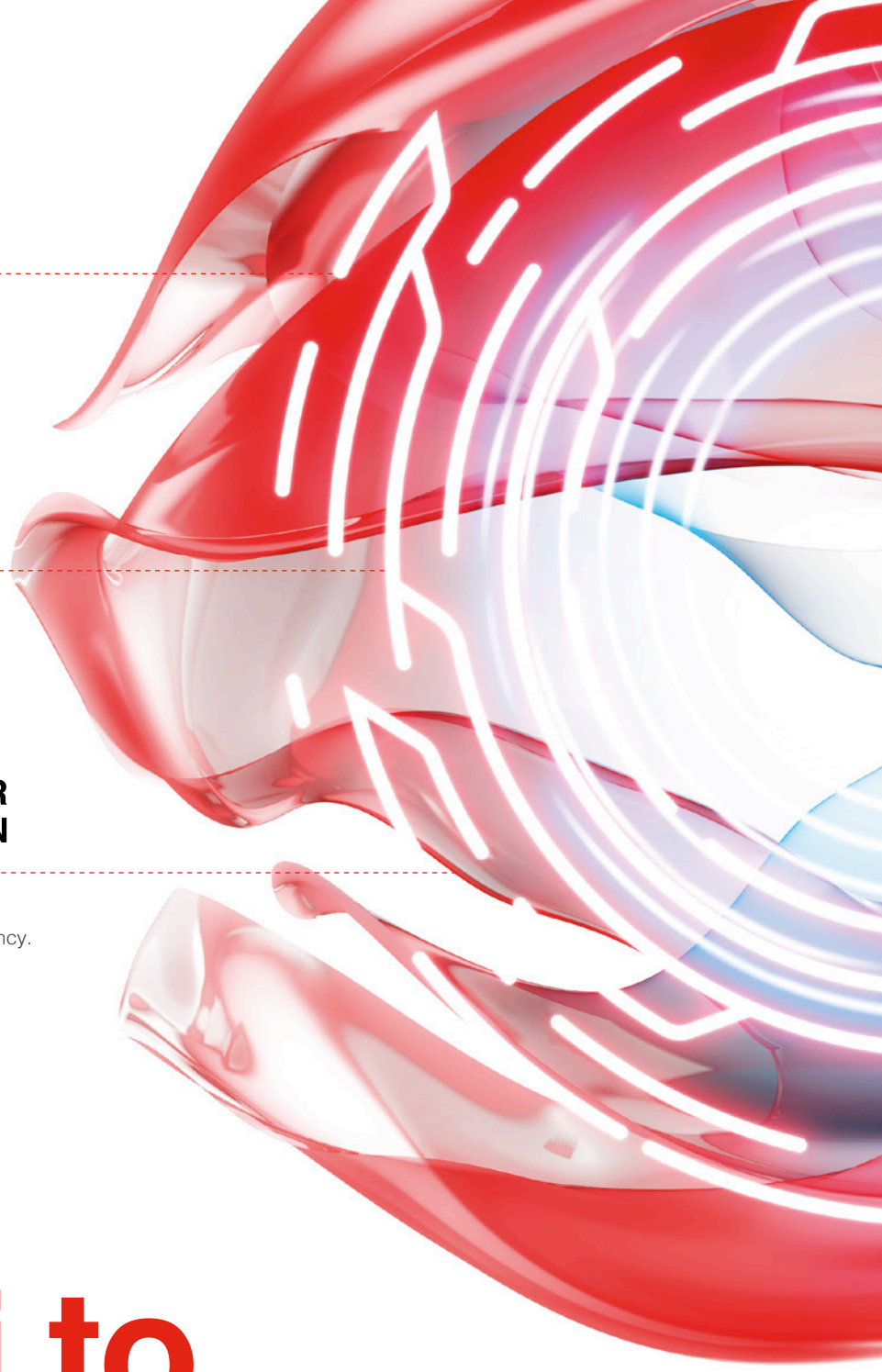

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Above: GN's new thermoformer, the GN580, is aimed at the food, medical, and industrial packaging

mono material, the company will present Mira-Layers, which can be use as annular die in processes like double bubble , blown films line and water quenching.

› **www.gapitaly.com**

GN Thermoforming Equipment will launch its new GN580 thermoformer at K2019.

The new form/cut/stack thermoformer is aimed at the food, medical, and industrial packaging markets. It is a smaller version of the GN800, which was launched at K2016.

The GN580 has a forming area of 580 x 465mm and a cycle time of 45 cycles/min at full stroke. The machine forms 120mm (4.7in) deep parts above and below the sheet line. It also features an operator-friendly HMI with integrated diagnostics and remote connection, an energy recovery system incorporated in all drives, and maintenance-free precision roller bearings in the toggles.

At the show, it will run 100% post-consumer recycled (PCR) PET with a common-edge tool, producing meat trays with minimal scrap. Over the years, GN has perfected the common-edge-cut tooling technology for its line of thermoformers. Common-edge tooling offers the ability to form a series of square or rectangular trays in a row or multiple rows while eliminating the web between the products.

The machine appearing at the show has already been sold to a European packaging manufacturer for the production of food trays and blister packs, says GN.

› **www.gncanada.com**

Herbold Meckesheim is using K2019 as a platform to launch new technology for plastics recyclers. The new EWS 60/210 high-capacity shredder was developed for both dry and wet operation and is said to be very robust and durable. The development work focused on requirements needed in the crusher stage in the recycling process, such as the need to deal with foreign bodies. The company says it focused on making a perfect wear-protected rotor that, in addition to custom knife configurations, is equipped with bolted armour plating and a special grinding chamber seal.

Herbold Meckesheim will also show a new two-shaft DWS shredder, which has a stator positioned in the middle. Due to the large surface area of the rotor, the machine has a very good feed performance and is suitable for materials that can only be fed in doses using conventional shredders such as big bags or high-volume containers, says the company.

Other company products on show include SB series granulators with force feeding, the new VWE 700 prewashing unit, mechanical and thermal dryers and HLR label removers.

› **www.herbold.com**

Hosokawa Alpine has developed a combined shredder and granulator.

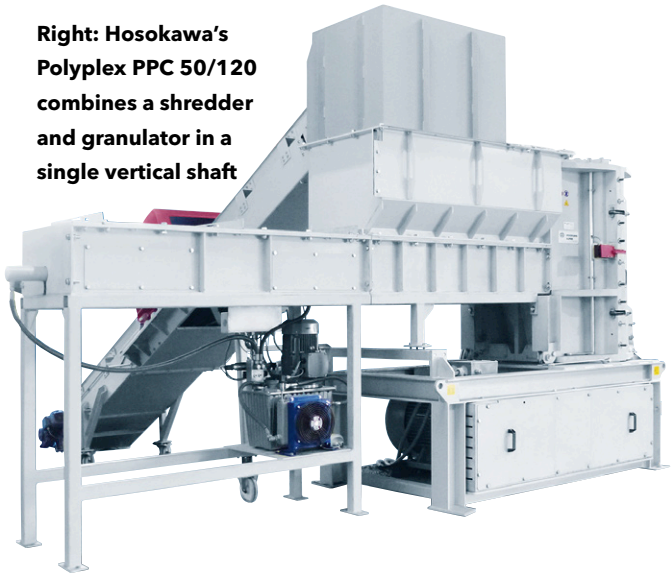
The Polyplex PPC 50/120 has a vertically arranged rotor with a top-mounted shredder and granulator section underneath.

"Granulator fineness values are achieved in a single step," said Josef Zöttl, senior sales manager in the company's recycling and granulators division. "The joint drive makes the size reduction far more energy-efficient."

With the aid of an intake unit, feed material is automatically dosed and charged to the shredder-granulator unit. Feed rate can be adjusted to suit the problem specification. After passing through the shredder section, the material falls into the granulator section and is reduced to granulator fineness.

The machine is especially suitable for in-house recycling. Different plastic parts can be charged together. The vertical design of the mill also brings advantages when cleaning, enabling easy access

Right: Hosokawa's Polyplex PPC 50/120 combines a shredder and granulator in a single vertical shaft



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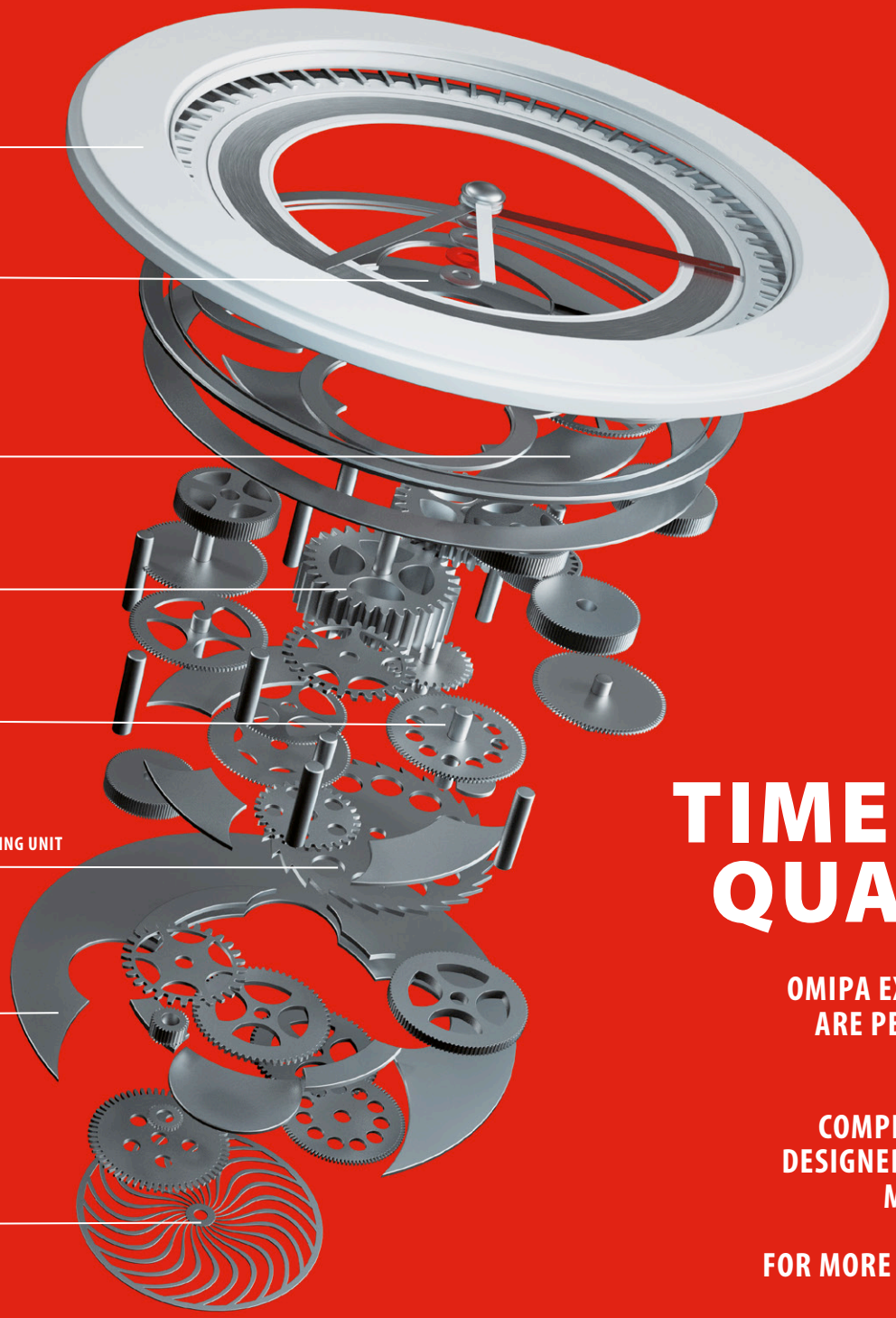

