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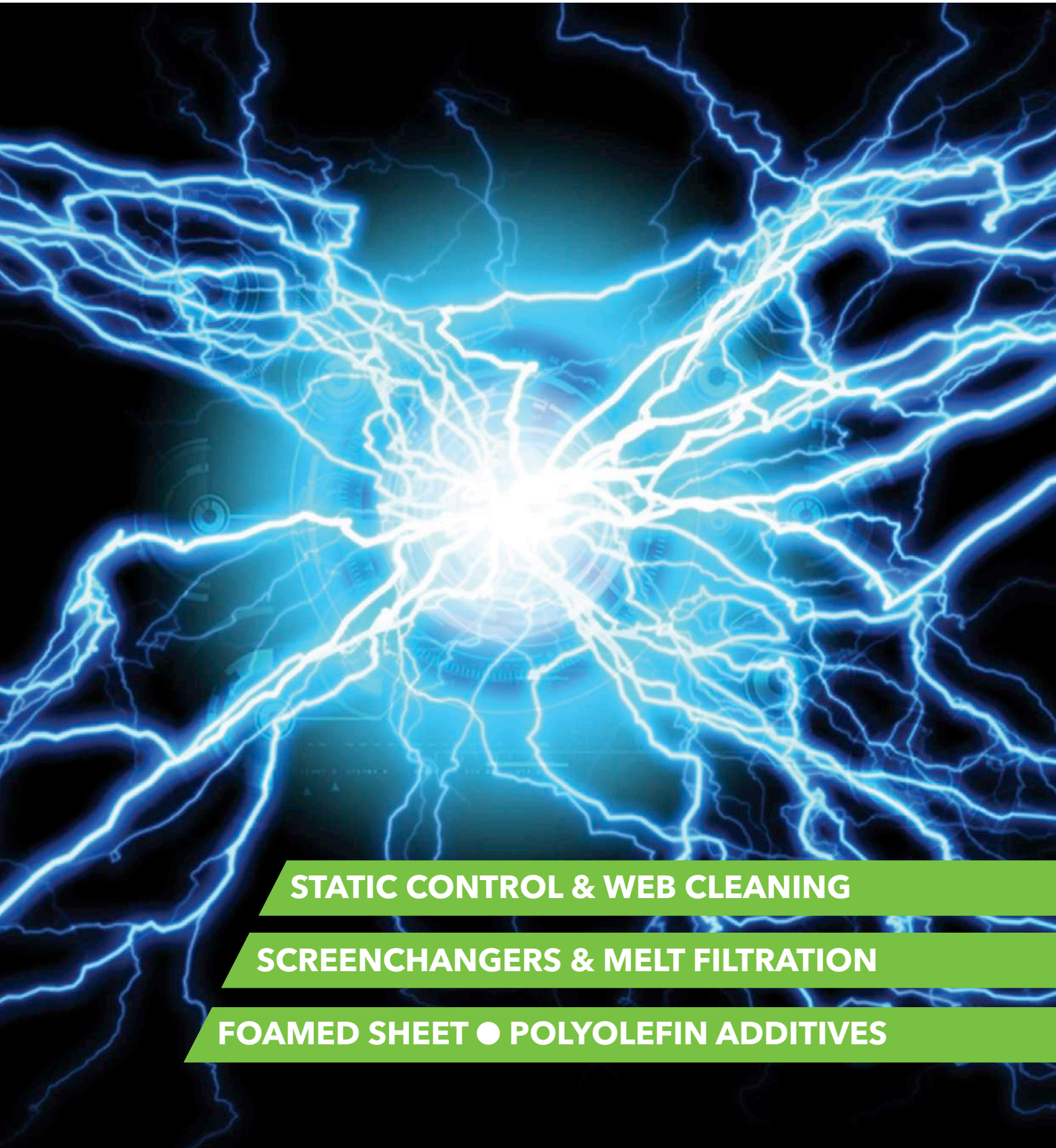

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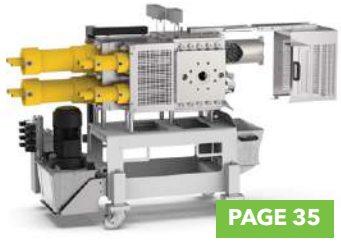
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Cleveland plastics expositions attract record numbers in 2023

AMI's US-based Plastics World Expos in Cleveland, Ohio attracted record numbers of exhibitors and visitors this year.

