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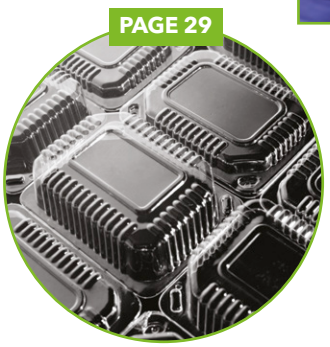

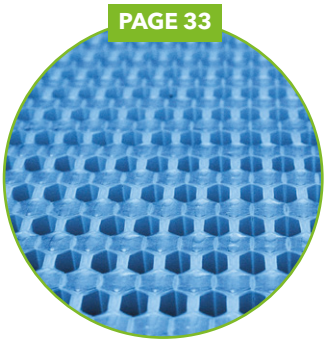

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Film and Sheet EXTRUSION

NEWS IN BRIEF...

Simona of Germany reported an increase of more than 6% in revenue for the first nine months of the year. The company posted sales of €335m (US$362m). This was partly driven by a strong performance from its US business – including the first-time inclusion of revenue from PMC, the specialist sheet company that Simona acquired in 2018. In Europe, it reported weaker demand in areas such as advertising and digital printing products.

› **www.simona.de**

US packaging company **Sonoco** reported flat results for the first three quarters of the year. Year-to-date sales of just over $4bn, and Q3 sales of $1.35bn were almost identical to corresponding results from the previous year. However, the consumer packaging division saw sales fall by around 3% to US$581m in Q3.

› **www.sonoco.com**

Finnish packaging giant **Huhtamaki** reported a 10% increase in sales for the first nine months of the financial year, to €2.5bn (US$2.7bn). At the same time, profitability (EBITDA) rose 14% to €339m (US$366m). For Q3 alone, sales grew 10% to nearly €780m (US$842m) and EBITDA rose 20% to nearly €114m (US$123m).

› **www.huhtamaki.com**

Sustainability was the key theme at K2019

Sustainability was a key theme at this year's K2019, with many exhibitors showcasing technologies such as chemical recycling, single-material flexible packaging and bioplastics.

Ulrich Reifenhäuser, chairman of the exhibitor advisory board at K2019, said: "Never before has the industry addressed an issue so unanimously – and worked on solutions so consistently – as is the case now, in the fields of environmental compatibility, saving resources and avoiding waste."

Several machinery and materials suppliers announced joint projects to develop all-PE multi-layer packaging – which is easier to recycle. These included: Hosokawa Alpine, in separate projects with Total and Dow; Reifenhauser is working on a projects with ExxonMobil (for heavy-duty sacks). Dow is also working with Windmoller and Holscher.

This year's show attracted nearly 225,000 visitors, which was slightly less than in 2016

"In many cases, machine-direction oriented (MDO) PE can replace PET in a multi-layer film – by adding strength and stiffness," said Holger Niemeier, executive vice president at Hosokawa Alpine.

The proportion of foreign visitors at this year's show exceeded 73%, compared with nearly 71% in 2013. Asia accounted for around 40,000 visitors – with large contingents from India, China and Japan. Almost 20,000 visitors came from North and South America – a 7% increase compared to 2016. There was a marked increase in the number of visitors from Brazil.

At the same time, exhibitor numbers rose from 3,285 (in 2016) to 3,330 at the latest edition.

Messe Dusseldorf, which organised the exhibition, said there were 224,116 visitors this year – about 2.6% lower than the official figure from 2016 (which was put at 230,000). This compares with 218,000 visitors at K2013.

The next K show will be on 19-26 October 2022.

› **www.k-online.de**

UK film producer Total Polyfilm closes with around 200 job losses

Total Polyfilm, a UK-based producer of polyethylene film, has ended production with the loss of around 200 jobs.

The company, which has production sites in Preston and Brighouse, was a leading producing of stretch, shrink and agricultural film. It had an output of around 40,000 tonnes/year across its two sites.

KPMG has been appointed as the joint administrator and will attempt to find buyers for the privately-owned business.

According to a report on the BBC website, the company had struggled to recover from a fire at its Preston factory in 2016. The site was completely rebuilt, but lost key customers which led to cashflow problems, said the report. The closure comes despite the firm reporting £45 million (US$56m) in sales for 2018/19.

› **www.totalpolyfilm.com**

Spartech changes ownership as Nautic Partners takes over

US-based thermoforming and extrusion specialist Spartech has changed hands.

Owner Arsenal Capital Partners has sold the company to Nautic Partners, which is also a private equity firm. Spartech's management will also own a stake in the company.

Spartech, based in Maryland Heights in Missouri, is a custom manufacturer of specialised acrylics and other engineered extruded plastics for end markets including aerospace, healthcare and packaging. Through its 14 plants, it provides acrylic products, plastic sheet and rollstock, specialty film laminates and thermoformed packaging.

John Inks, COO of Spartech, said: "We are excited to work with Nautic as we enter the next phase of our growth. Nautic shares our vision of growing this brand, investing in new products and further enhancing our customer experience.

"We are proud of our strong customer relationships today and are confident they will only improve as a result of this new partnership."

Chris Pierce, a managing director at Nautic, added: "What drew us to Spartech was the strength and depth of the management team, long customer relationships and the company's expertise in difficult-to-manufacture products such as cell cast acrylic, flame-retardant plastic sheet and multi-layer packaging – all of which are used in demanding, highly technical applications."

› **www.spartech.com**
› **www.nautic.com**

Thermoformed tractor cab roof wins SPE parts award

Plastics Unlimited is the overall winner in the SPE Thermoforming Division's parts competition for 2019.

The US company, based in Preston, Indiana, took the award with its tractor cab roof – which consists of two thermoformed parts that are glued together. Inside the roof, there are many different steel and thermoformed parts.

"Our customer approached us about producing a cab roof top for them that would incorporate mounting brackets and air ducts," said the company." They wanted a colour-matched Class A top side with a black textured bottom side – and also wanted to keep tooling costs low."

PHOTO: DALLAGER PHOTOGRAPHY

Plastics Unlimited's tractor cab roof includes two glued thermoformed parts, which helped keep tooling costs low

The outer material is an acrylic-capped ABS with a starting thickness of 0.156in, and the bottom is a black acrylic-capped haircell ABS with a starting thickness of 0.187in.

Some challenges included: controlling the shrink; and making sure the top and bottom fitted correctly so the glue gap was consistent. Another difficultly was to ensure that everything is held correctly when gluing the top and bottom together, so there is proper pressure on all sides.

Tooling for the design proved much cheaper than for other processes such as injection moulding or twin-sheet moulded plastic, it said.

This part was formed from temperature controlled, single-cavity production tooling.

› **www.plasticsunlimited.com**
› **https://thermoformingdivision.com**

Avery Dennison ups output

Labels and tape manufacturer Avery Dennison has opened a $65 million expansion at its Rodange plant in Luxembourg.

The company says the investment will help it to expand its European manufacturing footprint.

"This investment creates a number of advantages for us in Europe," said Tim Presto, vice president of supply chain and operations Europe.

"It increases our top-coating capabilities and helps us better address fluctuations in customer demand."

The expansion incorporates a new coater, additional slitter capacity, a new packaging line and an automated warehouse, said the company.

› **www.averydennison.com**

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Leading suppliers sign up for fast-growing plastics exhibitions

Leading suppliers from the fields of plastics recycling, compounding, extrusion and testing have booked stands at four focused exhibitions that will take place at Messe Essen in Germany on 3-4 June 2020.

The Plastics Recycling World Expo, Plastics Extrusion World Expo, Compounding World Expo and Polymer Testing World Expo will all be free to attend. They will feature five free conference theatres hosting business debates, technical presentations and training seminars. Last year's debut event in Essen attracted 4,024 visitors.

"We already have over 250 exhibitors signed up for next year's shows, which is 20% more than the final number at our launch event in Germany in 2018, and we still have seven months to go," said Rita Andrews, Head of Exhibitions at AMI, the organiser of the exhibition. "The vast majority of exhibitors at the first expos rebooked their stands, and many new names are signing up, having seen the size and quality of the audience at Essen last year."

The launch event in Essen, in 2018, was well attended

Companies that have already reserved stands at the event include leading suppliers of polymers and additives, such as BASF, Biesterfeld, Borealis, Cabot, Clariant, Evonik, ExxonMobil, Imerys, Omya, Solvay, Wacker and Westlake Global Compounds. The international line-up of exhibitors at Essen will also boast an international array of plastics recyclers and waste management companies such as K Kanellakis, Montello, Rodepa, Sogapol, Van Werven, Veolia and Vita Plastics.

Visitors to the Essen expos will also be able to find out about the latest developments from the suppliers of a wide range of extrusion, compounding and recycling equipment.

The new Polymer Testing World Expo will provide a focused meeting place for scientists, laboratory staff, researchers and R&D professionals who develop, test and analyse plastics materials and products. Relevant exhibitors that have already booked stands at Essen include Frontier Lab, Norner, Dynisco, Brabender, Collin Lab & Pilot Solutions, Fraunhofer, Konica Minolta, Labtech Engineering, Richard Hess MBV and ZBT.

"There is considerable crossover between the different sectors of the plastics industry that are covered by these four focused exhibitions, which will benefit exhibitors and visitors alike," said Andy Beevers, Events Director at AMI. "For example, 1,722 of the visitors to the last year's compounding and recycling shows in Essen said that they were involved in materials R&D and testing, which led to the addition of the Polymer Testing World Expo."

Stands at the exhibitions start at less than €3,000. For more information contact AMI's exhibition team at **exhibition_sales@ami.international**

German thermoforming and sheet group sets up new factory in Alabama

A German sheet producer and thermoformer is investing nearly $10 million to set up a new factory in the USA.

The Hartl family, which owns both thermoformer Durotherm and sheet extruder Infinex, will base their new company – called ID Plastics – in Auburn, Alabama.

The facility, which is expected to create around 50 new jobs, will initially produce the ID Pack Sleeve, a foldable, returnable transportation container system.

However, the company also has plans to produce sheet and thermoformed products. At its German base in Haiterbach, in the Black Forest, Durotherm and Infinex make products including single- and twin-sheet thermoformed parts, as well as sheet products such as Iso-Drain dimpled sheets.

"German technology made in the USA with state-of-the-art, customer-oriented manufacturing – that's the perfect combination," said Andreas Hartl, managing director of Durotherm.

› **www.durotherm.de**

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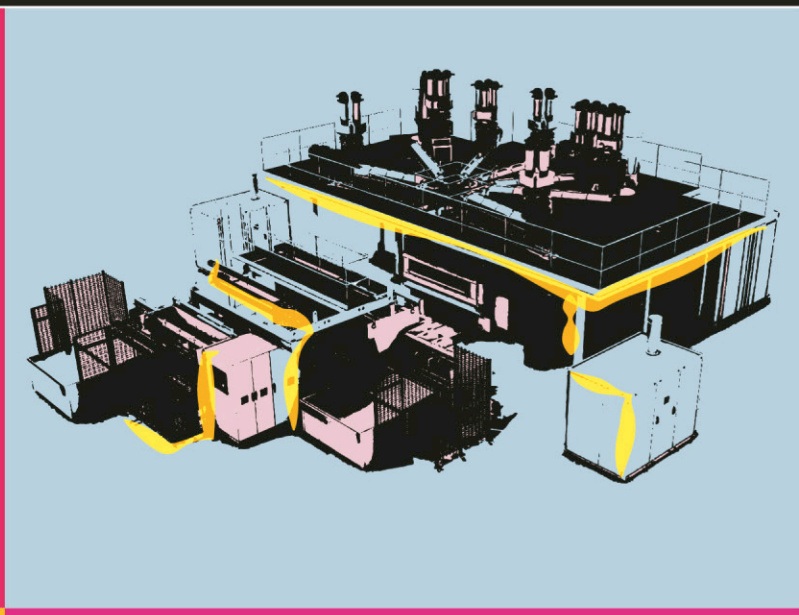