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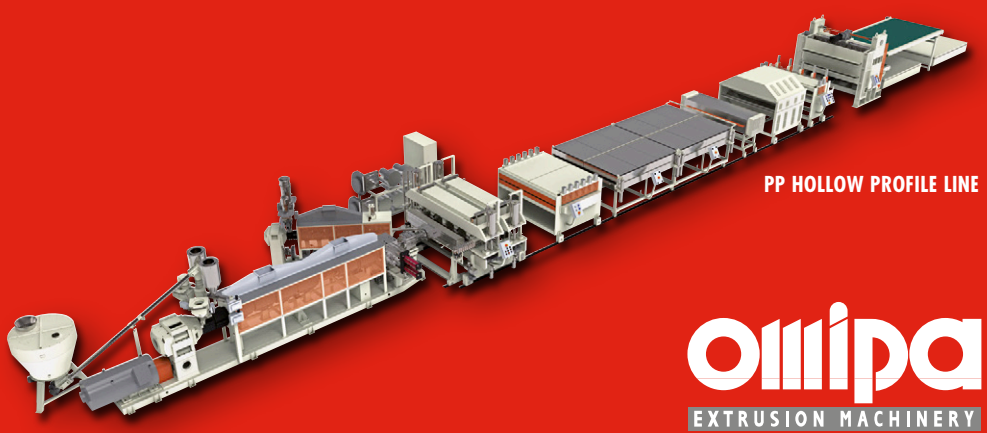

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Right: Illig will show its IC-RDKL 80 thermoforming system, to make IML-T lids

to the rotor and cutting knives. This guarantees fast cleaning and reduces downtime.

■ Separate to this, the company has set up a new division – selling and renting pre-owned process machines. All machines are the company's own. Pre-owned machines are tested to ensure high performance. Renting – of new machinery – allows customers to try out Hosokawa machinery before they buy it.

› **www.hosokawa-alpine.com**

Illig will present a number of thermoforming novelties at K2019.

Its IML-T system – which combines thermoforming with in-mould labelling – will be seen in action, demonstrating cups made of rPET with easily separable paper labels. For the first time, the company will show its new IC-RDKL 80 thermoforming system, which can be used to make IML-T lids.

Another innovation is the company's first fourth-generation thermoformer. The IC-RDM 76K has a new drive system and a much higher closing force. It will be producing drinking cups made of recycled PET.

The company will also highlight developments in digitisation in thermoforming – to increase overall availability and productivity. Illig Connectivity connects a customer's thermoforming production systems into the network, so they are better integrated into the value-added chain. Connectivity optimises job and process control, and facilitates data exchange, logging and archiving, says the company.

› **www.illig.de**

Kiefel will show its new Speedformer KMD 78.2 thermoformer at K2019.

It says that the new generation of steel rule machines offers high quality with greater productivity and energy efficiency.

"The new generation of machines is fast and reliable," said Erwin Wabnig, director of the packaging division at Kiefel. "Operators, even without specific training, can operate them intuitively. the new system can also process novel film materials and produce even complex products whilst consuming a minimal amount of energy."

Kiefel's designers focused on higher productivity, process control and availability when designing the new machine.

The heating system is ready for use within a very short time and has a 20% higher heating capacity – despite reduced energy consumption. This, combined with the energy recovery system of the servo drives, leads to considerable savings.

Kiefel will also showcase an egg tray, made completely from recycled PET. Close analysis and re-engineering of the material, tray and processing have led to a tray that is of similar – or better – quality to the ones available in virgin PS or PET.

Kiefel says that its premium flatbed tooling – combined with the new generation flatbed KMD thermoformers – helped streamline the development of the tray.

Next to a transition to 100% PCR material, Kiefel offers the expertise and support for more drastic material changes – such as plant-based materials such as PHA or PEF.

› **www.kiefel.com**

Kiefel will showcase an egg tray made from totally recycled PET

Labtech will use K2019 to introduce a range of its laboratory scale machines – including blown and cast film lines.

The company says that its LCF-400 Co-Ex film blowing line is a viable, low cost alterantive to its regular co-extrusion lines. It has five modular extruders connected to a five-layer pancake-type film blowing die. The standard line is fitted with a stabiliser cage with Teflon rolls, a polished wood collapsing frame, hard-chromed and rubber haul-offs and an oscillating tower frame.

It will also show a three-layer co-extruded cast film

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and sheet line with three extruders. The LCCR-350-SR is a heavy-duty machine, equipped with a roll stack that is mounted on a separate trolley, which rests on top of a slide rail along with the downstream unit. This allows the stack to be easily slid forward to backwards from the flat die, and can be oriented vertically, horizontally or diagonally.

› **www.labtechengineering.com**

Maag will show its entire portfolio at K for the first time – incorporating virgin polymer production, compounding, extrusion, mechanical end-of-life recycling, and industrial pump applications. This includes products from its subsidiaries including Reduction Engineering Scheer and Ettlinger.

The Ettlinger product range now offers high-performance filters for post-consumer recycling as well as solution packages downstream of the extruder, said the company.

"Our global distribution network provides customers with the technology that best meets their commercial and technical needs," said Alaaddin Aydin, vice president of Maag Germany. "Multiple solution options are usually available depending on requirements. Our many centres of excellence offer the engineering expertise to combine global know-how in custom systems."

Maag's portfolio extends from small machines and systems for throughputs up to 100 kg/h to machine and plant components capable of handling more than 100 t/h (including centrifugal dryers, polymer pumps and custom solutions in industrial applications).

› **www.maag.com**

Maguire will showcase its vacuum resin dryer, which it says uses a fraction of the energy of a desiccant dryer. The dryer, which has been re-named Ultra (it was formerly called VBD), can drastically reduce energy bills, says the company.

"While the energy needed to heat polymer to its required temperature is roughly the same for both vacuum and desiccant dryers, the Ultra dryer uses much less energy in the next stage – when the heated resin is actually dried," said Frank Kavanagh, vice president of marketing and sales at Maguire.

He cites a typical example for a process running at 220lbs (100kg) per hour, for 6,000 hours per year. An average desiccant dryer might run at 60 Watts per pound of material, versus the Ultra, which consumes 19 Watts per pound. While each system uses around 15W to heat the material from ambient temperature, the energy used to dry is very different: the desiccant dryer would use another 45W, while the Ultra uses just 4W – around 10 times less.

For an average US price of $0.12/kW, the annual energy bill for the desiccant dryer is $7,128, and $570 for the Ultra.

"Over the average lifespan of a dryer, that equates to $65,580," said Kavanagh.

Above: Maguire says that its Ultra vacuum resin dryer can drastically reduce energy bills

Using load cells in the dryer – on the vacuum hopper and retention hoppers – allows the touch-screen controls of the dryer to control the process in a way not seen with desiccant dryers, he said.

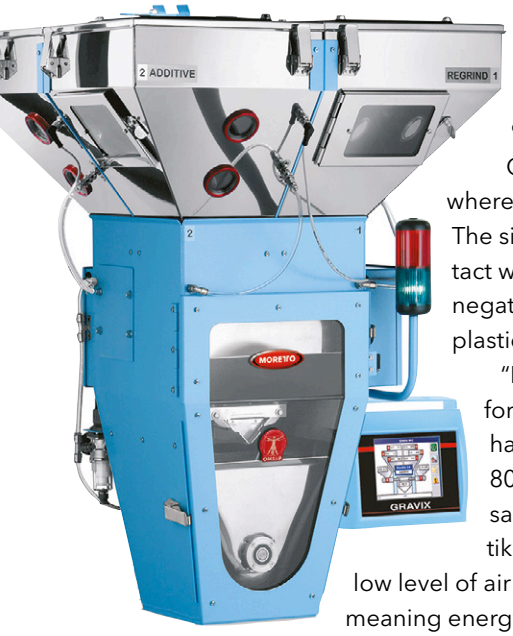
"The use of data provided by the load cells allows the dryer to achieve many functions automatically, such as automatic start-ups, automatic stops, and making cleaning and materials changes extremely rapid," he said.

Ultra dryers are available with throughputs of 150, 300, 600, and 1,000 lbs/hr. (68, 136, 272, and 454 kg/hr).

› **www.maguire.com**

Meech International has developed a number of new static control and web cleaning products, which it will showcase at K2019.

They include the CyClean R web cleaner, Hyperi-



Above: Moretto's DGM Gravix batch gravimetric dosers promise high accuracy and precision

on IonCharge50 (75W) and IonCharge30 (15W) static generators and the Hyperion 960IPS static control bar.

CyClean R is aimed at wider webs where lower tensions are common. The single or double-sided non-contact web cleaner uses positive and negative airflows to clean low-tension plastic webs.

"It is compact, making it suitable for use in tight spaces, and can handle high speed webs up to 800m/min," said Ralph Simon, sales director at Meech Elektrostatik. "What's more, it only requires a low level of air consumption to operate, meaning energy usage is kept to a minimum."

The company's latest static generators – Hyperion IonCharge30 (15W) and IonCharge50 (75W) – are versatile, compact and simple to install. They are suitable for use within a range of plastic-based applications that require temporary bonding of materials. IonCharge30 is compact and easy to install, while IonCharge50 is Meech's most powerful static generator.