The event – taking place for the fourth time – featured four focused tradeshows: Compounding World, Plastics Recycling World, Plastics Extrusion World and Polymer Testing World.

"We welcomed 347 exhibitors and 5,134 attendees to this year's exhibitions – year-on-year increases of 15% and 12% respectively," said Kelly DeFino, exhibition sales manager at AMI. "The expos are now the biggest annual event for the North American plastics industry, and more than 250 companies have already booked their booths for next year's show in Cleveland".

IMAGE: AMI

Five conference theatres – hosting more than 100 speakers – were well attended. An evening networking party at the Punch Bowl Social Cleveland also proved popular, with more than 500 attendees.

Josh Hensley, technical services engineer at Westlake Royal Building Products, commented: "The Expo is an excellent opportunity to catch up with current suppliers and learn about other products and services in the industry."

One exhibitor – Timothy Michalowski, president of Berlyn ECM – added: "This is a spectacular event to meet new clients, while the information provided by the speakers is one of the best ways to stay current in today's environment."

The AMI Plastics World Expos return to Cleveland on 13-14 November 2024. To find out more about exhibiting, visit:

› **www.ami.ltd/Plastics-World-Expo-NA**

ECHA completes investigation into PVC and additives safety

The European Chemicals Agency's (ECHA) has completed its **investigation** into the potential risk to human health and the environment from PVC and certain PVC additives and has passed it to the European Commission, which will decide whether to request REACH restriction.

The investigation, which focused on 63 PVC additives including plasticisers, heat stabilisers and flame retardants, suggested that regulatory action may be required with regard to certain plasticisers (primarily ortho-phthalates), heat stabilising organotins such as DOTE, flame retardants, and PVC microparticle emissions during use and also from recycling facilities and landfills.

European PVC trade association VinylPlus said it had submitted evidence to the investigation, which also considered alternatives and assessed societal impact of potential risk management measures, and would respond to data gaps and concerns highlighted by ECHA.

"VinylPlus constructively worked with ECHA in its task of performing a whole lifecycle assessment of PVC, its additives, and potential alternatives, highlighting their performance, costs, and lifecycle benefits alongside the impact on human health and our environment," said Brigitte Dero, Managing Director of the association.

"VinylPlus will carefully examine the report and its annexes…we question the risks identified by ECHA for some ortho-phthalates and other plasticisers, organotin stabilisers and microparticles, and we are committed to working with regulators to provide information as needed."

› **www.echa.europa.eu**
› **www.vinylplus.eu**

New lines for LIB coating

Asahi Kasei is to invest around ¥40 billion (US$272 million) in extra equipment for coating Hipore lithium-ion battery (LIB) separators.

New lines at existing separator facilities in the US, Japan and South Korea are scheduled for start-up in the first half of fiscal year 2026. This is enough to supply coated separators for batteries equivalent to 1.7 million electric vehicles.

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Orion adds new plant in China

Orion has completed its first greenfield project – a carbon black plant in eastern China, which it says will supply growing demand in Asia.

The facility, in Huaibei in Anhui province, will produce carbon black for a variety of applications including polymers. The site's two production lines have a total capacity of 70,000 tonnes/year.

"The Huaibei plant enables us to better support our Chinese customers with products that are made in China," said Corning Painter, CEO of Orion. "Now we can reallocate production lines in the US and Europe so we can increase supply to customers in those markets."

Orion has one other plant in China – in Qingdao – which was built in 1994. It produces carbon black for tyres, rubber goods and other products.

› **www.orioncarbons.com**

North America machine sales fall in Q3 2023

Sales of primary plastics machinery in North America fell in the third quarter of this year – in comparison with the same period in 2022.