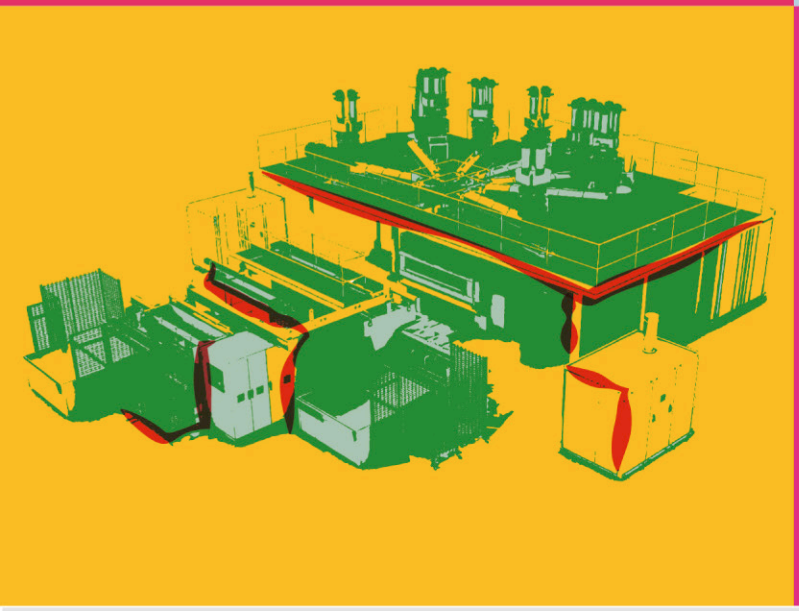

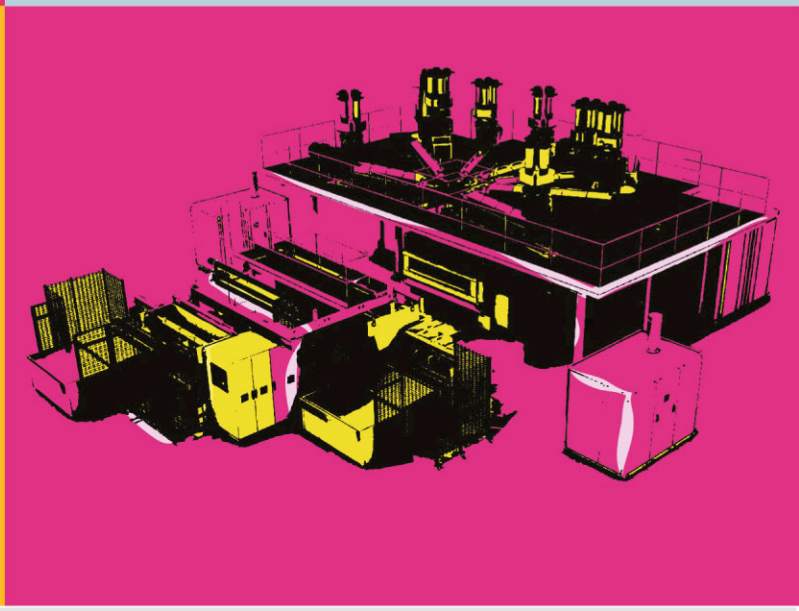

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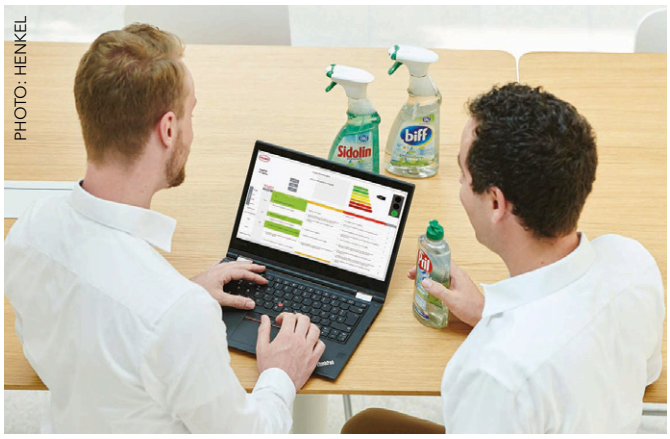

PHOTO: HENKEL

Design for recycling is incentivised by Germany's new packaging law. Henkel is one group aiming to make the process easier with its free software tool EasyD4R

Germany advances on circular economy

Germany is pushing ahead with circular economy plans that aim to reduce the impact of plastics packaging in the environment.

The Environment Ministry published a draft bill in early September for a ban on supermarket plastic bags, which would include bio-based and degradable plastic bags, but not bags for packing fruit and vegetables. Since 2016, there has been a voluntary commitment for stores not to give out free plastic bags to shoppers.

In response to the bag ban proposal – which would see fines of up to €100,000 being imposed on companies violating the ban – the German plastics packaging organisation, IK, said the move showed discrimination against plastics versus other bag materials. The trade body said proper disposal of plastic bags is already dealt with through Germany's national yellow sack system for consumers to recycle packaging.

IK called for the discussion on plastics bags and packaging to be based on facts, and not be the subject of populist politics. It said that replacing single-use plastics with other disposable materials would be counter-productive.

Government actions are further ahead in implementing Germany's new packaging law, which came into effect on 1 January 2019. ZSVR, the country's central packaging registry, has published the minimum standard for design of recyclable packaging. The new law provides a financial incentive in the dual system licence structure (responsible for the yellow sack collections) for companies to adopt packaging that is easier to recycle.

The government expects that a move to greater recyclability would then lead to higher recycling rates for plastics packaging in Germany.

› **www.verpackungsregister.org**

PHA plant for Russia

Taif JSC Group, a Russian petrochemicals producer, has announced the start of the construction phase of its 10,000 tonnes/year polyhydroxyalkanoate (PHA) bioplastics project in the special economic-industrial zone of Alabuga in Tatarstan. The company plans to award the contract for construction of the plant by the end of the year and to start production in 2H 2021. In the longer term, capacity may be doubled, said the company.

› **www.taif.ru**

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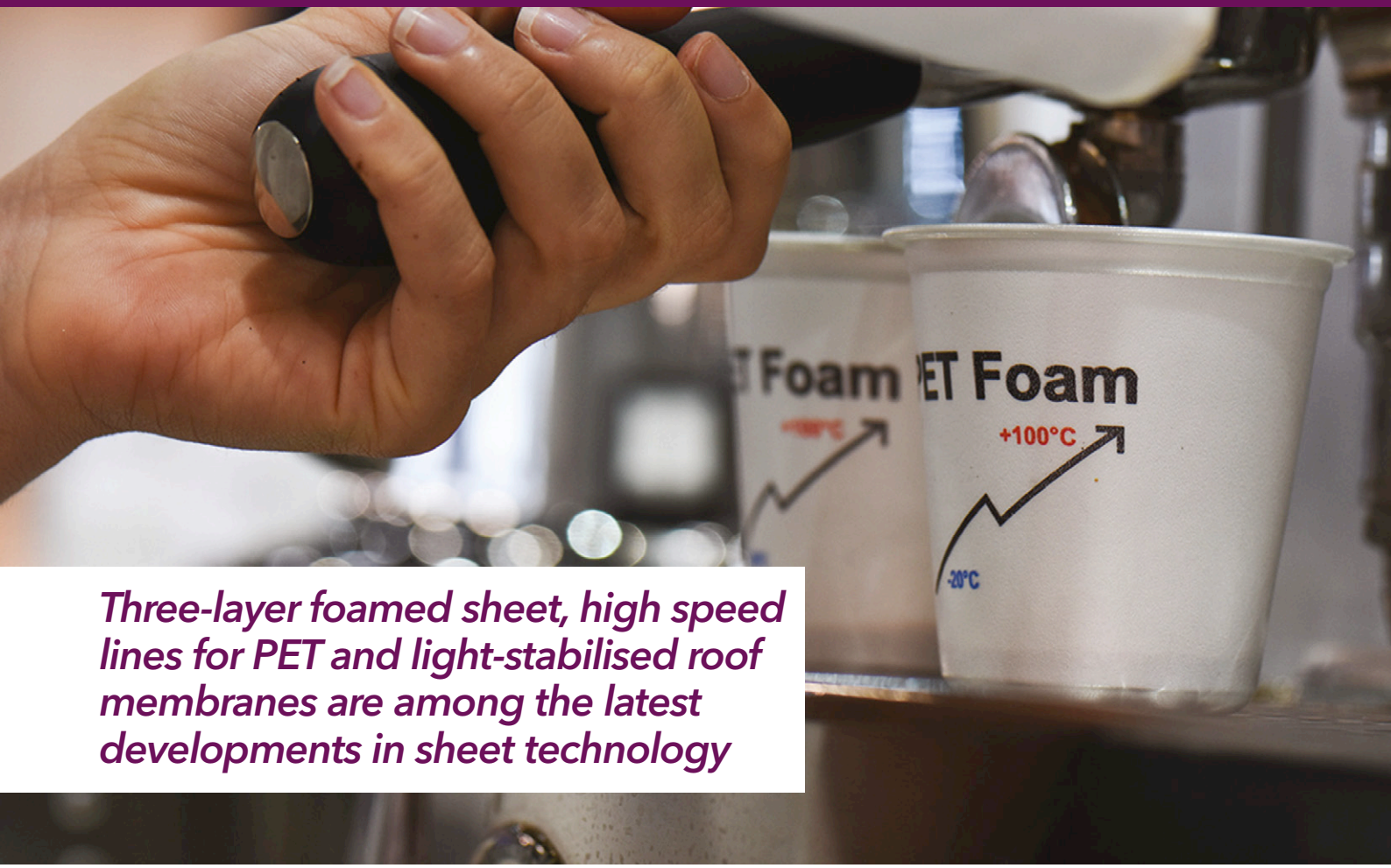

Three-layer foamed sheet, high speed lines for PET and light-stabilised roof membranes are among the latest developments in sheet technology

Going flat out: latest sheet developments

Among the many developments at the recent K2019 show, there were a number in sheet technology – including a three-layer foamed sheet with high temperature resistance.

SML of Austria is developing this foamed sheet for hot fill applications – with new features in terms of heat resistance, insulation and recyclability – in a joint R&D programme with **Kiefel**. The basis for these new products is a three-layer PET (or PP) sheet with a physically foamed central layer.

Mono-material foamed PET or PP sheet made with SML's new systems have product features that can help to replace difficult-to-recycle hot fill applications made of expanded polystyrenes. Generally, PS is permitted for food applications, but it is considered to release the chemical compound styrene into the environment, says the company.

The foamed sheet from SML's new lines has an A/B/A structure, in which the central B layer is foamed while the two outer layers are rigid. The central layer is physically foamed with the injection of nitrogen or carbon dioxide. Mono-material structures facilitate recycling while the foamed layer reduces weight up to 50% compared to PET sheet with the same properties. No special additives are required to enhance the heat stability of the sheet making it suitable for economic production of low-weight cups with good insulation properties.

In a new joint R&D project, Kiefel and SML are exploring and further developing the potential for this type of foamed sheet. As well as developing end products with specific mechanical and thermal properties, the research will look to optimise the manufacturing processes and develop new recycling methods.

The first outcome is that cups with a heat resistance of up to 100°C have been created from standard APET. The sheet for such cups can have an overall density of about 0.65 kg/dm³, which saves material and increases the insulating properties – making it possible to hand-hold the cups when they are filled with hot liquids. The cups were

Main image: SML and Kiefel have developed three-layer PET sheet with a foamed central layer, for making heat-resistant cups

seen at K2019 recently.

Unlike polystyrene, mono-material foamed sheet – especially from PET – is straightforward to recycle as the infrastructure already exists in many places. Hot fill applications made of foamed PET sheet can be easily processed with other single use products from PET. This opens opportunities to branches as airline catering or system gastronomy which still rely on disposable items.

KraussMaffei Berstorff has delivered an automated system to help Russian refrigerator manufacturer Birusa make coextruded polystyrene sheets

Live demos

At K2019, **Viscotec** – a division of **Starlinger** – ran a live demonstration of its ViscoSheet line, for making PET sheet. The line is capable of producing food-grade sheet from 100% recycled PET (rPET).

In the demonstration, a line at its headquarters in Austria was started and operated from the Starlinger stand at the K show in Dusseldorf – and presented through a live broadcast.

Prior to this, the company supplied three separate PET sheet production lines to WIP of Poland, to help it expand its PET operations beyond preforms and bottles. WIP began producing PET sheet in 2013.

"In 2018/2019, we partnered with Starlinger Viscotec to raise our PET sheet production to the next level in order to keep up with market needs," said Dariusz Niemer, general manager of WIP's sheet plant in Zwoleń. "Today our production rates are 16,000 tonnes/year."

Expanding to PET

Processing Technologies International (PTI) has extended the use of its Super-G HighSpeed extruder to PET sheet.

"With this line, a 75mm extruder has the output of a typical 150mm extruder," said Matt Banach, senior vice president of sales and marketing.

The extruder has previously been used to process PP and PS, he said. The company now has plans to process ABS on the machine.

"ABS is similar to polystyrene in some ways – but there are challenges," he said. "We may be able to produce thicker sheet with ABS."

Earlier this year, PTI formed a strategic business alliance with and **Farrel Pomini** to supply integrated compounding and extrusion systems for production of plastic sheet under the Direct-to-Sheet (DTS) Compounding name.

The two companies said that DTS Compounding brings together their respective production technologies: PTI will contribute its sheet extrusion machinery, notably the G-Series Rolls Stands; Farrel Pomini its CP Series II compounding system.