The new mid-range Hyperion 960IPS is a pulsed DC ionising bar, which is versatile and simple to install. With adjustable voltage, frequency and balance, the bar possesses powerful ionisation of up to 15kV and provides 50% greater maximum working distance than the earlier 929IPS ionising bar.

› **www.meech.com**

Moretto of Italy will show a range of its materials handling technologies – including dosing and conveying – at K2019.

To manage and supervise the conveying process – of small or large quantities of plastic – its One Wire 3 system ensures high transport efficiency, thanks to its FIFO logic.

One Wire 3 also controls the devices, which contribute to optimising the granule conveying and feeding process. In particular, the Dolphin manifold unit automatically supplies and distributes all the materials to all the machines, avoiding the risk of contamination and human error.

Kruise Kontrol (KK), patented by Moretto, can manage material speed during the conveying phases. This eliminates the formation of angel hair and wear of the pipes. It acts differently to typical inverter systems that simply act on air speed, but do not account for numerous other variables that characterize each material, Moretto – pointing out that KK controls more than 15 parameters.

Its DGM Gravix batch gravimetric dosers promise high accuracy and precision – up to 0.01% – thanks to its Vibration Immunity System and double eyelid system. They cover dosing requirements for granule, powder and flakes, with dedicated applications, up to 12 materials and 12,000 kg/h.

The company also offers its DPK weight-in-loss dosing system, for dosing small amounts of masterbatch or additives. The technology of the load cells – and the control algorithm – give it a dosing accuracy of ±0.03%. The masterbatch or additive to be dosed is contained in a hopper built in a specific transparent resistant acrylic material, free from electrostatic charges, which makes immediately visible the content material and the level of load and avoids the stop of material on the hopper walls. The hopper is easily removable without the use of tools and, together with the intelligent storage and recognition system of the masterbatches alongside the machine, the recipe change is even more immediate, says Moretto.

› **www.moretto.com**

Motan will focus on a range of materials handling technologies at K2019.

Its Spectroplus synchronous dosing and mixing unit was developed for extrusion and compounding and will replace its previous Graviplus range. With a modular design, it is suitable for a large range of different materials – from powders, granulates and regrinds to liquids and flakes. Additionally, the synchronous dosing unit can be augmented with the Spetroflex dosing modules, which are also available in gravimetric and volumetric versions.

Spectroplus is controlled with the new Spectronet control, which can control both volumetric and gravimetric dosing modules, as well as external dosing units.

Meanwhile, its Metroflow gravimetric material loaders offer precise vacuum conveying – such as to move material from a silo to

Right: Meech has developed a number of new static control and web cleaning products

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Right: Motan's materials handling technologies include its Metroflow gravimetric material loaders

a drying bin, or to the procesing machine. With their precise weighing technology, they are particularly suited for monitoring material consumption in real time, which means that the units are ready for use in an Industry 4.0 environment.

Also, its new Luxor CA A compressed air dryer, with optimised control and integrated ETAplus technology, is designed for small to medium material throughputs. The dryer operates at temperatures of 30-180°C. It can be installed directly on top of the processing machine or on a mobile frame. The dryer is available in four sizes with bin volumes of 8, 15, 30 and 60 litres.

The company has also reworked and expanded its Metro range of individual material loaders. The new Metro G (for granulate) model, for large material throughputs, is available in 60, 100 and 150 litre capacities. Metro R (for regrind) is designed for processing recyclate, and is available in the same three sizes, as is the Metro F (for processing flakes). As a non-free-flowing material, flakes are prone to bridge-building, so this model is equipped with an extra-large outlet flap.

The Metro SG loaders offer an affordable range for standard applications, and are quick and easy to install. The Metrovac SG conveying station – with conveying control, blower and central dust filter – can supply up to eight material loaders and four purging valves. At the same time, the new Metronet SG provides the matching control, from which eight material loaders and one stand-by blower can be managed via a colour touchscreen display.

› **www.motan-colortronic.com**

Movacolor will showcase a range of its dosing technology during K2019, with a number of interactive displays

Movacolor will showcase a range of its dosing technology at K2019 – and encourage visitors to be interactive with its display.

This includes a newly integrated installation wizard. Visitors can also configure their own dosing system on two big touchscreens.

"We want visitors to experience how easy it is to design their own dosing system," said Gerhard Dersjant, managing director of Movacolor. "Installation and start-up can be done without reading the user manual – even for a first-time-buyer."

Products on show include the MCTwin, MCHybrid 34R and MCHigh Output 2500R – which can feed low density regrinds such as PET flakes at high dosing rates up to 75%.

Its MCNexus will also be on show. This optometric dosing system enables very accurate, pellet-by-pellet dosing and was developed for micro injection moulding and micro extrusion applications.

The company adds that its MCSmart monitoring and reporting software – and OPC/UA communication optional on its gravimetric systems – helps companies move towards Industry 4.0.

› **www.movacolor.com**

At K2019, **NDC Technologies** will launch its HazePro gauge – which helps plastic manufacturers measure the haze of plastic films online and report in real time.

Haze is a critical quality parameter for plastic film, sheet and other transparent materials. A product with a poor visible appearance can be a problem for manufacturers trying to maintain a specific quality standard. HazePro solves this by measuring the haze of both narrow and wide films online with high accuracy and reliability. It allows manufacturers to adjust the film and sheet extrusion process to maintain haze quality. Process adjustments can be automated, for real-time control of haze.

HazePro will be demonstrated on NDC's Mini-Trak O-Frame scanner and iView Pro.net process controller. Applications include optical, packaging, flexible packaging, agricultural, solar panel, coatings on glass (such as solar panels), anti-glare on computer screens and other uses. NDC's haze measurement complies with ASTM standard D1003 for transparent materials.

NDC will also display a virtual demonstration of a complete measurement and control system for

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Above: NDC's HazePro gauge helps plastic manufacturers measure the haze of plastic film and sheet

plastic film extrusion applications.

"It will look as though the entire measurement system and moving film product are actually on the booth floor," said the company.

Using tablets as the 'window' into this virtual environment, users will get a close-up look at NDC's FilmPro infrared gauge that measures the basis weight and thickness of clear, voided, pigmented, cavitated, porous, translucent coloured and even black tinted films. The measurement capability of FilmPro extends to single- or multi-layer products including biaxially-orientated films, cast films and stretch films. It can simultaneously measure the individual thicknesses of up to six different layers in co-extruded films.

The virtual system incorporates a scanning FilmPro sensor mounted on a MiniTrak O-Frame. FilmPro moves back-and-forth across the web, making film thickness measurements on a virtual plastic film. Visitors will be able to see critical process data on the company's virtual Pro.Net TDi process controller.

› **www.ndc.com**

NGR (Next Generation Recycling Machines) is teaming up with **Kuhne Group** at K2019. Since their first collaboration at K2016, several joint projects have been implemented, and interest in the combination of recycling and direct sheet production has grown, says NGR. During K2019, a demonstration line for direct rPET-to-sheet production will be shown in the large R&D area of Kuhne's facility in St. Augustin.

Within the integrated system, the PET melt travels from the NGR recycling extruder through its LSP reactor for boosting intrinsic viscosity with a seamless transfer into the Kuhne sheet line. NGR says thermoforming companies can use the system to produce packaging with very uniform and high strengths, excellent optical properties and which are approved for 100% food contact applications.

NGR has also extended its C Gran series of recycling machines to handle outputs of 2,200 kg/h and above.

This follows the market trend of increasing plastic recycling quantities and modernisation of recycling plants to satisfy the increased demand for high-quality recycled pellets, it says. As well as having to increase recycling quantity, the industry must ensure that the quality of recycled pellets is high.

"We have a broad portfolio of recycling machines with very different, specialised technologies," said Patrick Steinwendner, product and marketing Manager at NGR. "We recommend shredder-feeder-extruder combinations – especially for dry industrial waste – but for high moisture mixed plastics from the post-consumer waste stream, cutter-compactor-extruder combinations offer advantages."

› **www.ngr-world.com**

› **www.kuhne-group.com**

Nordson will show its range of melt filters among the products it is exhibiting at K2019. It has developed the BKG FlexDisc to provide PET recyclers with more filtration area than standard screens, without an increase in machine size. The company says that the FlexDisc filter for piston-activated screen changers substantially enlarges available filtration area without the need to increase machine size, enabling processors and recyclers to achieve finer filtration, higher throughputs, longer filter service life, and reduced specific backflush volume. Nordson recommends the BKG FlexDisc for increasing productivity and enhancing quality in bottle-to-bottle PET recycling, PET fibre recycling and battery separator film applications.

› **www.nordson.com**

Right: NGR's C Gran recycling machine can now handle outputs of 2,200 kg/h

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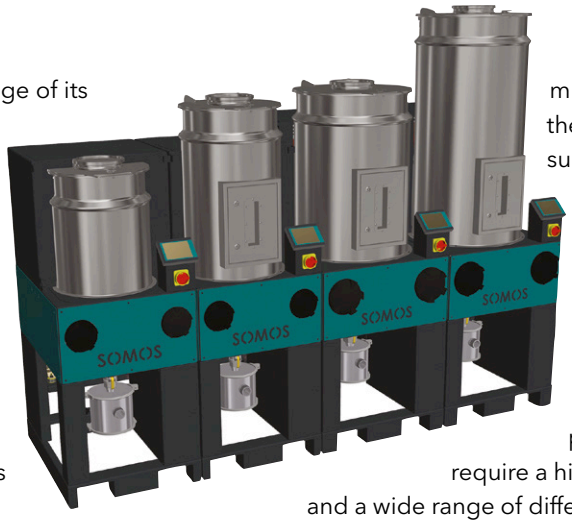
Starlinger Group textile packaging consumer bags recycling technology



Right: ProTec will launch its new Somos RDF flexible modular drying system at K2019

Piovan will showcase a range of its technologies at K2019 – including those from its other brands such as Aquatech and Penta.

Its GenesysNext line is a drying system with self-adaptive technology that is also optimised for the treatment of recycled PET. It can automatically manage the drying process by setting all the critical parameters – including process air flow rate, dew point value, residence time and temperature. It maintains optimum operating conditions even as hourly production and initial temperature and humidity conditions of the plastic granulate vary.