The goal of the alliance is to eliminate the need to create pre-compounded resins prior to extrusion processing. "Polymers and additives can be mixed and directly extruded to sheet in one cohesive and uninterrupted process," the companies said.

Claimed benefits include cost savings, process efficiencies and enhanced control of compounded materials where high volumes of mineral fillers are required in extruded sheet. DTS Compounding can be configured in line with a thermoformer or as a roll stock system producing wound rolls of sheet offline.

Cool customer

Birusa, a Russian refrigerator manufacturer, has taken delivery of an automated system from **KraussMaffei Berstorff** to make coextruded polystyrene sheets.

The company says that the highlight of the 1000mm sheet system is the ability to automate sheet thickness during production.

"This system gives us enormous advantages, such as high production flexibility, and reductions in changeover times, labour costs and the amount of waste produced," said Maxim Komendantov, head of process engineering at Birusa.

The company added that the system helped it to improve competitiveness under difficult market conditions.

Pilot line development

Battenfeld-Cincinnati recently added a multi-functional thermoforming sheet line to its pilot plant in Bad Oeynhausen, Germany.

"The new pilot plant line will enable our customers to develop new types of sheets or optimise their existing products – something that is becoming increasingly important in the context of design

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for recycling," said Henning Stieglitz, CTO at Battenfeld-Cincinnati.

The core components of the pilot plant line are the high-speed 75 T6.1 extruder, the StarExtruder 120-40, and Multi-Touch roll stack with a width of 1,400 mm. The complete extrusion line can produce sheets and thin boards made from new materials, recycled materials, bioplastics, and combinations of materials.

The line comprises the two main extruders and a 45 mm co-extruder, each with a multi-component dispensing unit, melt pump, and screen changer, feed block and roll stack with winder. Depending on the configuration, the line can achieve a maximum output level of 1,900 kg/h for PP or PS and around 1,200 kg/h for PET with line speeds of up to 120 m/min.

The StarExtruder is ideal for producing PET sheets from new or recycled materials. The single-screw extruder with central planetary roll section processes the melt very gently and achieves high degassing and decontamination rates thanks to the large melt surface in the central section.

"It comes into its own when processing recycled materials, as it reliably removes volatile components from the melt," said Stieglitz.

Above: Battenfeld-Cincinnati has added a thermoforming sheet line to its pilot plant in Bad Oeynhausen in Germany

Airport protection

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

An additives package comprising a Tinuvin light 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

Above: BASF additives are helping to protect TPO sheet roofing membranes at Incheon Airport in South Korea

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. "Our stabilisers reduce production costs and make products last longer, and help to conserve raw material."

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."

Black and white

US-based sheet manufacturer **Plaskolite** has launched a continuous cast acrylic sheet that appears black in daylight and white when backlit at night.

Optix-L Black/White achieves the same colouring effect as perforated vinyl, offering a clean, simple, single-source solution for dramatic day and night signage, says the company.

The sheet uses a unique formulation to produce a double-sided gloss acrylic sheet that delivers the black/white effect in indoor or outdoor applications. It is available in stock at 0.177 thickness with custom size runs also available.

"It eliminates the need for a second layer to achieve the desired effect under daylight or night time conditions, reducing material costs and streamlining sign construction," said Jim Richards, vice president of Plaskolite's industrial division. "On the heels of our introduction of Optix EL, this is another example of innovation originating from a recent acquisition and expanding and complementing our existing portfolio."

Better recycling

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 characteriSed 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.

PVC-free

Simona launched its new range of PVC-free foam sheets at K2019. It says that its new Simopor product family allows creative designs in the field of visual communication and structural engineering. Four new variants are available.

Simopor S is an all-rounder for all applications, meeting high standards in terms of technical properties and certifications. Simopor SP is a specialist product in functional white that is optimised for digital printing. Simopor E is a cost-effective, entry-level product. And, Simopor EP is an economical, lightweight product in pure white.

The portfolio also includes its established products Simopor Color and Simopor Construct.

The company has also extended its portfolio of third-generation twin-wall sheets to include an all-white design featuring UV stabilisation. Compared to the grey or black sheets in this range, the

Right: Plaskolite has launched a cast acrylic sheet that appears black in daylight and white when backlit at night

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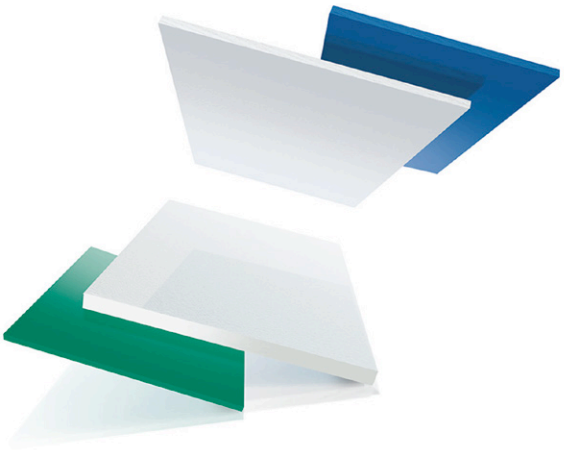

Right: Simona has added four variants to its Simopor family of foam sheets

new product offers lower heat absorption, particularly in outdoor applications. This makes it suitable for use in container construction (outdoor installation), exhaust air scrubbers and for installations such as containers or other enclosures – where a durable and corrosion-resistant material is required.

Simona HKP white UV is physiologically safe and can be exposed to the elements for 10 years or more.

Expanded production

Renolit has expanded production of its Tecnogor thermoformable composite sheet with a new line in India.

The company has added the line at its APPL Gor Plastics India plant in Pune – the first time it has made the sheet outside Europe. The product is aimed at manufacturers of automotive interiors in India and the Asia Pacific region.

A key feature of the new line is the inclusion of Renolit's patented extrusion processing technology for making the product – a glass fibre-reinforced, PP-based thermoplastic composite. High-quality 3D trim parts can be thermoformed in a high productivity 'glue free' one-step-process, which reduces production costs, says the company. Renolit says the production process gives the product high stiffness and impact performance. The patented fibre-embedding extrusion technique also makes it a clean, safe material to handle on the shop floor and after moulding. This is because the glass fibres are encapsulated in the polymer matrix during extrusion.

Below: Renolit's Indian subsidiary will make Tecnogor composite sheet for thermoformed automotive interior components

The new line can produce a number of other Renolit products, such as Deep-Stock and Flexigor.

"For many years we could only offer the Renolit Wood-Stock sheet range, but can now offer a wider range of sustainable products which offer solutions to real problems the market is facing using traditional glass fibre mats," said Rahul Chivate, general manager of APPL Gor Plastics India.

Adriano Odino, technical director of Renolit Composites, who led the installation project, added: "The local engineering team did a great job installing and commissioning the new line – which is now fully operational and open for business."

Goex goes west

Meanwhile, US-based custom sheet extruder **Goex** has opened a new manufacturing facility in Cedar City, Utah. The 20-acre site will include a 120,000 sq ft facility that will employ up to 140 people.

"Our new location supports ourongoing commitment to ensure timely delivery of extruded sheet products," said Joshua Gray, president and CEO of Goex. "Just as continued growth prompted the need for additional space in [our main plant in] Janesville, Utah will help us better serve our customers in the west of the country."

Its Janesville facility, built in 2015, covers 235,000 sq ft and employs 200 people. Goex intends to continue growing in Janesville, which will continue to house product development, R&D, and corporate offices.

By adding an extrusion facility in Utah with similar design, Goex will integrate standardised equipment and procedures that allow it to provide short lead times, increase capacity and reach more customers.

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Smart or intelligent packaging goes beyond simply providing a barrier – and can even connect directly into the supply chain via an internet connection

Adding intelligence to plastic packaging

At one time, packaging had only one function: to protect its contents. This remains vital – but 'smart' packaging promises many new functions including better traceability and longer shelf life.

Smart (or intelligent) packaging has gone through several phases. Initially, it referred to packaging that went beyond that of a simple barrier. Incorporating oxygen scavengers into the inner layer of a package, for instance, helped to extend shelf life compared to that of a simple barrier.

However, the advent of the 'Internet of Things' has changed that. Now, a smart package can also connect wirelessly through the internet – allowing a host of new functions.

At the recent Smart Packaging conference in Hamburg – organised by **AMI** – Kobi Bentkovski, CEO of Israel-based **Waterio**, told delegates that smart packaging exists on five different 'levels'.

Level 0 has no smart or connected features – which is becoming increasingly rare on supermarket shelves. A 'Level 1' package may include a single code that is read with an RFID reader; Level 2 also has a single code (such as an NFC or QR code), but it can be read by consumers; Level 3 has a unique code for each product; Levels 4 and 5 connect products with sensors – and might include 'smart caps' that remind a patient to take their medicine.

For these higher levels, robust packaging is not enough – as it requires devices such as sensors to gather data before transmitting it onwards. These sensors need to be inexpensive and easy to incorporate into packaging – so should not be bulky.

Adding light

Marcin Ratajczak, CEO of Germany-based **Inuru**, told delegates how printed electronics can help to make plastic packaging 'smarter'.

Organic light-emitting diodes (OLEDs) can be printed directly onto packaging, to add functions such as lighting to a label. This helps to enhance another key feature of packaging – shelf appeal.

The OLED is added at low cost and at room

Main image: Smart packaging can help to extend the shelf life of fresh produce

temperature. It uses industry-standard ink-jet printing – using 10 different inks – and is the subject of six pending patents. Printing can be done at around 200 m/hour. A typical OLED has multiple layers, yet these do not require UV curing. Each OLED may be anything from 5 to 100nm thick.

Medical assistance

Alex Cole, strategic marketing manager at the Centre for Process Innovation (**CPI**) in the UK, said that smart electronics could help to create smart packaging for the pharmaceutical industry.

"There are significant opportunities within the pharma industry for smart packaging," he said.

Many of the functions supplied by smart packaging are of particular relevance. As well as gas scavenging – which can help to extend the lifetime of the contents – many of the 'information' functions of smart packaging are critical to pharmaceutical products. These include factors such as monitoring temperature, checking for tampering, connecting with data systems and fighting against counterfeit products.

Flexible hybrid electronics – which combine traditional silicon electronics and printed electronics on a flexible substrate like plastic film – will be a key enabler here, he said. The ability to use techniques like roll-to-roll printing helps to ensure that it can be scaled up, he added.

In one project, CPI worked with a consortium of partners to develop flexible NFC smart tags that track conditions such as temperature and humidity. It was demonstrated in real supply chains. This could reduce losses in clinical supply chains, to support reduced costs and quicker development of medicines, he said.

Nano integration

The Fraunhofer Institute for Electronic Nano Systems (ENAS) in Germany has also developed technology to integrate printed electronics into plastic packaging.

Andreas Willert, senior scientist at **Fraunhofer ENAS**, told delegates that it had been working with a number of substrates including PET, PEN, polycarbonate and polyimide. It had used a number of techniques such as piezo inkjet printing, flatbed screen printing and rotogravure printing to imbue the surfaces with printed circuits.

Screen printing proved particularly effective, as it is a robust process and allows for a large layer thickness.

"Screen printing meets many requirements," he said.

The team also produced inkjet-printed antennas in a sheet-fed process – on PET film.

"Printing technologies enable the addition of new functionalities to plastics and packages," he said, adding: "The bottlenecks for wider use are the availability of materials, and the additional costs to making products."

Reducing waste

However, the added connectivity provided by printed electronics is not always needed. One of the main selling points of any kind of packaging is still the ability to reduce food waste by ensuring that it is preserved for longer. Smart packaging techniques can help to improve this further.

Justin Creasy is technical sales director of UK-based company **It's Fresh**. He said that his company's products help to absorb ethylene – the gas that is released by ripening fresh produce. Too much ethylene, when reabsorbed by fruit and vegetables, can lead to premature spoilage.

"Removing ethylene slows down the ripening process and extends the life of the fruit," he said.

He said that the company's ethylene filters absorb the gas to prevent early ripening. The filters can be deployed at any point in the supply chain – whether in transit from the farm or on the supermarket shelf.

They can be supplied as self-adhesive labels, or incorporated into the absorption pad within a fruit punnet, for instance.

In similar fashion, labels that indicate the freshness of food help to minimise waste – and improve safety. Graham Skinner, product development manager at **Insignia Technologies**, explained that the company's gas diffusion timers indicate the diffusion of carbon dioxide through the packaging.

"Varying the type and thickness of the barrier materials allows us to control the time/temperature response of the label and create a range of time temperature indicators for different applications,"

Below: Elements like QR codes can help to smooth packaging through the supply chain

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he said. These types of labels can monitor temperature across the whole supply chain. They can also be used as a 'rotation aid' on shelves, so that older products can be brought to the front closer to their sell-by date.

The company has helped a quick-service restaurant (QSR) customer in North America to extend shelf life.

Left: Parx Plastics says that its zinc-based antimicrobial technology can fight bacteria such as *E. coli*

Antimicrobial effect

Fighting against food-borne bacteria is also an important part of smart packaging. Michael van der Jagt, CEO of Netherlands-based **Parx Plastics**, said that is company uses "the second most abundant trace element in the human body" – zinc – as an active ingredient to prevent the spread of bacteria within food packaging.

He said that zinc has a high spectrum of antimicrobial performance – fighting germs such as *E. coli*, listeria, MRSA and *C. difficile*. He added that the top layer of human skin contains around 6% zinc, to provide protection against bacteria and viruses.

"Our technology is based on biomimicry, using a biocompatible element," he said. "It uses no silvery or heavy metals, and no nanomaterials."

■ The next Smart Packaging conference takes place in Hamburg on 29-30 September 2020. For more details, contact Anna Kislingbury (anna.kislingbury@ami.international) on +44 (0) 117 314 8111.

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In-mould labelling, sustainability and barrier performance were all themes covered at this year's Thin Wall packaging conference, held in Chicago earlier this year

Latest advances in thin wall packaging

When making thin-wall packaging, there are often many factors to balance when choosing between injection moulding and thermoforming. In some cases, injection moulding wins out, though thermoforming is becoming increasingly attractive due to greater precision and line speeds.

Thermoforming labels

At the **AMI** Thin Wall Packaging conference in Chicago earlier this year, US-based **Tech II** – which celebrated its 50th anniversary this year – explained how thermoforming in-mould labelling (T-IML) can compete with the injection-moulded version of the technology.

In the process, a pre-printed label is placed into the mould before a part (such as a yoghurt cup) is formed. The processing heat causes the label to stick to the side of the container. Because label and substrate material are the same, there are no later issues with contaminating the recycling stream.

"T-IML gives thermoforming efficiencies at injection moulding performance," said Eric Shiffer, CEO of Tech II.

Tooling is also cheaper, and part thickness can easily be optimised.

"We can also add oxygen and vapour barrier options for improved shelf life, flavour and colour," he added.

IML allows multiple labels to be applied to the same size of lid. Designs can be varied through the use of different inks, metallic foil and double-sided print.

IML recycling

The increased focus on sustainability means that IML producers must consider the recyclability of their products. Nico Van de Walle, product manager for IML at Belgium-based **Verstraete**, told delegates of a 'circular economy' project that the company is involved in.

The project, called Holy Grail, involves many other players, and aims to improve the sorting efficiency of products like thin wall packaging.

"There are two technology routes," he said. "Adding chemical tracers; or enhancing the packaging with a digital watermark."

Main image: Thermoforming is becoming increasingly preferable as a technique for making thin-wall packaging

Above: Verstraete says that IML producers must consider the recyclability of their products

One example of a tracer system is Prism, which uses UV fluorescence to detect chemical tracers within the waste plastic. It has been put through industrial trials, running at 2.5 m/s with high levels of detection. The system is being commercialised by UK-based **Nextek**.

Despite the success of this part of the project, Van de Walle says there are still questions to answer – such as whether new inks needed for the process will increase packaging price, and if migration of the chemical tracers may have an implication for food safety.

The second approach is to use digital watermarks. These could be applied to printed labels, sleeves and moulded parts.

It works by 'encoding' pixels in the artwork into a larger invisible 'code'. There is no need for special inks, and no special printing techniques are needed.

"It's invisible to the human eye, and there is no visual impact on the original artwork," he said.

EVOH recycling

Michaill Dolgovskij, technical service and development engineer at **Kuraray America**, continued the recycling theme by explaining details of internal and partner studies into recycling EVOH-containing thin wall packaging.

Two internal studies assessed the effect of EVOH in the PP and PE recycling streams. In the first, the company concluded that PP/EVOH multi-layer scrap – such as would be found in multi-layer thin wall packaging – did not affect the PP recycling stream as long as EVOH content was below 10%.

"Typically, 2% is the maximum for real-world scenarios," he said.

In the second study, Kuraray found that PP/EVOH and HDPE/EVOH scrap could enter the HDPE waste stream without issue. However, PS/

EVOH/PE scrap could not.

Kuraray also carried out a project with recycling specialist Nextek into recycling PP/EVOH/PP and HDPE/EVOH/HDPE multi-layer sheets and bottles. The most relevant was the PP study, as it dealt with thermoforming sheet (and not bottles).

A dry blend of 90% PCR-PP and 10% industrial scrap (which comprised PCR-PP/EVOH) was compounded and decontaminated. The melt index of the PCR-PP/EVOH material was suitable for sheet extrusion and thermoforming, said the company.

Adding clarity

Another supplier of barrier materials, **Soarus** (a division of Mitsubishi Chemical), said that one of its new 'high clarity' grades could help to banish the poor appearance of products like thermoformed cups.

"One cause of this poor appearance is interfacial instability," said Ikko Matsui, R&D manager at the company.

He explained that irregularities in the tie layer between the EVOH and outer layers could cause light refraction, and a reduction in clarity and transparency. This, in turn, can be caused by reactive coupling between the tie layer and EVOH layer.

"Our high-clarity EVOH is designed to provide a smooth interface between EVOH and tie layer under various conditions," he said.

The grade – a modified version of its Soarnol – allows for a wider processing window and maintains appearance – even with asymmetric structures, he said.

Soarus has also been involved in projects to test the recyclability of multi-layer packaging that uses its materials. Its G-Polymer, which is also used as a barrier layer, is actually water-soluble. This means that, when multi-layer packaging is ground up, the G-Polymer is released and can be dissolved out of the mix. The remaining polymer can then be reused in new packaging, said Matsui.

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- **https://techii.com**
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- **www.nextek.org**
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Building a better future: construction applications

Products from moisture-resistant housewrap to highly transparent roof panels are just two examples of innovative extruded products for the construction market

Construction is a key market for extruded products, though is typically more associated with pipes and profiles. However, extruded film and sheet – in products such as roof panels and housewrap – are also important in this market.

Recently, **Econcore** of Belgium developed a new type of honeycomb panel – using recycled PET (R-PET) as the base material. The company has typically made the cores – which are thermoformed and folded in a continuous process – from polypropylene (PP). Now, it has branched out into using R-PET, following a two-year development project.

"It is now ready to be licensed," said Wouter Winant, technical manager at Econcore.

The research addressed issues such as whether R-PET could be suitably extruded, and if it worked with downstream processes.

"This is a good technique to apply in regions that generate lots of waste PET," said Winant.

EconCore used a **Meaf** 50-H34 extruder for trial production of the R-PET honeycomb sandwich panels. The honeycomb core is made of 95% recycled post-consumer PET from bottles.

"We want to bring a smart, innovative and sustainable product to market that contributes towards the circular economy of plastics," said Winant. "Our R-PET core offers high stiffness and strength in compression and shear, high temperature stability and has excellent weight to cost ratio."

Prior to this, Econcore signed a licensing agreement with a leading non-woven manufacturer.

The agreement addresses a range of applications that require improved cost-efficiency, lightweighting and additional functionalisation, such as acoustic absorption, it says.

The manufacturer is licensing the technology to add value to these manufactured goods and extend the range of commercial applications. Its honeycomb cores, combined with non-woven thermoplastic skin layers, produce sandwich panels with enhanced acoustic performance – with regards to both noise insulation and absorption.

The acoustic absorption is achieved through a combination of a thermoplastic honeycomb core – which reduces energy – and air-permeable skin layers, which let the sound energy through, for further dissipation within the honeycomb cells. These advantages are likely to be applied in applications including building, says Econcore.

Main image: EconCore's honeycomb core will be combined with a non-woven to make acoustic absorption panels

Energy focus

SABIC showcased a number of building and construction technologies at K2019 – with a key focus on energy.

"Renewable sources of energy are vital to the transition to a carbon-free landscape, and solar energy can yield high results," said the company. "To drive down energy consumption within buildings, roof panels are an effective solution – but are frequently hindered by weight and the stress of performing under elevated temperatures."

New solar panels from Solarge, for instance, can

Right: At K2019, Paneltim presented its new Antislip panel with orange peel structure

be retrofitted or incorporated in building roofs. They are lightweight, easy to install and help reduce energy consumption through harnessing a renewable energy source.

The panels use PP compounds for the PV panel back sheet and Lexan Exell D sheet as a protective top layer and aesthetic look for the panels. The PP compounds meet Solarge's material specifications for high strength and stiffness, providing continuous performance at elevated temperatures for solar panels. With the Lexan Exell D sheet, the aesthetic look of the PV panel is improved – and addresses the customer's desire for a lightweight solution that can be installed easily.

Lexan Exell D sheet is also commonly used in high-rise buildings – in structures such as roofs and skylights – where strength, weight and transparency are a challenge.

The Lexan sheet is 250 times more impact resistant than glass and performs well under extreme weather and temperature fluctuations, from -40°C to 120°C, says the company.

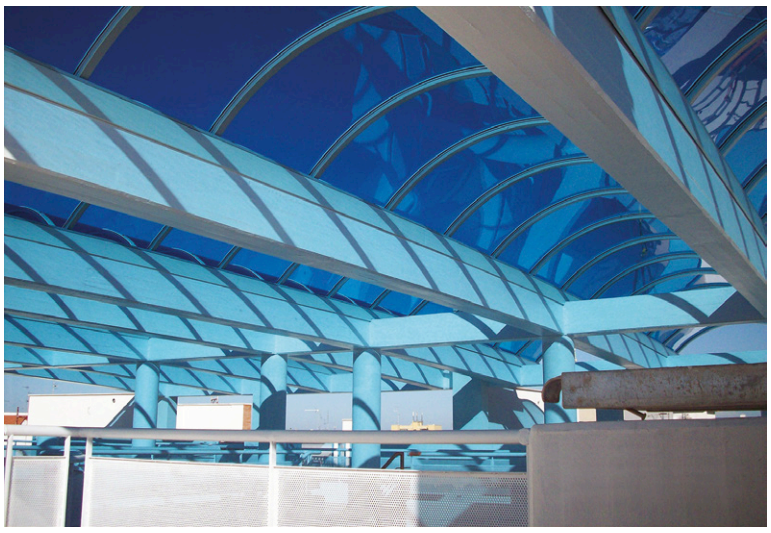
Building standard

Belgium-based **Paneltim** has introduced the 'Paneltim Technical Standard' (PTS), a new standard for calculating structural applications built with its double-walled plastic panels.

The standard offers plastics processors, engineers and product developers insight into how the panels can be used in new applications, while meeting all design standards.

Below: Sabic's Lexan Exell D sheet is commonly used in roof panels

The PTS is based on test results that have been obtained at testing laboratories such as SKZ and was written in collaboration with engineering firms. Paneltim invests in research and development and in the expansion of production capacity and new moulds. For example, a whole new production hall and welding line will soon be opened – while the company presented its new Antislip panel with orange peel structure at K2019. This panel scores well on walkability with shoes and bare feet.



It's a wrap

Despite its less robust nature, plastic film is also critical in construction. Delegates at the recent *Housewrap* conference in the USA – organised by **AMI** – learnt about some of the growing applications.

William Ranson, manager of the **DuPont** Building Knowledge Center, said that housewrap consists of thin sheet materials with a high resistance to liquid water, low to medium resistance to water vapour diffusion and a high resistance to airflow – as well durability to repeated wetting.

"It is an alternative to traditional building felt and paper," he said.

Housewrap helps protect underlying sheathing from water damage.

"It is the simplest way to integrate flashings to create a water management system," said Ranson.

Thermal protection

As well as protection against water, plastics are also fundamental to providing insulation. **BASF** presented details of its Slentex material, which is based on its aerogel technology.

The product is supplied as a fibre-reinforced blanket that is 150cm wide, 1cm and around 45m long. Shorter lengths will become available in future, says the company.

BASF says that the higher performance of Slentex means it can be used to make thinner insulation – by 25-50%, it claims. A hydrophobic surface and special material composition – with an open, porous surface – also helps it to regulate moisture.