Regarding solutions for PET, at the Düsseldorf exhibition, visitors will be able to check out the new user-friendly range of instruments for analysing preform quality. These devices enable the most important parameters, such as the acetaldehyde level in preforms, to be measured in a simple and intuitive manner.

Below: Piovan's GenesysNext is a drying system with self-adaptive technology

FDM, the Piovan company based in Germany, will showcase its new GDS 5 dosing system – a gravimetric blender optimised to enable mounting up to five granulator stations while maintaining compact dimensions. It uses a Siemens PLC system.

Aquatech, the company dedicated to industrial cooling and temperature control, will display Aryacool+, a new generation adiabatic solution for all industrial customers who are looking for process sustainability. The Easytherm range of temperature control units will be completed with the new pressurised temperature controls that will complement the line of atmospheric temperature controllers.

› **www.piovan.com**

Right: Plasmec's Combimix-HC mixers are aimed at PVC or WPC dry blend applications

Plasmec, which specialises in plastic mixing machinery, is to show a range of its technologies at K2019.

Combimix-HC mixers are aimed at technical mixing applications in the field of PVC or WPC dry blend production. Versions span from 200/800 to 2500/8500 litres capacity. A high output can be achieved thanks to the optimised design of the high-speed TRM mixer, and the high-efficiency HEC cooler type mixer.

Plasmec will also show a TRR-1500/FV container mixer, which complies with the Atex Directives. It is suitable for mixing additives with potential explosion risk and can be installed in classified areas. It is an alternative to conventional turbo-mixers for masterbatch, pigments and technical polymers when production conditions require a high degree of versatility and a wide range of different recipes to be mixed with the same machine, says the company.

› **www.plasmec.it**

ProTec Polymer Processing will launch a new flexible modular drying system at K2019.

The Somos RDF modular resin drying system, for flexible stationary use without a central dry air generator, consists of autonomous units with their own Industry 4.0-capable controllers. Depending on requirements and desired throughput, the modules can be combined into a variable overall system with central visualisation and control.

Components are available with capacities of 50-400 litres, with each individually controllable. When interconnected, they can be controlled using a common operator control unit. As standard, they offer drying temperatures of 60-140°C, while high-temperature variants for up to 180°C are also available. Each module has an integrated air generator, which rules out complete failure – as may occur with a centrally supplied drying system.

Installation requires little space and effort as the modules are compact and do not require extensive supply and return air piping. The system also saves energy because only the components that are needed are operated. If requirements change,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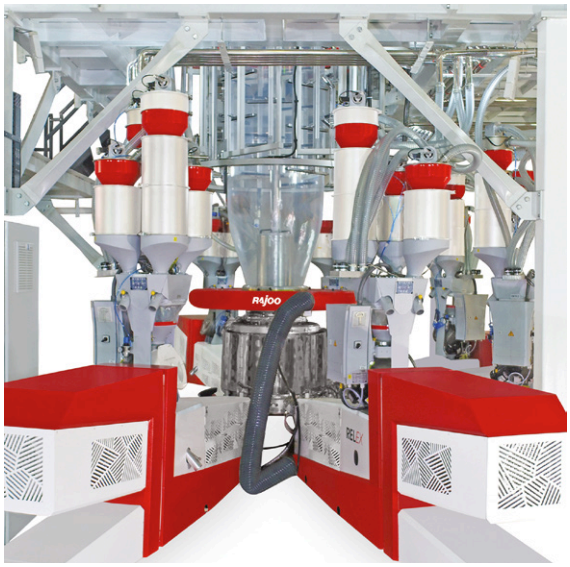
Right: Rajoo's Heptafoil system produces co-extruded barrier film and works as a POD line



modules can be added or removed.

The modules can store up to 200 formulations. They have their own dry air generators and also provide several energy-saving systems: drying air volume is adapted to throughput, while regeneration cycles are controlled on the basis of the actual water content of the pellets, for instance.

› **www.sp-protec.com**

At K2019, **Rajoo** of India will demonstrate two machine: a seven-layer blown film line; and a twin screw sheet extrusion line for PET.

Heptafoil is its seven-layer lines that can produce co-extruded barrier film and work as a POD line. It is suitable for symmetrical and asymmetrical structures, with a capacity of 450 kg/hr. The line includes multi- component batch line blending, non-contact capacitive sensors for barrier and POD films, automatic profile control and integrated supervisory control. Applications include packaging, barrier films and non-barrier films – such as lamination grade, milk and water packaging and shrink film.

Its Lamina rPET line converts bottle flakes into transparent sheets. At K, a demonstration – at 450 kg/hr – has an energy consumption of 0.25 unit/kg. The machine is already used in many applications, including beverage containers, garment boxes and blister packaging.

› **www.rajoo.com**

Below: Schwing's Vacuclean Compact can clean small tools and machine parts

Schwing Technologies – based just 30km from Dusseldorf – will showcase its new vacuum pyrolysis system. The company, which celebrates its 50th anniversary this year, says that the Vacuclean Compact can be used to clean a variety of small tools and machine parts, with a maximum load of 50kg.

"This is precisely what many of our customers appreciate, for cleaning screw elements, spinnerets, spin packs, pelletising discs and screen changers," said Thomas Schwing, managing director.

The machine is energy-efficient and environmentally friendly, and operates without gas fuel, says the company. It removes all plastic residues from production tools – while still protecting the material – which helps to reduce machine downtime and extend the service life of the cleaned parts, says the company.

› **www.schwing-technologies.com**

Starlinger is using K2019 as a platform to present synergies in two of its businesses: plastics recycling and woven plastic packaging. The group will present a closed loop system for big bags made from woven polypropylene under its K2019 theme of "circular packaging".

The closed loop concept for big bags (or FIBCs: flexible intermediate bulk containers) begins with polypropylene granulate and leads back to polypropylene regranulate via stages of bag production, usage, recovery, and recycling. In cooperation with the major big bag manufacturers Louis Blockx and LC Packaging, Starlinger has simulated this loop and produced new big bags from fabric with high rPP content. The recycling stage is carried out on Starlinger's RecoStar Dynamic recycling line. Apart from saving costs for raw materials, the recycling of big bags lowers the carbon footprint of this type of bulk packaging, says the company.

Samples of the closed loop bags will be available at the K show to demonstrate rPP big bags have the same quality as big bags made from virgin material in terms of tensile strength, weight, and safety factor. A live demonstration of the bag recycling will take place at an open house event on 14-16 and 21-25 October at Starlinger's facility in Weissenbach, Austria.

PET recycling is another focus area for Starlinger during K2019. It is highlighting PET bottle-to-bottle recycling using its RecoStar PET iV+ technology. These recycling lines meet the strict criteria of various national and international authorities (for example, EFSA and FDA) with regard to food contact as well as the quality requirements of major brand owners. Starlinger says another option in great demand is bottle-to-fibre recycling, which turns used PET bottles into textiles.

› **www.starlinger.com/en/recycling**

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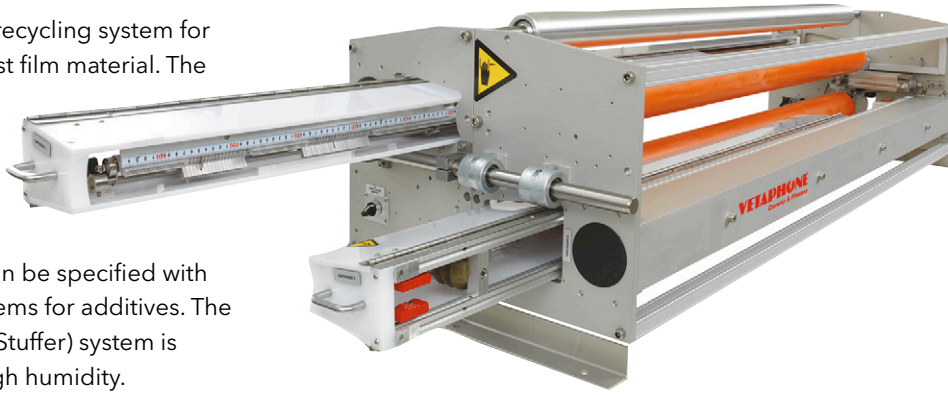

Right: Vetaphone will show a double-sided Corona treater for extrusion and converting applications

Tecnova will show its 54-TTC recycling system for highly printed and highly moist film material. The line includes one or more storage silos and a forced feeding system designed to continuously feed the extruder. This is equipped with two venting zones and can be specified with options including dosing systems for additives. The innovative VTS (Vacuum Twin Stuffer) system is available for materials with high humidity.

Tecnova has also developed the new 3M7 melt filter, which can be used for several applications: compounding, pellets, post-industrial and post-consumer recycling and agricultural film. The filtering element is a mesh belt available in different sizes and different filtration ranges, up to 80 micron. It guarantees high regranulate quality at low operating costs and using a fully-automatic process, says the company.

› **www.tecnovarecycling.it**

Vetaphone will display a range of surface treatment technology at K2019,.

This include four standard Corona units from its portfolio. The VE2-B model is for extrusion and converting applications, which is capable of double-sided treatment. The VE1-D and VE1-E models are also for extrusion and converting applications but can distribute a higher power charge or run at higher speeds than the B model. The final unit on display, the VE1-L, is a compact model designed for lamination environments where space is at a premium.

All four units are equipped with Vetaphone's iCC7 control panel that logs function and maintenance and has remote access for performance and fault analysis. By using a proprietary hardware interface, all Vetaphone Corona systems can be controlled centrally from the main machine HMI, allowing one operator to manage several lines at the same time.

"Many see the integrated display as the end-game – we see it as the beginning and have made it available on our iCC7 unit since 2017," said Frank Eisby, CEO of Vetaphone. "The aim is to make the use of our technology completely intuitive, simplifying the control of the Corona process as much as possible."

› **www.vetaphone.com**

WM Thermoforming of Switzerland has developed a new new steel-rule-die thermoforming machine – called Flex 92 – which is designed to provide thermoformers with more freedom of choice.

It says that the new machine requires no major mould modifications, has a movable clamping frame, pub assist and electrical driven ejector. Its steel rule die technology improves parallelism stability, cutting precision and steel rule die longevity.

A remote machine-viewer interface allows real-time remote monitoring of the machine's functions via smart phone, tablet or PC.

At K2019, the machine will run with a 24-cavity lid-mould from Marbach, using 450-micron PP sheet incorporating Milliken's nucleant technology. WM will also demonstrate new laser technology called TLA, alternative thermoforming materials and a new coffee capsule machine.