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- **www.econcore.com**
- **www.meaf.com**
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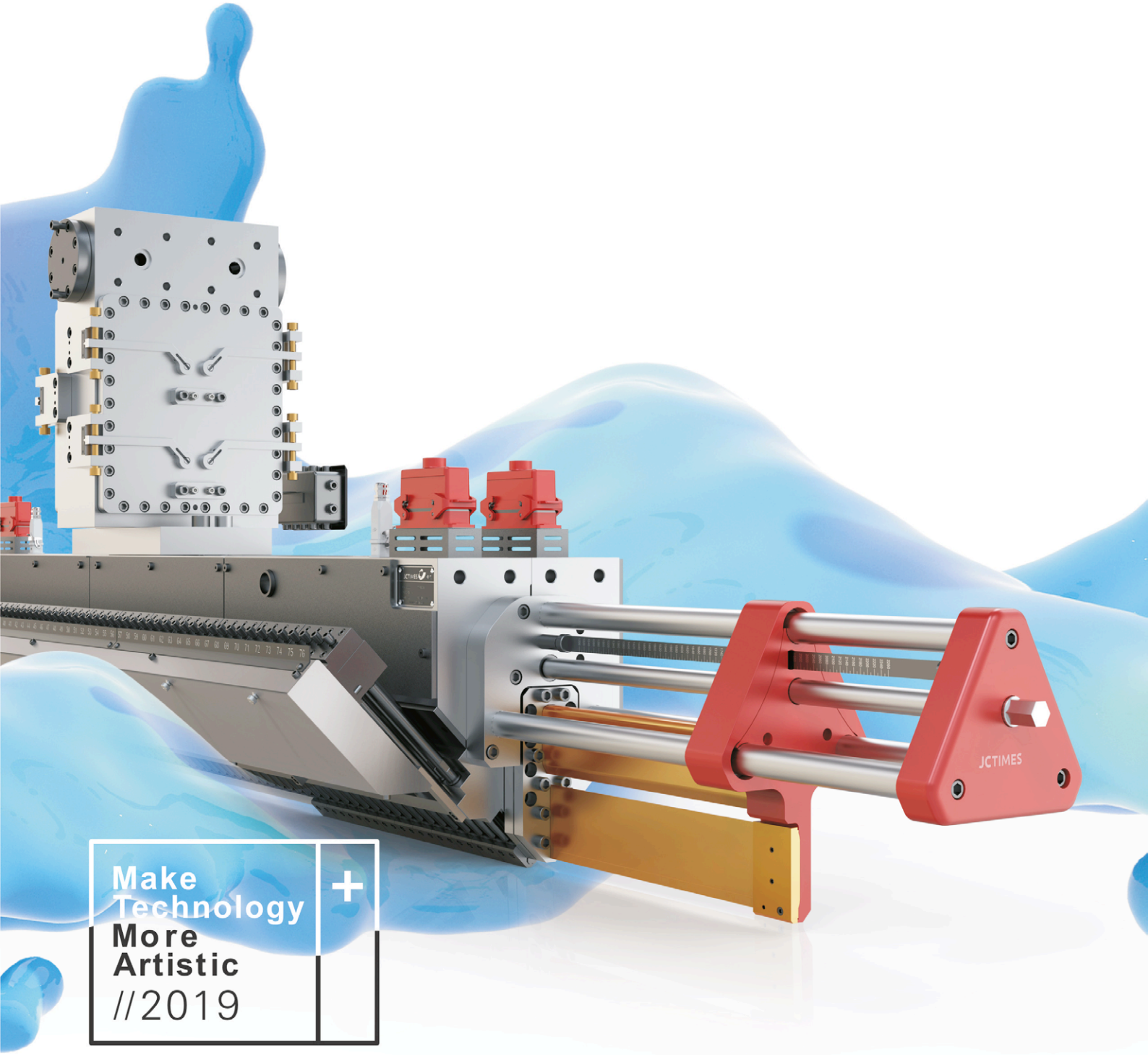

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K2019 saw a greater participation from foreign visitors and an unmistakable focus on sustainability – including many variants on the theme of recycling plastics

Sustainability: the key theme from K2019

After eight days – and what for many people has been many miles of walking between halls – the giant K2019 exhibition is over.

Sustainability was a key theme at this year's show, with many exhibitors showcasing technologies such as chemical recycling, single-material flexible packaging and bioplastics.

Ulrich Reifenhäuser, chairman of the exhibitor advisory board at K2019, said: "Never before has the industry addressed an issue so unanimously – and worked on solutions so consistently – as is the case now, in the fields of environmental compatibility, saving resources and avoiding waste."

The proportion of foreign visitors at this year's show exceeded 73%, compared with nearly 71% in 2013. Asia accounted for around 40,000 visitors – with large contingents from India, China and Japan. Almost 20,000 visitors came from North and South America – a 7% increase compared to 2016. There was a marked increase in the number of visitors from Brazil, said the organiser.

At the same time, exhibitor numbers rose from 3,285 (in 2016) to 3,330 at the latest edition of the show.

Messe Dusseldorf, which organised the exhibition, said there were 224,116 visitors this year – about 2.6% lower than the official figure from 2016 (which was put at 230,000). This compares with 218,000 visitors at K2013, said the organiser.

The next K show will be held on 19-26 October 2022.

Technology review

The following pages contain a selection of new launches from this year's show. The section concentrates on machine developments – but is not exhaustive. Many other new machine technologies were launched at the show. Some will be featured in the next edition, while others will be seen in future editions – within their relevant subject areas.

In our next issue, we will concentrate on material-related launches from K2019. These include chemical recycling technologies – which was a major theme for the materials companies – and a variety of new resins and additives. ›

Right: Bobst says that its new Vision CI offers high quality flexo press printing

Bobst has launched a new flexo press called Vision CI, which it says provides high-quality and cost-effective print production

The new press is designed to deliver efficient performance for all production lengths on a wide range of substrates. Fast to setup and change over, it features technical innovations and automation that ensure repeatable process consistency, minimum waste and easy manufacturing. It is ideal for converters looking to add a powerful and reliable production tool to their operation, says the company.

"With the Vision CI, we have delivered on our vision for the future of CI flexo press printing," said Mark McInulty, managing director of CI Flexo Printing. "It combines the latest technology with the highest manufacturing standards at the best price/performance ratio – putting premium print quality, reliability and high standards of efficiency at the fingertips of converters."

It is initially available as an 8-colour press and provides consistent and repeatable printing quality with solvent-based and water-based ink printing, says Bobst.

"The machine can be installed and ready to print at the site in a matter of four weeks, which is a major benefit for converters," said McInulty. "Its compact dimensions will save space, and its smart ergonomic design will ensure convenient, intuitive and fast operation."

It also incorporates SmartHeat technology, which allows the machine to use its own heat as an internal energy source. At the same time, its SmartClean technology saves on ink and solvents, while SmartKey and SmartSet maximise productivity by minimising job set-up time and material waste.

› **www.bobst.com**

Below: Brabender's blown film take-off unit blows, cools, flattens, takes off and winds an extruded film tube

The new **Brabender** downstream unit for the extrusion of blown films offers user-friendly control, improved accessibility as well as greater flexibility and precision.

The take-off unit combines with an extruder with a film blowing head. The extruded polymer is blown into a film tube with a precisely definable diameter, then cooled, flattened, taken off by rollers and wound up. The device is suitable for the production of blown films from many materials, including thermoplastics, TPEs and biopolymers.

Possible applications include final material testing, the development and optimisation of recipes and quality control during production. Since the take-off unit can be used to simulate film production on a small scale, it provides fast results for testing the processing behaviour of new formulations or materials without having to interrupt ongoing production.

The unit was designed for particularly flexible film production. The film tube can be adjusted to the correct diameter by controlling air volume. An optional ultrasonic sensor measures film width. The inclination of the flattening device can be adjusted to the respective film diameter, says the company.

Film thickness is adjusted by changing parameters such as take-off speed, blow-up ratio and bubble height. The roller assembly can be flexibly positioned in height and adapted to a wide range of film thicknesses by means of an electric lifting column. To ensure that the film bubble is squeezed – even with thicker films – the compressive pressure of the two squeezing rollers can be adjusted pneumatically.

An optional FQA (film quality analyser) camera system allows continuous analysis of film quality without any problems. The touch screen with integrated MetaBridge software makes the control particularly user-friendly and intuitive. Parameters such as support and cooling air volume, working height and winding torque can be easily adjusted via the touch screen.

› **www.brabender.com**

Multilayer film extruder Vishakha Polyfab will become the first processor in India to use AquaFrost water-quenched blown film technology from **Brampton Engineering**.

The technology was showcased at the recent

Above: Brampton Engineering has sold its first Aquafrost water-quenched blown film line to India

K2019 exhibition.

Vishakha Polyfab has been a longtime Brampton customer, installing India's first seven- and nine-layer barrier blown film lines. With the addition of the water-quenching system, the company will be able to improve film clarity and thermoformability, balance orientation, and increase processing versatility with fewer resins.

"We have worked with Vishakha Polyfab for almost 20 years in supplying equipment solutions to address their needs," said David Kerfoot of Brampton Engineering. "Our close and productive collaboration has enabled us to grow together and advance multi-layer film technology in the region. We look forward to their continued success in leading the film packaging market in India and beyond."

› **www.be-ca.com**

Germany-based **Britas** launched a new series of piston screen changers at K2019. They are aimed at applications where plastic waste is not heavily contaminated.

The continuous (CMF) and discontinuous (DMF) models can be used with both industrial and production plastic waste. They add to the company's existing ABMF, ABMF 1600 & ABMF PET models.

"We are delighted to announce the CMF and DMF screen changers, which are aimed at customers who want to recycle waste plastics with less pollution," said Friedrich Kastner, chairman of Britas Recycling.

The systems are mainly used in the post-industrial, post-production and new product sectors. Depending on required flow rates and different operating modes, customers can choose between the discontinuous version – which typically has one piston – or the continuous one, which has two pistons.

Basic versions are the CMF as automatic continuous piston screen changer and the DMF as discontinuous piston screen changer – available in square or round execution.

"The DMF-rd is a round case that is heated with ceramic heating bands. This filter is the most cost-effective filter version and is mainly used as a pre-filter for coarse contaminants, as a pump protection or used in reduced space conditions," said Heiko Henss, managing director of of Britas Recycling.

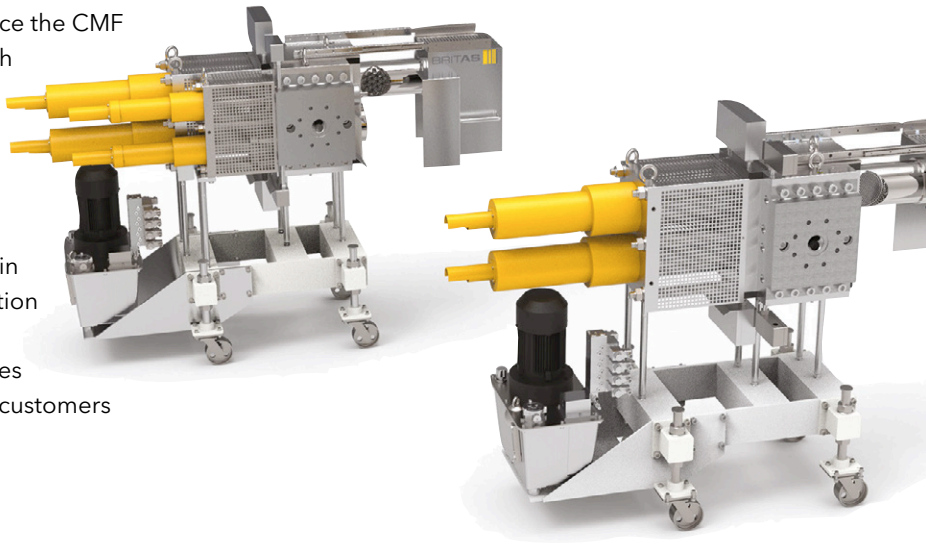
The DMF-sq is suitable for higher temperatures (up to 350°C) and higher pressures (up to 500 bar) due to its square housing, and is heated with heating cartridges. Both types can be used for polyolefins, melt adhesives and for many engineering plastics.

The CMF-BF can clean the screens automatically, and a back-flush attachment includes two pistons that automatically perform the back-flushing process. When a filter change is required, one of the two back-flush pistons is moved into the back-flush position first. As a result, the melt inflow of the corresponding filter is interrupted. A small melt stream of already purified material is diverted and passed backwards through the filter to be cleaned and discharged to the outside. This process is automatically repeated for the second filter.

› **www.britas.de**

At K2019, **Colines** ran daily demos of its Allrollex 3000, its cast line for stretch film production. The line ran at a consistent speed of 750 m/min but managed to reach 770 m/min on the last day of exhibition, according to the company.

"We also ran daily demos of our Allwrapper, the orbital bundle wrapper which uses stretch film in place of heat-shrink film," said Colines. ›



Right: Britas launched its CMF and DMF piston screen changers at K2019

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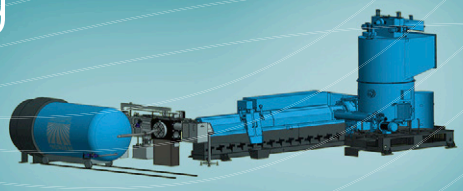

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At the same time, it showed the latest technologies and applications from its R&D department in relation to both flexible packaging (MOPP, MOPE and MO-Barrier films) and alveolar board (the double-wall of BubbleGuard board). One application made from BubbleGuard board was bench that proved far lighter than a product made from traditional materials.

› **www.colines.it**

GN Thermoforming Equipment says that its new GN580 thermoformer – a form/cut/stack model, which it launched at K2019 – is aimed at small factories that run lots of different products.

"Tool changing is very simple – which is ideal if you are running multiple products," said Paul Phillips, sales and marketing manager.

It shares many features with its larger GN800 – such as the same energy recovery system – but its smaller size means it has three stations instead of four.

However, it does have one new feature: it can take competitor tooling without the need for an adapter plate.

"Tooling is a big investment," said Phillips. "If you have tools that fit one machine, you can't usually run them on another type without an expensive adapter plate."

He says the machine's flexibility and small size makes it attractive to smaller companies – and the ability to run rival tools means that a thermoformer would not need to invest in new tooling for the new machine.

Phillips did not explain exactly how the GN580 accommodates competitor tooling, but said: "It has to do with where the chain reel is. The forming press has been modified so that you can manage different tools."

At the show, GN ran the new machine with recycled PET using a common-edge tool – producing meat trays with minimal scrap.

› **www.gncanada.com**

At K-2019, **Maguire** displayed a modular extrusion control system for blown film that can raise productivity on both new and existing lines.

The system has three basic components: a Maguire WXB Weigh Extrusion Blender, with a gain-in-weight (GIW) weigh bin and loss-in-weight (LIW) mix chamber; a Maguire 4088 controller, which controls the loading, blending, and metering of raw material to the extrusion process; and a **Syncro** controller, which uses data from the 4088 controller to control line speed and haul-off.

Modes of extrusion control available with the Maguire + Syncro system include pounds or kilogrammes per hour; weight per length of extrudate; and product thickness in microns.

The system is the product of a partnership between Maguire and Italy-based Syncro that began in 2016 with Maguire taking an investment position with Syncro, which specialises in controls for all types of extrusion process.

Along with the Syntrol controller, Syncro supplies key line components including air ring, autoprofiler, IB and layflat controls, and gauging systems.

For an existing production line which includes a standard Maguire Weigh Scale Blender instead of the WXB unit, the processor can obtain the new extrusion control capability by installing the 4088 controller, a loss-in-weight hopper, and the Syncro controller.

"The enhanced accuracy and reliability of a state-of-the-art extrusion control system enables the blown film processor to maximise throughput while maintaining tight tolerances, or reduce material consumption by downgauging," said Frank Kavanagh, vice president of sales and marketing at Maguire. "The Maguire + Syncro system provides this accuracy, drawing on Maguire's expertise in control of material dosing with Syncro's expertise in controlling extrusion lines."

› **www.maguire.com**

› **www.syncro-group.it**

Right: GN's GN580 can accommodate tools from rival manufacturers

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Above: Rapid's ThermoPro granulators are designed for in-line processing of skeletal waste

Metravib, a specialist in dynamic mechanical analysis, has improved DMA and fatigue testing by extending the capabilities of its DMA+ series.

Fully automated DMA testing in shear, compression and tension

Xpander is an automated specimen handling system that is designed to boost the productivity of the DMA+ series and can provide tests round the clock in compression, tension and shear.

The DMA+ series testing capabilities are extending with a brand new Multitest crack growth software module coupled to a motorised video camera. Using specimens up to 80mm wide, it is possible to follow up to four cracks in one single test. The crack length measurement can be performed with a resolution better than 2 microns.

"Xpander and the new DMA+ series have been designed taking account of industrial expectations in terms of accuracy, performance, productivity and ergonomics, as expressed by worldwide leaders in the rubber and polymers sector. With 50 years of experience in the field, we are the ideal partner," said Hugues Baurier, worldwide sales manager.

› **http://metravib.acoemgroup.com**

Right: Maguire has combined its components with a Syncro controller, to create a modular extrusion control system for blown film

At K 2019, **Rapid Granulator** presented its complete line of ThermoPro machines – a new range of granulators specifically designed for in-line processing of skeletal waste from sheet and film thermoforming lines.

The ThermoPro is equipped with a heavy-duty roller feed system that also can handle the start-up cups up to 200mm height in the web, eliminating any extra labour costs and material waste. ThemoPro with integrated loop control is made in super sound proof execution in order to operate at noise levels below 80dBA. Rapid currently offers 15 different base configuration machines, depending on customer requirements.

The company has also upgraded its Raptor Duo – a machine that combines the benefits of a pre-cutter and a granulator that was initially launched at K2016.

Bengt Rimark, CEO of Rapid, says that his company is in a strong position due to an increasing focus on plastics recycling – and said that sustainability was a key theme at the show.

"We are fortunate to be in a business that is part of the solution to reducing the environmental impact of plastics," he said. "Customers are desperate to get recycled materials in their product as their consumers are demanding it. We are not only helping customers recycle their materials, we are also making them more profitable when doing it," he said.

› **www.rapidgranulator.com**

Tomra develops collection and sorting systems that optimise resource recovery and minimises waste. Its sensor-based sorting solutions – including Autosort, Autosort Flake and Innosort Flake – were on show at K2019.

Volker Rehrmann, executive vice president of Tomra Recycling & Mining, said: "Continuing to use our resources in an unsustainable and inefficient way should no longer be an option. At Tomra, we continue to develop new sorting solutions."

The Innosort Flake, seen at the show, is a good example of "positively impacting and purifying the recycling process", he said. Since its launch earlier this year, it has shown to be a good dual-sorting solution for plastic recovery facilities – sorting plastic fractions of 2-12mm by colour and simultaneously by polymer types. This means that large amounts of contaminants can be removed – and the potential loss of PET flake material can be significantly reduced.

This all-in-one solution with ultra-high resolution and specialised sensor configuration offers high performance results.

"It's an economically favourable sorting solution providing a quick return on investment and scalable flexibility," said the company.

The company is also developing ways of further improving the sorting process. Based on improvements in

collecting and managing large amounts of data – and the development of artificial intelligence – Tomra has developed deep learning software for sensor-based sorting.

The software can learn individually from a large amount of collected data, equalling or even surpassing sorting results achieved by humans and typical machines, it says. By combining deep learning models with Tomra's sorting solutions, objects that could previously not be separated can now be sorted with high purity levels, it claims.

"In this regard, deep learning is considered as a promising approach when it comes to addressing the increasing challenges in waste sorting, such as new waste streams, and objects being detected but not successfully ejected – or covered by other materials," said the company.

› **www.tomra.com**

Vecoplan introduced a single-stage shredder from its new VIZ (Vecoplan Infinity Shredders) series at K2019. The machine can be equipped either with the high-torque, quick-start HiTorc drive from the company's VAZ series, or with the ESC, which is Vecoplan's frequency-controlled, belt-type direct drive. Both systems are patented and are designed for great energy efficiency.

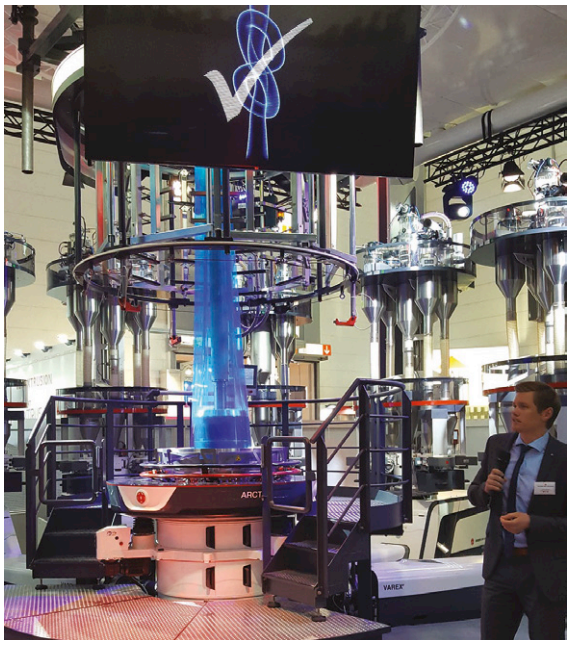
The VIZ shredder offers flexibility in terms of the cutting geometry. It can be precisely adapted to different input and output requirements by changing the rotors and blades and by selecting the right screen, says Vecoplan. The performance can be precisely determined by the interface. Thanks to the efficient machine concept, users benefit from short set-up times and a high level of adaptability to cater for different output requirements, says the company.

Vecoplan says it offers solutions not only for mechanical but also for chemical recycling.

› **www.vecoplan.com**

Below: Vecoplan's V-ECO series shredder

PHOTO: VECOPLAN



Right: W&H showcased its Turbostart automation system three times daily at the show

At K2019, **Windmoller & Holscher** (W&H) presented its Turbostart automation system – which it says can stop and restarting blown film lines 50% more quickly.

"Starting and stopping a line leads to loss of time and quality fluctuations, but is unavoidable," said Martin Backmann, head of R&D Extrusion at W&H

He said that film manufacturers stop and start their lines at least once a day – sometimes more – for processes such as cleaning and maintenance. "Our goal was a system that makes the process fast, safe and simple."

At the show, W&H showed the live stopping and starting of a Varex II blown film line with Turbostart in less than 15 minutes. The demonstration ran three times daily.

"A good operator needs at least 30 minutes for the same process without automation," said Backmann. "An operator can activate Turbostart and control the process at the touch of a button on a screen of the Procontrol operating panel."

Most manual work on the machine can be automated, he said.

"Until now, in order to prevent quality problems caused by air inclusions, the operator had to cut the bubble with a knife at the top of the haul-off. This costs time and is a safety hazard. Turbostart takes over this work step fully automatically."

He says the system helps operators to stop and start the system efficiently and safely due to its simple handling and high level of automation.

"Due to the controlled process, the system is back in good production in a very short time," he said.

› **www.wuh-group.com**

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We preview the Stretch and Shrink Film conference, which takes place in New Orleans in December, with insight from two leading industry specialists

Revealing new topics in stretch and shrink film

AMI's international *Stretch & Shrink Film* conference will take place on 2-4 December 2019 at the Royal Sonesta hotel in New Orleans, USA.

The programme has been designed to stimulate fresh thinking around the topic and provides networking opportunities to delegates. This year's conference will include an executive panel discussion which will highlight, examine and suggest novel ideas and creative strategies to improve sustainability of stretch and shrink films.

To find out what the market has in store for the future, AMI turned to industry specialists Vanessa Veit and Monika Kleczek, who will be sharing their insight at the conference.

Vanessa Veit, Global Sourcing Director Packaging North America, General Mills

What are the three trends shaping the future of stretch and shrink packaging?

Stretch and shrink packaging will likely continue to adapt to consumer and customer preferences for food packaging, health care and cosmetics. Consumer preferences are shifting toward personalised, convenient, healthier and affordable products that will require creative ways to increase manufacturing flexibility to deal with SKU proliferation. These changing consumer preferences will require converters to have more flexibility and agile processes to manage shorter manufacturing runs and faster new product development and time to market.

How do the new developments in sustainable flexible packaging drive innovation?

The pressure on sustainable packaging will continue and stretch and shrink packaging – like all the other types of packaging – will need to increase recycle content, reusability, and composability. For packaging companies, pressure for sustainable packaging will require investment and a large scale-up of innovation capacity to reduce the environmental impact of packaging, comply with regulations, and satisfy consumer preference.

What are your predictions for the industry in the next three to five years?

With film overall being a low-cost, lightweight, with

Main image: The pressure to be more sustainable means that stretch and shrink packaging will need to increase recycled content and composability

strong barrier properties, this industry could also benefit from other trends, such as the demand for e-commerce-ready packaging, or particularly easy-return items. Stretch and shrink packaging need to innovate quickly and create products and technology roadmaps that address current sustainability shortfalls.

Monika Kleczek, Technical Service & Application Development – Centre for Performance Applications, Nova Chemicals

How do you use consumer insights to drive packaging innovation?

Consumer demand is a key driver for packaging innovation. We've learned that we need to be as close to the consumer as possible ourselves, to better understand their unmet needs and to be able to work effectively with our customers to help solve for them. That's why we started doing our own consumer research, both in focus groups and in phone-based surveys. We're absolutely thrilled to be learning first-hand how consumers feel about different types of packaging, what's important to them and what they're looking for.

In my presentation, I'll be sharing interesting insights about consumer perceptions around plastic packaging that we learned from two surveys we completed this year.

How are brand owners making sustainability commitments to address potential concerns?

Packaging Digest published an interesting article earlier this year with data from the Sustainable Packaging Coalition on companies that have publicly announced sustainability goals or "statements of support". It found that nearly 100 major brand owners had announced goals and commitments in 14 different sustainability-related areas. These types of announcements have only accelerated in the months since the study came out, but it is a helpful snapshot.

Most of the goals we see in the media are around packaging recyclability and PCR inclusion, and we're starting to see plastic deselection in some applications as well.