› **www.wm-thermoforming.com**

Zeppelin Systems will present a range of plastic processing solutions at K2019 – which each designed to "ensure more efficiency during plant operations", says the company.

Shorter plant downtimes increase productivity. Zeppelin has developed a new Airfoil tool that reduces cleaning costs. The wing-shaped mixer arm – together with 'winglets', which have been used in aviation for years to reduce air resistance – generate a low resistance during the mixing process. This and other design innovations have reduced cleaning expenses. Large savings can be achieved on production lines, with multiple mixtures changes during the day – with each entailing a cleaning process. The company will carry out a live presentation of the new container mixer during the show.

The company also offers improved diverter valves, rotary feeders and silos – which it says are vital to the economical operation of logistics facilities. Its optimised line of switches and locks can deliver equivalent performance with a significant reduction in size, offering higher overall system efficiency due to lower installation costs and an improved energy balance.

› **www.zeppelin-systems.com**

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Filling in: the use of minerals in plastics

Filler materials such as talc and calcium carbonate are commonly used in plastic formulations – and many will be showcased at K2019

Mineral fillers are often used to replace expensive polymer with a less expensive inorganic filler in a formulation. While this is a key factor in the use of these minerals – such as calcium carbonate and talc – they can also help enhance polymer function.

GCR of Spain will exhibit its Granic and BioGranic ranges of mineral fillers at K2019.

BioGranic is a new mineral masterbatch for biopolymers, developed to enhance certain properties of biopolymers – such as improving processing and boosting their cost effectiveness.

The company uses its patented Irtion technology – based on the use of infrared radiation – to provide a gentler treatment for the materials. This reduces energy consumption and enables new products to be developed.

BioGranic is mostly used in flexible applications, such as carrier bags, fruit and vegetable bags, refuse bags and agricultural films where compostable resins are widely used. In this case, tear strength – both in cross and machine direction – can be maintained or improved with the use of minerals. The BioGranic use allows the optimisation of processing parameters such as blow-up ratio and draw ratio.

In rigid applications, such as food packaging trays, modification of mechanical properties and improved processing can be achieved using BioGranic. Impact strength of PLA can be increased three-fold, while stiffness is maintained by adding 20% mineral masterbatch in 800-micron thick PLA sheets. Also, thermal resistance of PLA can be improved by introducing minerals and with minor changes in the processing parameters.

The company's Granic range has also been used recently to improve flexible packaging. Segers & Balcaen has a longstanding partnership with GCR that is focused on improving the environmental footprint of its products.

Following a life cycle assessment, carried out by GCR for all its Granic products, S&B has been able to reduce its CO2 emissions by 12% on the raw material, as well as other environmental impacts.

Granic also guarantees the high-quality standards S&B has for its products. The quality of the frozen food packaging improved thanks to the addition of 30% Granic and the technical experience of S&B. This resulted in a significant dart drop improvement of up to 350g.

Talc talk

The talc business of **Elementis** – which was previously Mondo Minerals – will be showcasing its range of high-performance grades at K2019.

Its talc range includes a number of high-performance grades, including Finntalc, Plustalc and Microtalc.

All Finntalc grades are purified in a cascade of multiple flotation cells. This process results in a tight definition of the talc composition. In combination with a precisely controlled particle size distribution, this ensures a good reproducibility in formulations. This is an essential requirement for high-tech applications. ›

Main image: GCR has helped Segers Balcaen improve the quality of its frozen food packaging through the use of its Granic mineral filler

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Where reproducibility is the limiting factor, Finntalc is the preferred grade. Plustalc grades are a selected talcs with a higher level of brightness. They have a low iron content, which makes them ideal for a number of plastics applications. Microtalc grades are based on the highest purity talc ores.

At the same time, Spain-based **Kompuestos** will showcase its Exfill range high-performance mineral based concentrates. Thanks to the high dispersion and homogeneity of the grades, the addition in a certain application can go as high as 70% of the final plastic packaging. This helps to reduce the content of petroleum-derived polymers, while maintaining and enhancing the mechanical properties of the packaging, says the company.

Micronised grades

India-based **20 Microns** will showcase a number of its calcium carbonates during K2019.

The company produces a variety of different calcium carbonates under its Micron Carb series. These offer different brightness and particle sizes.

The company says that its grades are super white, highly pure, micronised materials, with closely controlled particle size. The particle size distribution optimises particle packing, leaving less void space to be filled by resins, it says.

Its Lithomer series offers various products for diverse applications to help replace titanium dioxide in different systems up to 25%, depending on the end formulation of the product.

A proprietary white pigment opacifier is made by co-precipitation of white prime pigment with modified materials, in which tiny voids are generated on the upper surface of particles. Lithomer's relative scattering, high lightness, neutral white colour and diffuse reflectance enable the replacement of substantial amounts of titanium dioxide in a finished product.

Ultrafine filler

Shandong Nuosen Plastic of China will showcase a number of masterbatch technologies at K2019 – including a talc filler masterbatch.

Talc masterbatch is made of ultrafine talcum powder as the main raw material, mixed with polymer resin carrier and related modifier, and fully mixed by a high-performance double screw machine, for use in extrusion products.

Attributes include good dispersibility, low effect on resin transparency, uniform plasticising and good processing performance. It is mainly used in polyethylene (PE) transparent blown film. It can significantly improve features such as surface gloss, weatherability and adhesion.

Above: Calcium carbonate, in powder form, is commonly used as a mineral filler in plastics

Talc filler masterbatch contains talcum, carrier resin and some additives. It has very fine dispersion, is free of agglomeration and helps to improve end product qualities such as printability, smoothness and stiffness.

Functional fillers

Imerys will show its full range of mineral fillers at the show, covering a range of applications.

It will show its FilmLink and FibreLink calcium carbonates – which are designed to improve throughput and enhance downgauging potential in the production of technical films such as BOPP – and the InFusion line of mineral fillers for achieving high loadings in PVC.

For recycling, it has developed its ImerLink technology. Based on proprietary recipes and its mineral additives, it allows mixed olefin waste streams to be compatibilized to deliver performance similar to virgin material. The ImerSorb range of absorbent mineral fillers can also help in recycling, as well as other end-use markets, by absorbing volatile organic compounds (VOCs) to minimise odour.

Also, **IMI Fabi** will present its latest talc fillers. Its NSultraC ultrafine grade, which exploits the nucleating capability of talc to generate better structures and improved performance in foamed parts. In addition, the company will detail how its materials can be used as functional additives in both traditional and bioplastics compounds.

CLICK ON THE LINKS FOR MORE INFORMATION:

- **www.gcrgroup.es**
- **www.elementis.com**
- **www.kompuestos.com**
- **www.20microns.com**
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A broad range of additives – from antifogs to light stabilisers – helps to maximise the performance of polyolefin film

Clear winner: additives boost polyolefin film

Polyolefins are well established as film materials, but it is research and development in additives that is helping to extend and improve their performance.

In one instance, **Techmer** has combined polymerisation and additives technologies to create its Multi-Season Antifog greenhouse film.

Antifog (AF) films work by additives migrating to the polyethylene film's surface, increasing its surface tension. This lower surface energy creates a hydrophilic effect, with a smaller contact angle for water droplets to form on the film. This gives better transparency and visibility through the clear film – with little or no fog formation.

Effective antifogging films can enhance light transmission, improve crop ripening rates, and reduce crop damage – by limiting mould growth and 'lens effect' burning damage.

Techmer says it has improved the performance of antifog films with its new technology, which required detailed knowledge of molecular structure, polymer chemistry and additive technology. The result is a hybrid polymer that can be custom-tailored as needed.

"Our approach was to functionalise the backbone of the polymer," said Abe Mor, chief technology officer. "This increased the molar volume of the AF additive, allowing for controlled or elimination of diffusion of the additive, which extends AF's effective lifespan."

Various factors impact the mobility of the additives in a polymer, such as molecular weight and structure of the additive, its compatibility with the host polymer, and the processing temperature. High solubility in water and high diffusion rates can cause a premature loss of AF additives from the polymer, making it vital to control the diffusivity of the additive to lengthen the effectiveness of the antifog properties.

To prove the technology, Techmer developed an in-house test method to accelerate and scale performance results, which were later validated through full-scale field testing.

A traditional greenhouse film typically loses its antifogging performance after six months in the field. Under harsher and warmer climates, the loss of performance can be even greater. ›

Main image: Evonik's Spherilex antiblocking agents are designed for thin polyolefin films

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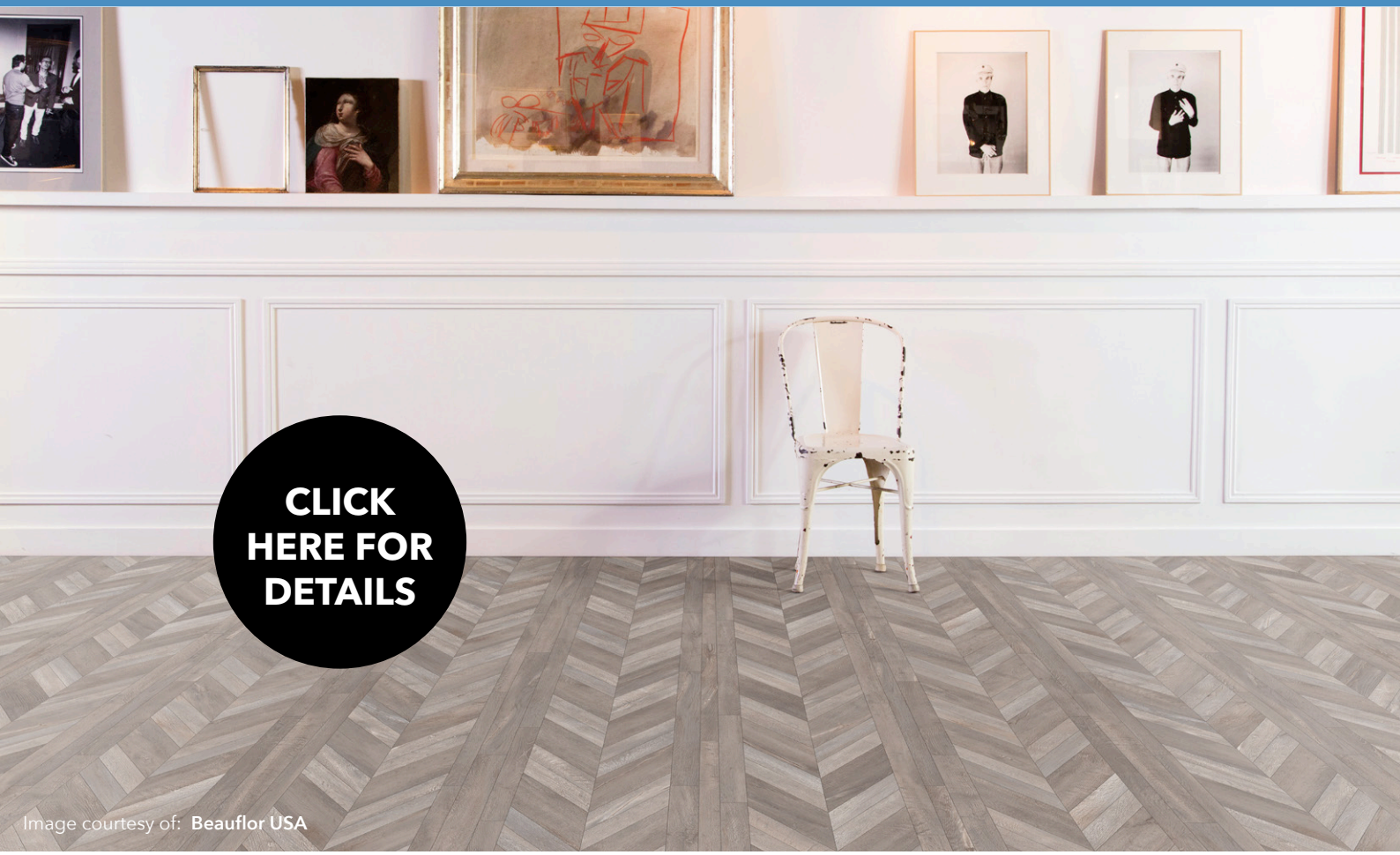

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Before field testing, instrumentation analysis via Fourier Transform Infrared Spectroscopy (FTIR) revealed that conventional AF suffered a 15% loss after accelerated testing, meaning it would lose 41% of its functional antifog group by volume after oven ageing at 70°C and four weeks of heat exposure. The same analysis of Techmer's Multi-Season AF revealed it had suffered only a 1% loss after accelerated AF testing.

Techmer says its film is durable, offers extended antifog life, increases overall greenhouse production yield, and saves on labour cost for installing new antifog films so frequently.

Silica anti-block

Evonik has introduced two new grades of precipitated silica for use as antiblocking agents.

Spherilex 60 AB was developed for blown and cast film made from polyolefins and polyesters, while Spherilex 30 AB is designed for very thin products such as biaxially oriented film.

Antiblocking agents help improve film winding, as well as handling during subsequent processing.

Both grades are made using a new, patented manufacturing process that simultaneously allows spherical particle shape, controlled particle size, and narrow particle size distribution to be achieved.

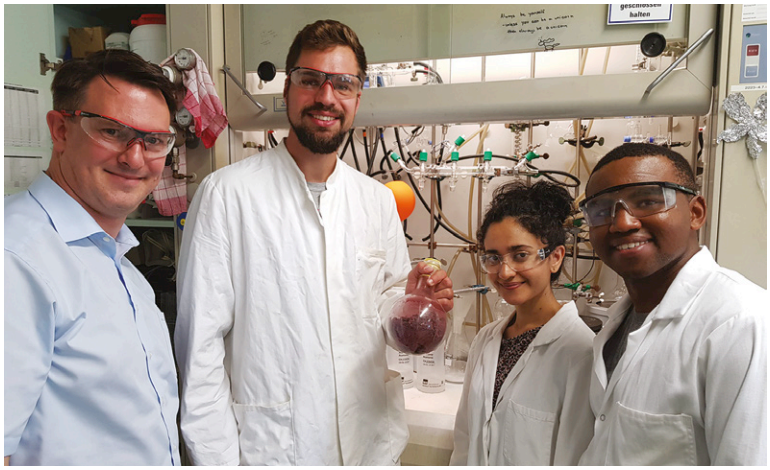
The combination of properties can be applied to many blown and cast films, including those made from polyethylene (PE), polypropylene (PP), PET and polyamide (PA).

Above: A BASF light stabiliser and antioxidant protect roofing membranes made of TPO sheet

On the roof

BASF additives are helping to protect the roof at Incheon Airport's Terminal 2 in South Korea.

An additives package comprising a Tinuvin light



Above: German researchers have used cashew nut shell liquid to make an organic UV filter

stabiliser and Irgastab antioxidant helps protect roofing membranes made of thermoplastic polyolefin (TPO) sheet.

"TPO roofing membranes produced with our polymer formulation and stabilisation can perform in some of the most extreme climate conditions and meet current roofing and waterproofing standards," said Hermann Althoff, senior vice president of BASF's Performance Chemicals unit in Asia Pacific.

The light stabiliser is based on BASF's proprietary NOR-HALS (hindered amine light stabiliser) technology. It has a lower interaction with system components and acidic environmental contaminants than traditional HALS products, says BASF, which helps the TPO membranes retain their mechanical properties.

John Yu, director of R&D at the membrane producer, Wonpoong, said: "Now we can ensure the polymer's UV resistance and provide our customers with more durable products."

Filter from nuts

An international research team has used cashew nut shell liquid (CNSL) as the basis for new types of organic UV filter, which can be used as a plastics additive.

The researchers, from **Johannes Gutenberg University** Mainz (JGU) in Germany, the University of the Witwatersrand in Johannesburg in South Africa and the University of Dar-es-Salaam in Tanzania, say the CNSL acts as a substitute for petroleum in the synthesis of the filter.

UV radiation is a typical cause of damage to paints, coatings and plastics. A typical way to protect against this is to add UV filters to the formulation. These can either be mineral pigments such as titanium dioxide or organic compounds.

Currently, both classes of UV filters are under fire for different reasons, say the researchers – with some organic filters being toxic to aquatic life. At the same time, most organic filters are produced from petroleum.

The researchers, led by Till Opatz of JGU and Charles de Koning from Johannesburg, used CNSL as a renewable starting material for the production of new UV filters. CNSL is produced in large quantity during the production of the nuts and cannot be used as food or feed., so there is no competition between its use as a chemical raw material and the production of foodstuff.

CLICK ON THE LINKS FOR MORE INFORMATION:

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PHOTO: SHUTTERSTOCK

AMI's Polymer Foam conference takes place in Hamburg in November, bringing together leading specialists to explore the challenges and benefits of foaming technology

Exploring opportunities for foamed polymers

Foamed polymers offer a whole raft of potential benefits, ranging from weight, material and energy savings to improved performance and cost effectiveness. But maximising the gains means understanding and successfully implementing the very best technologies. AMI's seventh European Polymer Foam conference brings together key technical experts and decision makers from end-users, foam manufacturers, testing companies and universities, as well as leading materials and technology providers, to discuss and explore the latest innovations and end-use applications involving polymer foam.

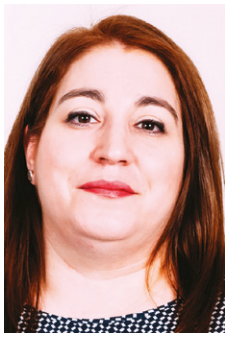
Taking place in Hamburg, Germany, on 26-27 November, the Polymer Foam conference will explore new opportunities for polymer foams in end-use markets, will examine regulatory developments and how they may impact on the use of foamed materials and blowing agents, and will identify end-use requirements, innovative production techniques and new material combinations. Covering all foaming solutions, a key attraction of this well-established event is the opportunity it provides attendees to find out more about their own business sector as well as learning from ideas being successfully applied in other foaming areas. This article previews the event and takes a look at the line-up of expert speakers.

Aerospace ideas

Polymer Foam will be opened by **Ingo Roth**, who is responsible for Research & Technology Cabin and Cargo Interior and Materials at **Airbus** in Germany. He will explain how foam is being used to reduce weight and increase functional integration in aerospace applications. He will be followed by **Norbert Hessenberger**, Head of Innovation & Development at **Greiner Aerospace** in Austria, who will detail some innovative foam solutions for aircraft interior and seating applications.

The focus will then turn to processing innovations. **Yuxiao Zhang**, Research Associate at the **Institute for Plastics Processing (IKV)** at **RWTH Aachen University** in Germany, will take a detailed look at available foam injection moulding processes for packaging applications. Then

Main image: The newest foam production and development innovations will be discussed at AMI's seventh European Polymer Foam conference in Hamburg in November



Expert speakers at the seventh European Polymer Foam conference include (from left) Cellmat Technologies Manager New Products and R&D Dr Cristina Saiz-Arroyo, University of Toronto Professor Chul B Park, and Tramaco Technical Sales Manager Dr Thomas Mergenhagen

Dr Cristina Saiz-Arroyo, Manager New Products and R&D at **Cellmat Technologies** in Spain, will examine how foaming mechanisms can be controlled to successfully optimise the production of advanced polymeric foam structures. And **Prof Dr Volker Altstädt**, Professor at the **University Bayreuth** in Germany, will explore some high-performance flame-retardant foams based on thermoplastic PET and thermoset epoxy resins.

Nano innovation

A full session has been allocated to the topic of nano-fibrillated materials. **Han Goossens**, Chief Scientist, Technology Management & New Offerings, and **Sunamita Anunciacao**, Specifications Specialist, at **SABIC** in the Netherlands will kick off the discussion with a joint presentation identifying new possibilities for PET foaming using nano-fibrillated masterbatches. Then **Prof Chul B Park**, Professor at the **University of Toronto** in Canada, will follow on with details of an investigation into foamability of impact modified polypropylene using nano-fibrillated EPDM rubber.

The final session on the first day will give attendees the opportunity to find out about technical and regulatory developments impacting on chemical foaming agents. **Dr Thomas Mergenhagen**, Technical Sales Manager/Quality Manager at **Tramaco** in Germany, will review the basics and highlight some new developments in chemical foaming agents, including some key regulatory changes within the EU. Then **Dr Theresa Wassmer**, Technical Sales Manager Polymers at **Chemische Fabrik Budenheim** in Germany, will focus on the sustainablilty theme by exploring innovations in eco-friendly, endothermic foaming agents for thermoplastics.