Citizen activism and headlines about plastics in our natural environment have been the catalysts for brand owner goals, and for the value chain to work on real solutions to plastics end-of-life issues. However, the speed of change in public sentiment caught many organisations a bit unprepared. Many brand owner goals appear designed in response to citizen demands but are misaligned to the realities of our current recycling rates, infrastructure and capabilities. It's critical that we understand the full requirements of shifting to a circular model.

Sustainability and circularity are ecosystems that demand the full cooperation and integration of all players in the value chain, from resin suppliers and converters to brand owners, consumers, and recyclers, as well as government and NGOs. We must realistically assess current waste management infrastructure and systems and address the gaps to fully "close the loop."

In the past, poor recycling economics dictated the use of almost exclusively virgin plastics, but today the social mandate for circularity means the challenges are changing. Some of the biggest issues we currently face in developed countries include low consumer recycling rates, high demand for specific types of recyclate, an insufficient clean stream of recyclate, and the shortage of suitable reprocessing capabilities.

What further developments are being worked on for the future?

Applications development at Nova Chemicals is focused on moving the industry towards a circular plastics economy. Recyclable flexible packaging and recyclate incorporation will both continue to be core, critical areas of work. Reducing food waste, which is a key benefit of performance packaging, also continues to be a focus of our product and applications R&D. Package integrity extends shelf-life throughout the supply chain and prevents contamination and premature spoilage, which translates to less food going uneaten and going to landfill or worse, instead of into feeding the world's population.

We're also working with our industry colleagues to facilitate and accelerate circularity through consortiums and solutions communities, joint projects with our customers and brand owners, industry advocacy and more.

Globally, there's a tremendous need for waste collection and recycling systems in fast-growing economies where economic development is outpacing infrastructure. These countries, many of which are in southeast Asia, are the source of the vast majority of ocean plastics. Initiatives like Project STOP and The Alliance to End Plastic Waste are investing money, expertise and other resources in infrastructure development, citizen education, new technologies and environmental clean-up targeted towards the countries with the highest plastic leakage rates.

We're also excited to see a renewed focus and

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Right: Both stretch and shrink film are likely to keep adapting to consumer and customer preferences

investment in R&D in many organisations to improve the technical and economic viability of chemical recycling. Today there are commercial technologies that allow many post-use plastics to be converted into synthetic fuels, diesel and waxes. The next step is to economically take plastic molecules back to their monomers, where they can be used as feedstock for new polymers.

Finally, citizens are expressing a real frustration with the consequences of the make-take-dispose consumption model. This is a great opportunity to educate consumers about the value of plastics and how each of us can best play a role in moving towards a circular economy through purchasing decisions, advocacy, and recycling habits. To win hearts and minds, we must show that we're taking real action to get and keep plastics out of our natural environment, and we must help consumers understand the benefits that plastic packaging provides to the global food supply, human health and the environment. Only then can people make conscientious, well-informed decisions that they feel good about.

■ To learn more about *Stretch and Shrink 2019*, visit the **conference website**.

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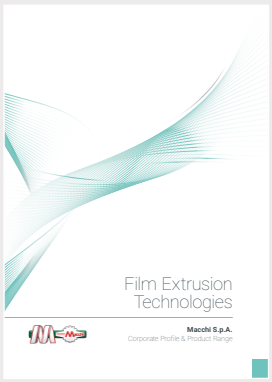

This 28-page brochure from Macchi covers the company's wide range of film extrusion technologies including coextrusion lines, wide webs, die heads, take offs, winders, trim recovery and control systems.

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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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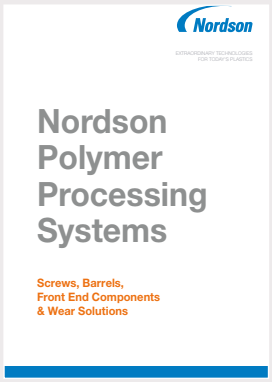
NORDSON: SCREWS & BARRELS



In this Nordson Polymer Processing Systems brochure, find out about Xaloy bimetallic extrusion screws and barrels, designed to meet process requirements, help optimisation, combat wear, boost output, and improve and maintain quality.

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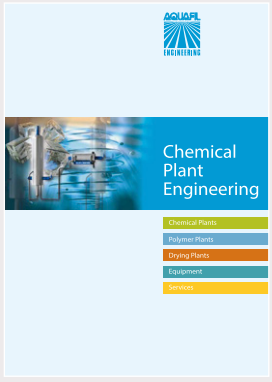

This 12-page brochure from Aquafil Engineering details its comprehensive range of chemical plant engineering capabilities, which include polyamide polymerisation, polyester condensation and polymer drying installations.

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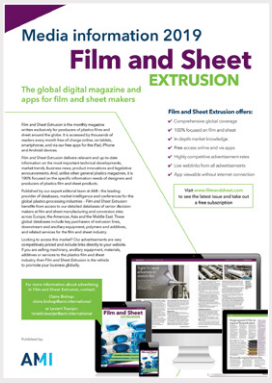

An advertisement in Film and Sheet Extrusion magazine is a highly cost effective way to reach key decision makers in the global plastics extrusion industry. Download our 2019 media pack to find out more about upcoming features, ad rates and distribution.

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

Learn more about AMI's upcoming conferences

Click on the relevant brochure cover or link to download a PDF of the full conference programme

POLYMER FOAM

AMI's Polymer Foam conference returns on 26-27 November and will take place in Hamburg, Germany. The programme will cover the latest developments in chemical blowing agents, physical foaming, particle foam processing and syntactic foam technology.

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AGRICULTURAL FILM

Now in its 12th edition, the popular Agricultural Film conference will take place on 18-20 November 2019 in Barcelona, Spain. The three-day programme will bring together agricultural and horticultural cover specifiers, raw material and film manufacturers with agriculture stakeholders.

❯ CLICK HERE TO DOWNLOAD

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.

❯ CLICK HERE TO DOWNLOAD

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.

❯ CLICK HERE TO DOWNLOAD

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.

❯ CLICK HERE TO DOWNLOAD

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.

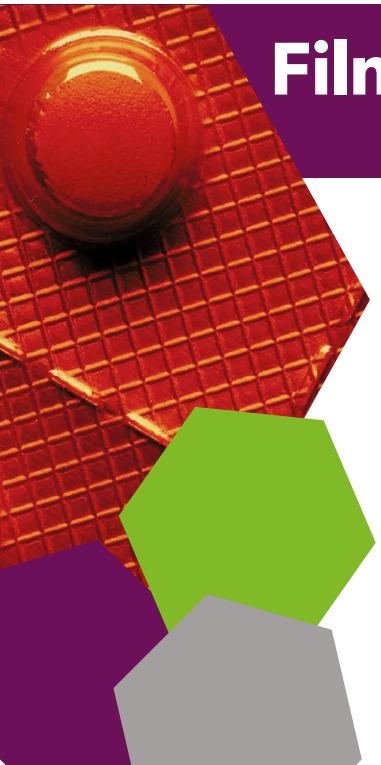
❯ CLICK HERE TO DOWNLOAD

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

Avoncourt Packaging

Head office:	Cork, Republic of Ireland
Managing director:	Ross Bateman
Founded:	1973
Ownership:	Private
Profile:	Avoncourt, founded in 1973, has grown to become a leading producer of thermoformed packaging from its base in Cork, in the Republic of Ireland. Its customers include many leading supermarkets across Ireland, the UK and Europe. The company concentrates on supplying packaging made from food-grade recycled PET.
Product lines:	The company's products include a range of thermoformed food packaging, including hinged and flow wrap trays for baked goods, sales and deli containers (including those with peelable lids), trays for meat, fish and poultry (including those separated into compartments), confectionery trays, produce trays (for items such as tomatoes) and a variety of shelf-ready trays. All of the rPET that it uses for its trays contains at least 50% post-consumer recyclate (PCR), while also retaining high levels of clarity, it says.
Factory location:	Avoncourt's factory, on the Ballycurreen Industrial Estate in Cork, produces all the company's products. The company decided to start extruding its own sheet in 2016, as this gave more flexibility and offered a commercial advantage. It installed Viscosheet and DeCon technology from Viscotec of Austria, which helped it produce rPET sheet of high quality. The company says that use of rPET sheet helps its customers to justify their continued use of plastic packaging in their products. In addition to its Cork facility, the company also has an office in the Netherlands. The company also offers product design to its customers.

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:

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

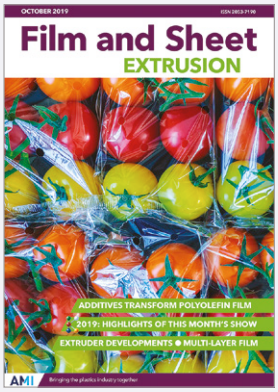
January/February 2020
Developments in bioplastics
Materials testing and quality control
Polyolefins for film and sheet
Medical materials and applications

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

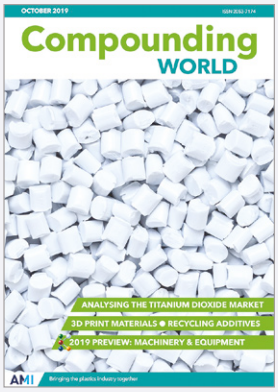


Film and Sheet
October 2019
The October edition of Film and Sheet Extrusion explores the latest additive introductions for polyolefin film production. It also takes a look at the role of mineral fillers and previews some of the machinery innovations on show at K2019.

› CLICK HERE TO VIEW

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.

› CLICK HERE TO VIEW



Compounding World
October 2019
The October edition of Compounding World goes inside the titanium dioxide market to find out the latest regulatory, technical and market developments. Also featured: 3D printing materials, alternative compounding technology and a K2019 Machinery Preview.

› CLICK HERE TO VIEW

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.

› CLICK HERE TO VIEW

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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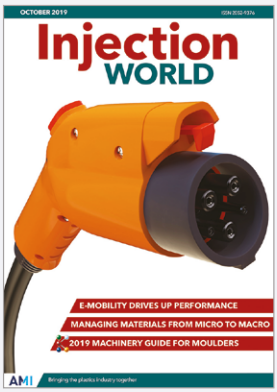

Injection World
October 2019
The October issue of Injection World magazine covers new resins and compounds developed for new electro-mobility applications. Feature articles also take a look at what's new in materials handling and product development with 3D printing.

› CLICK HERE TO VIEW

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	**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
	26-28 March	MECCSPE, Parma, Italy	www.mecspe.com
	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	https://eu.extrusion-expo.com
	29 Sep-1 Oct	Interplas, Birmingham, UK	www.interplasuk.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

Polymers in Flooring

Berlin / 2019

Discovering the latest trends and innovations in polymer flooring, improving materials, production and design to open new markets

3-4 December 2019
Palace Hotel, Berlin, Germany

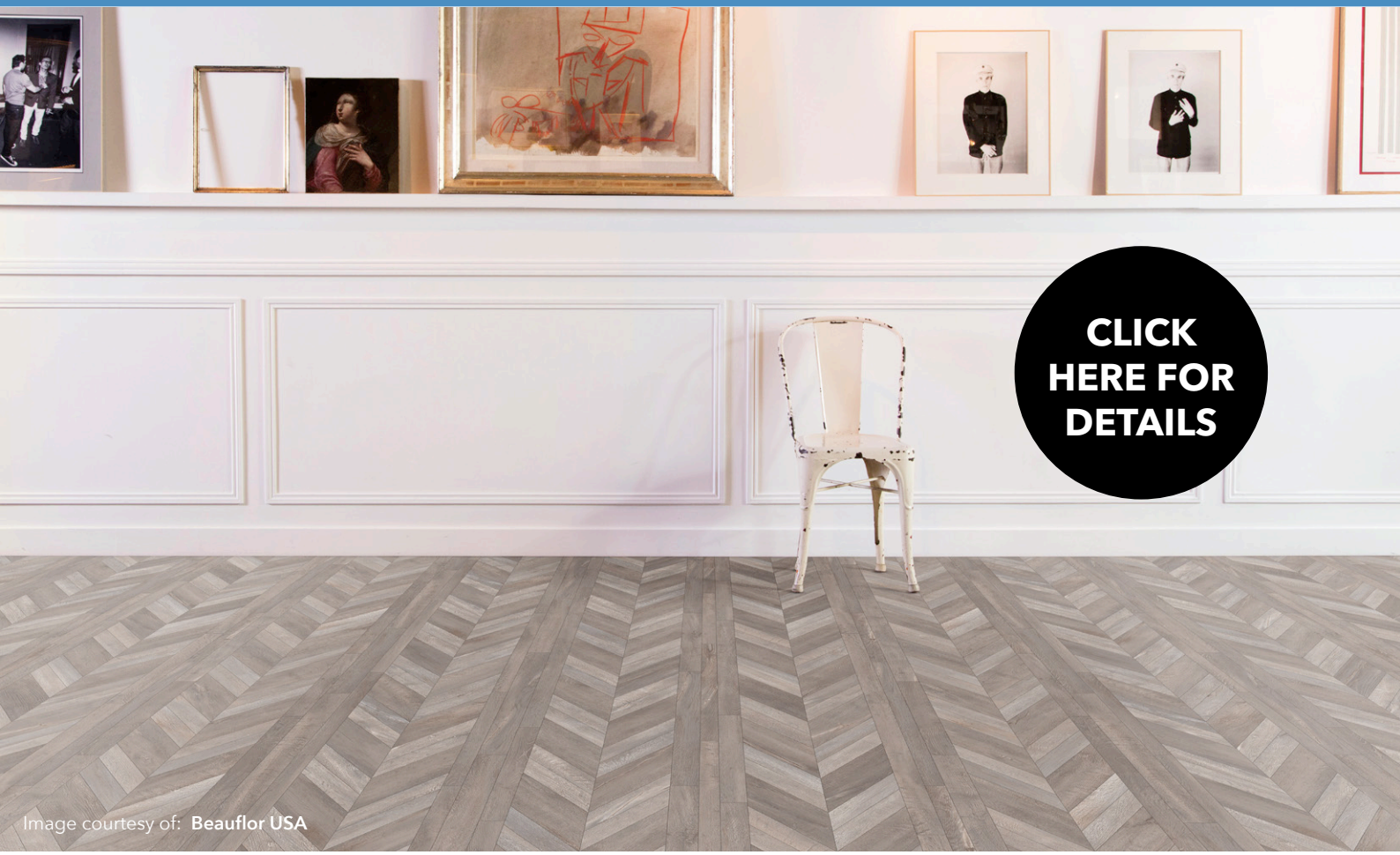

Image courtesy of: **Beauflor USA**

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AMI

Bringing the plastics industry together.