Progress in PU

The second day of the conference will open with a look at the polyurethane foam industry. **Dr Aleksander Prociak**, Prof of CUT, Deputy Manager of Department of Chemistry and Technology of Polymers at the **Cracow University of Technology** in Poland, will present some new research on bio-based PU foams for thermal insulating applications. His presentation will also look at the effects of selected bio-components in this application. Next up is **Dr Guillaume Francois**, Scientific Software Developer at **Transvalor** in France, who will explain how in situ industrial PU foaming and filling can be modelled using numerical simulation. And **Dr Jan-Pleun Lens**, Vice President Research and Applications at **FRX Polymers** in the US, will speak about graphite-free and halogen-free flame-retardant flexible PU foams for automotive applications.

The final session of the conference is focused on extrusion processing. **Robert Breuer**, Research Associate at the **Institute for Plastics Processing (IKV)** in Germany, will look at the production of polypropylene foam sheet using blowing agent mixtures based on CO_2. And **Hilmar Heithorst**, Product Management CoC Flat Products at **Kraussmaffei Technologies** in Germany, will explore some of the newest extrusion technologies for PET foams.

About Polymer Foam EU 2019

Polymer Foam EU takes place at the Maritim Hotel in Hamburg, Germany, on 26-27 November 2019. The event brings together expert speakers from foam end users, manufacturers, testing companies and universities, as well as materials and technology providers. Over its previous six editions, the conference has established itself as the place to learn about foam market opportunities, end use requirements, regulatory developments, novel production techniques, and innovative material combinations.

Aside from the formal programme, the informal lunches and refreshment breaks and the complimentary cocktail reception at the end of the first day provide plenty of opportunity for discussion and networking. To find out more, visit the Polymer Foam **conference website** or contact Conference Organiser Katie Edwards. Tel: +44 (0)117 314 8111; Email: **katie.edwards@ami.international**

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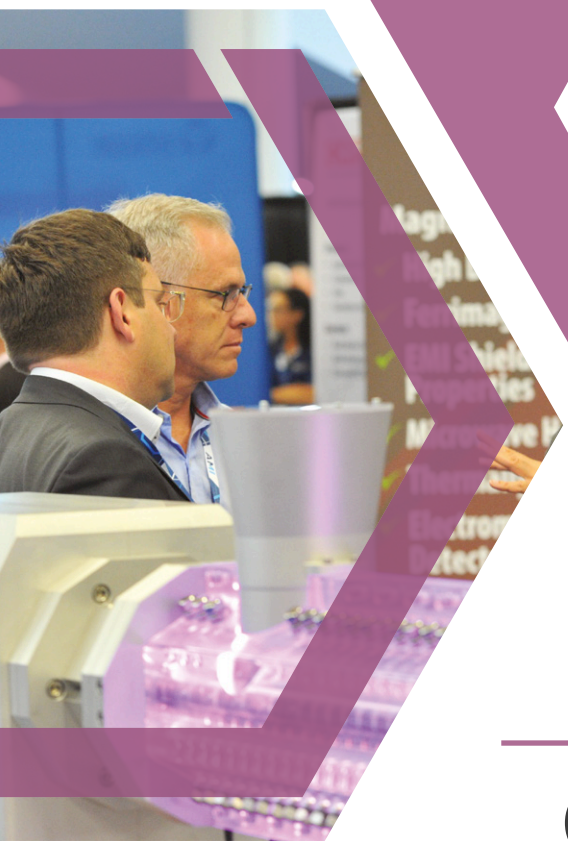

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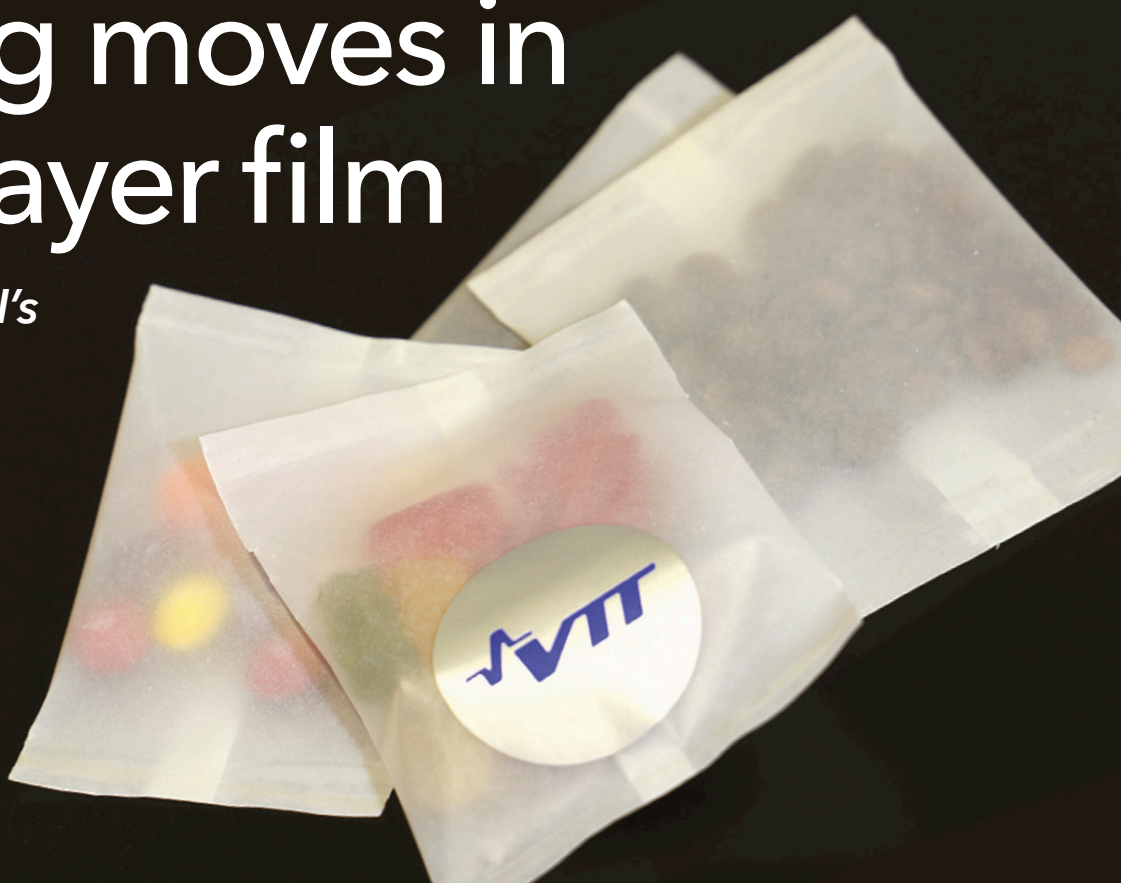
Making moves in multi-layer film

Delegates at AMI's conference on multi-layer film heard about performance improvements, and several attempts to boost recyclability



Main image: VTT's cellulose-based film boasts a good oxygen barrier, but its transparency needs to be improved

Multi-layer packaging has become both a blessing and a curse in recent times. While it provides a superior barrier to mono-layer film, the difficulty of recycling it has become a key issue for the industry.

This was a subject addressed by a number of speakers at the *Multi-Layer Flexible Packaging* conference, organised by **AMI** last year. Some of the solutions on offer included biodegradable materials and new methods of production and recycling.

Cellulose film

Mika Vaha-Nissi, principal scientist at Finland's **VTT** technical research centre, told delegates about its cellulose-based multi-layer packaging films.

VTT has combined several of its technologies – including nano-fibrillated cellulose – to create three-layer packaging.

These are produced on a pilot line. Positive points include a good oxygen barrier, temperature resistance up to 200°C and a tensile strength of 200MPa. Factors still to be improved include the water vapour barrier, flexibility, transparency and heat sealing performance.

VTT has create a number of different packaging structures, using other materials including bio-HDPE, bio-LDPE and PLA. This includes the creation of stand-up pouches.

The film is made on a surface treatment and coating line, with casting on a plastic substrate. The film incorporates 23% sorbitol as a plasticiser, and both film surfaces are coated with VTT's molar mass controlled cellulose (MMCC) – a patent-pending technology. VTT believes this type of packaging could be used to protect products such as nuts, chocolate, cheese and coffee.

Solvent recycling

APK of Germany has developed a new method to recycle multi-layer film, using solvents to separate out the different polymers.

Florian Riedl, head of business development for the company's Newcycling process, told delegates that multi-layer films made from polyethylene (PE) and polyamide (PA) could be split back into their constituents using solvent separation. The end result was PE and PA granulate – which Riedl said were comparable with virgin material.

In simple form, the process uses a solvent to dissolve the shredded multi-layer film. It is then separated into two fractions: the solvent fraction, which contains the PA, is washed and finally repelletised. The liquid fraction, in which PE has been dissolved, goes through a drying step before it is also repelletised. Solvent is regenerated and re-used in the process.

Riedl said that materials have comparable

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Above: APK is expanding the capacity of its Newcycling process at its facility in Germany

qualities to virgin resin. Its Mersalen grade of LDPE, for instance, has been used to replace virgin PE in blown and cast film applications for non-food flexible packaging. Its Mersamid PA grades have also been used in both extrusion and injection moulding applications.

The company is already growing beyond the treatment of PE/PA film. It has begun engineering work for a second plant to handle a wider range of waste film, including PET/PE structures. It intends to begin production here by the end of next year.

Layer simulation

Not all multi-layer packaging research deals directly with recycling. There is still plenty of work into the packaging's prime function: to create a superior barrier.

Norner, a polymer research organisation in Norway, has developed a simulation tool for barrier packaging. The online tool helps packaging designers to estimate factors such as oxygen and water transmission rates, based on the formulation of the multi-layer packaging. It can model the properties of several types of structure, including in-mould label solutions.

"The combination of geometrical options, permeability properties and environmental conditions provides a useful tool for design and development," said Ole Jan Myhre, marketing manager at Norner.

Users enter the details of their multi-layer structure and the tool will estimate the barrier properties. For instance, it can compare multiple multi-layer formulations of cereal packaging – using different materials in different thicknesses.

As well as making calculations based on layer thickness, it can also account for factors such as ambient temperature, or after a particular period of exposure.

Layer improvement

Felix Lesouef, assistant technical manager for the Admer division at **Mitsui Chemicals Europe**, told delegates how the combination of material and machinery technologies can lead to better-performing products.

He explained how the use of adhesive resins and coatings could help improve the performance of multi-layer BOPP film – when combined with a process such as Brueckner's inline coating (ILC) method. Here, the usual technique has been changed slightly – by performing the coating between the two stretching stages. This is followed by drying and stretching in the TD oven.

This method helps to boost gas barrier properties, improve metal adhesion, gloss and ink adhesion – while imparting anti-block, antifog and anti-static properties.

He said that a process like ILC for BOPP film can help to close the gap between low-cost metallised BOPP film and expensive, multi-layer UHB films.

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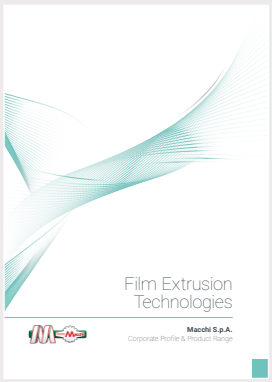

This 28-page brochure from Macchi covers the company's wide range of film extrusion technologies including coextrusion lines, wide webs, die heads, take offs, winders, trim recovery and control systems.

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COLINES: BARRIER FILMS

This new brochure from Colines focuses on extrusion lines for the production of barrier films for vacuum and modified atmosphere packaging to preserve foodstuffs and medical products.

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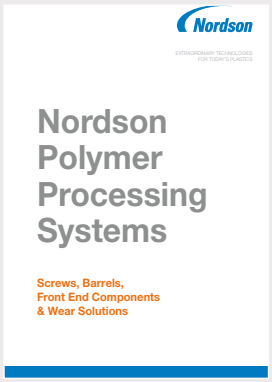

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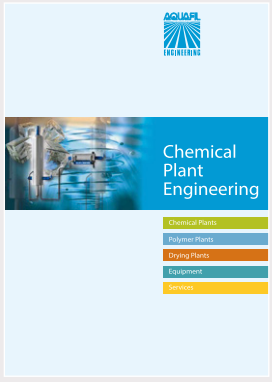

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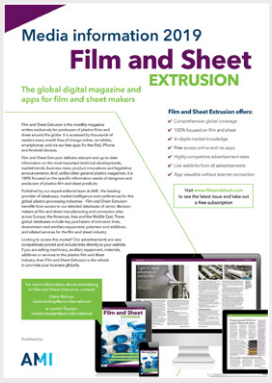

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MULTILAYER FLEXIBLE PACKAGING

The Multilayer Flexible Packaging conference, which takes place on 18-20 November 2019 in Vienna, Austria, will explore the challenges for producers in answering sustainability demands while continuing to meet brand owners' needs in design and performance.

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THIN WALL PACKAGING

The 14th edition of this successful event takes place on 2-4 December 2019 in Dusseldorf, Germany. Hear market insights from brand owners, retailers, packaging manufacturers, researchers and suppliers to the retail packaging sector.

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STRETCH & SHRINK FILM US

Taking place in New Orleans on 3-4 December 2019, this event will include a sustainability masterclass, as well as look at market trends, discuss technology innovations and share the latest on materials in stretch and shrink film.

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PLASTICS REGULATIONS US

Keep up to date with plastics-related regulation and future regulatory developments that will impact the plastics supply chain at this key conference taking place on 10-11 December 2019 in Pittsburgh, PA.

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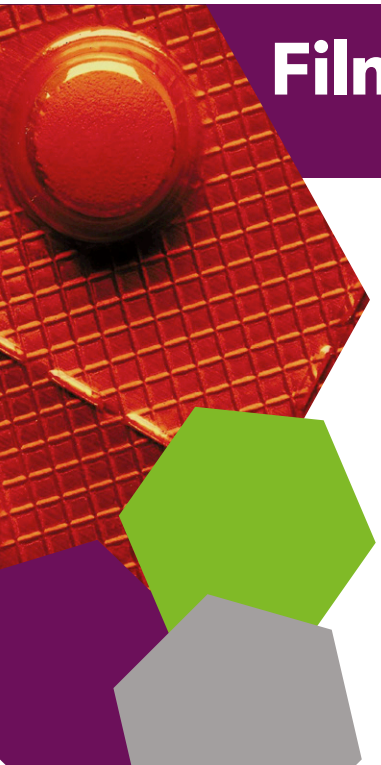
To see our full line-up of more than 50 plastics industry events over the next 12 months, please visit www.ami.international/events

SRF Packaging Films

Head office:	Uttrakhand, India
CEO:	Prashant Mehra
Founded:	1995
Ownership:	Public
Employees:	Around 7,000 worldwide (parent company)
Turnover (2018-19):	Rs7693 crore (US$1.2bn) (parent company)
Profile:	SRF, which was founded in 1970, began with a nylon tyre cord plant. Afterwards, it expanded into other areas such as technical textiles – and finally into packaging film in 1995. This division processes a range of materials, and makes many different types of bioriented film, for both food and non-food applications.
Product lines:	The company offers two main types of bioriented product: BOPP and BOPET. However, these are available in many different varieties. Its Petlar range of BOPET films, for instance, range from plain film with no surface treatment to grades that are adapted for printing and embossing, or have high barrier properties. Similarly, its Oplar range of BOPP film encompass everything from plain film through metallised grades to advanced grades with antifog performance.
Factory locations:	The packaging films division has three plants in India and two more abroad – in Thailand and South Africa. The three India plants produce both BOPP and BOPET film, and has metallisation, holography and coating capabilities. Its Thailand plant concentrates on PET film, while the South Africa plant produces BOPP film. Both overseas plants offer metallised versions. Machine suppliers at the plants include Brueckner, Aquafil, Bobst, Kampf, Nordmeccanica and Lindauer Dornier.

To be considered for 'Extruder of the Month', contact the editor on lou@filmandsheet.com



Film and Sheet Extrusion FORTHCOMING FEATURES

The next issues of Film and Sheet Extrusion magazine will have special reports on the following topics:

November 2019
Sheet materials ● Construction
Thin-wall packaging
Smart packaging
K2019 show review

December 2019
Screenchangers & melt filtration
Foamed sheet technologies
Static control/web cleaning
Materials recycling/granulators

Editorial submissions should be sent to Lou Reade: lou@filmandsheet.com

For information on advertising in these issues, please contact:
Claire Bishop: claire.bishop@ami.international Tel: +44 (0)1732 682948
Levent Tounjer: levent.tounjer@ami.international Tel: +44 (0)117 314 8183

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

Film and Sheet
September 2019
The September issue of Film and Sheet Extrusion takes an in-depth look at the latest in downstream equipment, new biaxial film technologies and PVC plasticisers. Plus the K2019 Preview provides an extruder's guide to material exhibitors.

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Film and Sheet
July/August 2019
The July-August edition of Film and Sheet Extrusion looks at the accelerating research into bioplastics applications, plus stretch and shrink film, masterbatches, bag-making machinery and a Visitor Guide to K2019.

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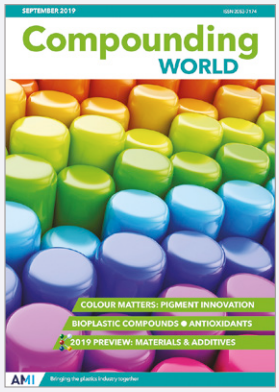

Compounding World
September 2019
The September issue of Compounding World discusses how to get more from pigments and also covers bioplastics, stabilisation and purging. Plus a preview of K2019 materials and additives exhibitors.

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Plastics Recycling World
September/October 2019
The September/October edition of Plastics Recycling World explores a new sorting technology that uses watermarks to identify polymers. Plus, a look at the latest initiatives in rigids recycling and a preview of K's innovations.

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Pipe and Profile
October 2019
The October issue of Pipe and Profile Extrusion magazine has in-depth features on pipe inspection, what's new in PVC-O, the latest in materials handling and a K2019 materials preview.

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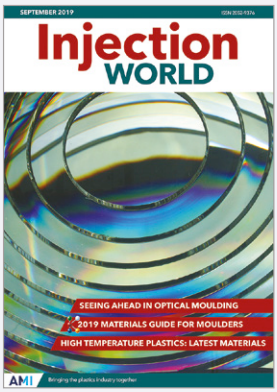

Injection World
September 2019
The September edition of Injection World magazine takes a look at the latest in optical and medical moulding. It also reviews developments in high temperature plastics, plus a preview of the material innovations that will feature at K2019.

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Take out your own FREE subscriptions to any of the magazines. Click on the logos below to simply register on-line.

Compounding WORLD
Film and Sheet EXTRUSION
Pipe and Profile EXTRUSION
Injection WORLD
Plastics Recycling WORLD

GLOBAL EXHIBITION GUIDE

2019	**16-23 October**	K2019, Dusseldorf, Germany	www.k-online.com
	17-19 October	Plastics, Printing & Packaging, Dar-es-Salaam, Tanzania	www.expogr.com/tanzania/pppexpo
	25-28 November	Plastivision Arabia, Sharjah	www.plastivision.ae
	27-29 November	Plastics & Rubber Vietnam	www.plasticsvietnam.com
2020	**13-16 January**	Saudi Plastics & Petrochem, Riyadh	www.saudipp.com
	16-20 January	Plastivision India, Mumbai, India	www.plastivision.org
	21-23 January	Swiss Plastics, Lucerne, Switzerland	www.swissplastics-expo.ch
	28-31 January	Interplastica, Moscow, Russia	www.interplastica.de
	24-26 February	Plastics, Printing & Packaging, Addis Ababa, Ethiopia	www.expogr.com/ethiopia/pppexpo
	9-11 March	Plast Alger, Algiers, Algeria	www.plastalger.com
	11-13 March	Expo Plasticos, Guadalajara, Mexico	www.expoplasticos.com.mx
	21-24 April	Chinaplas, Shanghai, China	http://www.chinaplasonline.com
	7-13 May	Interpack, Dusseldorf, Germany	www.interpack.com
	3-4 June	Plastics Extrusion World Expo Europe, Essen, Germany	www.eu.extrusion-expo.com/
	13-17 October	Fakuma, Friedrichshafen, Germany	www.fakuma-messe.de

AMI CONFERENCES

12-14 November 2019	Polyolefin Additives, Vienna, Austria
18-20 November 2019	Agricultural Film, Barcelona, Spain
18-20 November 2019	Waterproof Membranes, Cologne, Germany
18-20 November 2019	Multilayer Flexible Packaging, Vienna, Austria
2-4 December 2019	Thin Wall Packaging, Dusseldorf, Germany
3-4 December 2019	Stretch & Shrink Film, New Orleans, USA
4-6 February 2020	Polyethylene Films, Coral Springs, USA
10-11 March 2020	Specialty Packaging Films Asia, Bangkok, Thailand
17-18 March 2020	Plastic Pouches, Vienna, Austria

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

www.ami.international