@Contact_AMI #AMIFlooring

Polymers in Flooring

Berlin / 2019

The European polymeric flooring industry is on the move! New flooring products are coming to the market, standards are changing or being developed and sustainability is still at the forefront of industry discussion.

The fourth edition of our Polymers in Flooring conference provides a unique forum for the polymeric flooring industry to discuss technical and market trends, industry initiatives, and sustainability whilst networking with key stakeholders and experts from the industry.

Resilient flooring is still used across multiple applications from residential, commercial and industrial to healthcare, sports and leisure. Innovative high-quality products enabled by new materials, design innovations and process developments are continuing to change customer perceptions and taking market share from other flooring types.

Speakers at Polymers in Flooring discuss developments in technology, materials and production, shifting products demand, industry initiatives, end user views and sustainability in the flooring industry.

Attendees can learn and get involved while key industry players discuss market and technology trends. In addition to the exciting speaker line-up, Polymers in Flooring 2019 provides exciting networking opportunities, including a cocktail reception, with key players representing the supply chain from throughout Europe and beyond.

> **Interesting conference with plenty of opportunity to meet with thought leaders in the flooring business. Good mix between technical and creative presentations**
>
> Senior Innovation Manager Hard Flooring, Beaulieu International Group

Five good reasons to attend:

- **Learn about key market trends and new opportunities in this dynamic market**
- **Explore innovative developments in materials and additives for resilient flooring**
- **Discover new ways to optimize production and to add value with innovative designs**
- **Understand how designers and architects select flooring for large-scale projects**
- **Network with major players from throughout the international polymer flooring supply chain**

Ways to get involved:

ATTEND

Register before 20th September 2019 and pay €1,040* saving €200 on the full price of €1,240*. There are additional discounts for group bookings. The registration fee includes attendance at all conference sessions, the Networking Cocktail Reception, lunch and refreshment breaks on both days and a set of conference proceedings.

SPONSOR

A variety of sponsorship opportunities are available at this conference to help promote your company's products and services to this highly targeted international audience. Contact the Conference Hotline for further information.

EXHIBIT

Make it easy to engage with the audience at this busy event with your own highly visible exhibition space. Bring your own display stand and / or banners and use the space to showcase your company's products and services and make a lasting impact. The exhibition runs throughout the conference by the main meeting room and is host to the networking functions.

Space is limited so to avoid disappointment please register for this service as soon as possible.

*VAT may apply

CONFERENCE HOTLINE

Contact: Alexandra Fish, Conference Team Manager
Tel: +44 (0) 117 314 8111
Email: alexandra.fish@ami.international

Polymers in Flooring
Berlin / 2019

Tuesday 3rd December 2019

08:00 Registration and welcome coffee
09:00 Opening announcements

GLOBAL MARKET TRENDS

09:40 **European flooring market trends**
Mr. Jan Hudak, Managing Director,
INTERCONNECTION CONSULTING, Slovakia

10:10 **Flooring industry trends – an American perspective**
Mr. Bruce Zwicker, CEO,
ZWICKER ADVISORY, United States

10:40 **China's recent striking innovations in rigid polymer core flooring**
Mr. Mark H. Curtis, CEO,
ANTON DECOTECH (HAINING) Co., Ltd., China

11:10 Morning coffee

CASE STUDIES IN FLOORING DESIGN AND DÉCOR

11:50 **Aesthetics, Acoustics, Affordability**
Ms. Sarah Escolme, Founder, Studio Escolme,
STUDIO ESCOLME, United Kingdom

12:20 **Translating customer insights into innovative flooring design**
Mr. Pol Lombaert, Senior Innovation Manager,
BEAULIEU INTERNATIONAL GROUP, Belgium

12:50 Lunch

DRIVING MATERIAL INNOVATION THROUGH THE CURRENT REGULATORY FRAMEWORK

14:20 **Exploring the impact of EU regulations on the selection of raw materials for flooring manufacturers**
Ms. Louise Hadcroft, Regulatory Technical Manager,
VALTRIS SPECIALTY CHEMICALS Ltd., United Kingdom

14:50 **Plasticisers in the regulatory framework**
Dr. Rainer Otter, Vice President, Regulatory Affairs/Advocacy,
BASF SE, Germany

15:20 **Developing polyolefinic flooring solutions together**
Mr. Bastien Filliol, Market Developer,
EXXONMOBIL CHEMICAL, Belgium

15:50 Coffee Break

16:30 **Developing the flooring of the future with innovative PU technology**,
Mr. Matthias Windmöller, CEO,
WINDMÖLLER GmbH, Germany

17:00 **Panel Discussion**
Panellists to be confirmed

18.00 Networking Cocktail Reception

Wednesday 4th December 2019

08.30 Registration and welcome coffee
09.00 Opening announcements

CIRCULAR ECONOMY IN THE RESILIENT FLOORING INDUSTRY AND BEYOND

09.10 **EU Circular economy policies across sectors and materials**
Mr. Federico Porrà, Policy Officer Circular Economy,
EUROPEAN COMMISSION, DIRECTORATE-GENERAL FOR ENVIRONMENT, UNIT SUSTAINABLE PRODUCTION, PRODUCTS & CONSUMPTION, Belgium

09.40 **Circular economy for resilient flooring – opportunities and challenges**
Ms. Jane Gardner, Managing Director,
ERFMI, Belgium

10.10 **The key to a circular economy in the EU carpet industry**
Dr. Edmund Vankann, Managing Director,
ECRA, EUROPEAN CARPET AND RUG ASSOCIATION, Belgium

10.40 Morning coffee

DEVELOPMENTS IN PRODUCTION TECHNOLOGY

11.20 **Innovative combinations of coatings and additives that are changing flooring for the better**
Mr. Paul Woolvine, Chief Executive Officer,
IOBAC Ltd., United Kingdom

11.50 ***Compounding solutions for sustainable flooring***
Dr. Karsten Kretschmer, Head of Technical Sales,
X-COMPOUND Gmbh, Germany

12.20 Lunch

INNOVATION IN THE FLOORING INDUSTRY - MANUFACTURERS SHARE THE LATEST TRENDS

13.50 **Easyvation: development and design trends in vinyl flooring**
Mr. Gert van Bruggen, Director Product Management and Design Vinyl,
FORBO FLOORING B.V., The Netherlands

14.20 **Finally digital – advances in digital printing**
Mr. Thorsten Beinke, Décor Director,
TARKETT, Luxembourg

14.50 **Latest developments in sustainable LVT flooring**
Mr. Olivier Ceysson, R&D - Innovation and Strategy Director,
GERFLOR, France

15.20 Afternoon tea and conference ends

AMI reserves the right to alter the programme without notice.
*The latest programme, including any new speakers, changes to the schedule, and any amendments to pricing and terms and conditions can be viewed on our website: **www.ami.international***

REGISTRATION FORM

Register online

PLEASE COMPLETE IN BLOCK CAPITALS

Company: _____
Address: _____
_____
Country: _____
Tel: _____ Fax: _____
VAT no.: _____
(Must be completed by all EU Companies)
Company activity: _____
Purchase order no. *(if applicable)*: _____
Invoice address *(if different from above)*: _____
_____

DELEGATE/EXHIBITOR DETAILS

Title: Mr/Mrs/Dr/Other: _____
First name: _____
Surname: _____
Position: _____
Email: _____
Special dietary requirements: _____
Signature: _____ Date: _____

Please confirm that you agree to your name being published alongside your company name and job title on the delegate list.

❑ *Yes* ❑ *No*

By registering for this event (please tick these boxes);

❑ *I agree to AMI's Privacy Policy (www.ami.international/about/legal)*
❑ *I agree to AMI's Terms & Conditions (www.ami.international/about/tac)*

PARTICIPATION

	Price	VAT	Total
❑ Early Booking Delegate Admission Fee[1]: (Until 20th September 2019)	€1,040.00	19%	€1,237.60
❑ Delegate Admission Fee[1]: (From 20th September 2019)	€1,240.00	19%	€1,475.60
❑ Exhibition Space: (UK Companies)[3]	€1,825.00	20%	€2,190.00
❑ Exhibition Space: (Non-UK Companies)[4]	€1,825.00	0%	€1,825.00

Total: _____

[1] Subject to German VAT at 19%. [2] Reverse Charge. [3] Subject to UK VAT at 20%. [4] Reverse Charge for companies from other EU countries, 0% for Non-EU companies.

METHOD OF PAYMENT

You will be sent an invoice in 7-14 working days.

❑ ***Pay by credit card by registering online:***
We accept: Visa / Mastercard
Alternatively, please provide your contact details and we will send you a link to a secure payment gateway via email.
Name: _____
Email: _____

❑ ***Bank transfer quoting:*** 'Your invoice and A/C No.'
To: National Westminster Bank Plc.
Thornbury Branch, 16 the Plain, Thornbury, Bristol, BS99 5HD
Account number: **06814077** Bank no. **556138**
IBAN: **GB63 NWBK 6072 0306 8140 77** SWIFT: **NWBKGB2L**

POLYMERS IN FLOORING 2019 CONFERENCE INFORMATION

3-4 December 2019
Hotel Palace
Budapester Str. 45
10787 Berlin
Germany
Tel: +49 30 2502-0

HOTEL ACCOMMODATION

Delegates are responsible for booking their own accommodation. We have negotiated a room rate of €145 for a single room and €165 for a double (tax, breakfast and Wi-Fi included) at the Hotel Palace in Berlin until 8th October 2019.

To make a reservation, please contact the hotel's reservation department at +49 (0) 302 502 1190 and indicate that you will be attending "AMI's Polymer Flooring" to qualify for the special room rate.

PARTICIPATION OPPORTUNITIES

Delegate registration: includes attendance at all conference sessions, a set of conference proceedings, entrance into the Networking Cocktail Reception, lunch and coffee breaks.

Sponsor this event: maximise your company profile before, during and after the event by becoming a sponsor. For further information, please contact the Conference Organiser

Exhibition space: an excellent way to enhance your business opportunities and make it easy for delegates to find you! Includes:

- entry for one representative from your company
- one exhibition space in the networking area
- your company profile in the conference proceedings
- new and existing product display
- handing out brochures and promotional items from your stand

Spaces are allocated on a first-come-first-served basis and sell quickly.

Group discounts: when registering as a group you may be entitled to discounts. Contact the Conference Organiser for more information.

Networking Cocktail Reception

A networking cocktail reception will be held on the first evening. This offers an excellent opportunity for delegates to meet with speakers and other colleagues. All delegates are invited to attend and admission is included in the delegate fee.

CANCELLATIONS

Full refunds, less a cancellation charge of €300 will be made on cancellations received prior to 3rd October 2019. Thereafter we regret that no refunds can be made. Delegates may be substituted at any time. Please note that refunds will not be given on exhibition spaces, sponsorship packages or networking dinner places.

CONFERENCE HOTLINE

ALEXANDRA FISH, CONFERENCE TEAM MANAGER
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