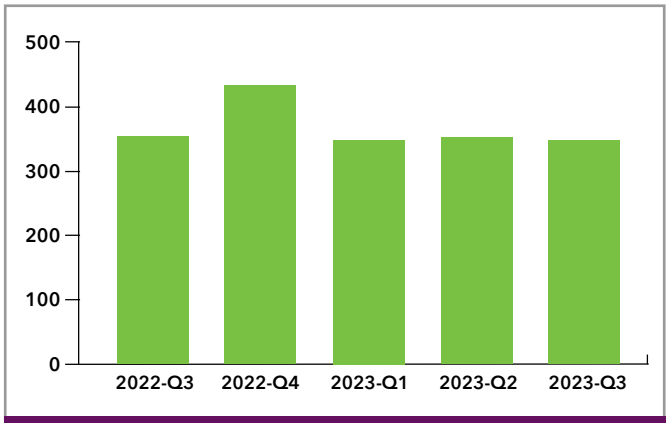
The Plastics Industry Association estimated sales at US$346 million in the period, a dip of around 2% compared to Q3 2022, and around 1.5% lower than the second quarter of this year.

In Q3 of this year, single-screw extruder sales rose nearly 31% compared to the previous quarter – and 75% higher than Q3 2022.

Sales of twin- screw extruders grew by 30% compared to the previous quarter, and by 3% compared to Q3 2022.

For comparison, sales of injection moulding machinery fell by around 2% in comparison with the previous quarter, and by 8% compared to Q3 2022.

"At the start of this year, there was a double-digit decline in primary plastics machinery shipments," said Perc Pineda, chief economist at the association. "This decline seems to have moderated on both a quarterly and year-over-year basis, aligning with rising economic output from the first to the third quarter of this year."



Primary plastics machinery sales, North America
Source: Plastics Industry Association, 2023

Machinery exports rose to US$271m in Q3 2023 – 7% higher than the previous quarter and 36% higher than Q3 2022. More than half the exports went to Mexico and Canada. Imports decreased by nearly 17% to US$383m in the period.

In the association's quarterly survey of suppliers – which assesses market conditions and future expectations – 56% of respondents expected market conditions to improve or remain steady over the next 12 months.

Plastics machinery will continue to be affected by high interest rates, said the association.

"While demand for plastics is anticipated to remain steady, fluctuations in manufacturing could impact business investment decisions," according to Pineda.

› **www.plasticsindustry.org**

New research centre will help cut carbon

IMAGE: SAICA

Saica has unveiled a new research, development and innovation (R&D&I) centre at its El Burgo de Ebro plant in Zaragoza, Spain.

The centre will service Saica's four divisions globally, including its flexible packaging segment, Saica Flex. It will allow teams to develop new products, improve raw material efficiency and offer advanced characterisation services of materials and processes to clients and other Saica departments.

The R&D&I centre has been designed to boost two strategic company objectives: reducing Saica's carbon footprint; and achieving 'zero waste to landfill' in all Saica plants. It currently employs more than 50 people, who make up multidisciplinary teams made up of engineers and technicians.

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Bottom: Stacked packaging, coated with anti-block

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Sales and profits fall at Cosmo

Indian film manufacturer Cosmo First has reported a dip in sales and profits in its latest half-year results.

Sales for the first half of the year fell more than 18% to around INR13 billion (US$156 million). At the same time, pre-tax profit slumped by around 80% to INR440m (around US$5m). Sales for the second quarter fell by around 15% compared to Q2 in the previous year.

Cosmo described the results as "improved" – as they exceed sales from Q1 of this year. This, it said, was due to enhanced BOPP film margins. In the near-to-medium term, BOPP and especially BOPET margins are expected to remain subdued, it said.

"In the short-term we remain focussed on increasing speciality sales," said Pankaj Poddar, CEO of Cosmo First. "In the medium term, drivers including speciality BOPET films, sun shield film and rigid packaging will result in profitability enhancement and margin stabilisation."

The company has also launched an injection moulding and thermoforming division called Cosmo Plastech to make thin-wall containers for the food and beverage industry. It will offer a range of packaging solutions for FMCG products.

Sanjay Chincholikar, business head for technical films and rigid packaging, said: "Our containers ensure durability, reliability, and moisture resistance, setting an innovative benchmark. Cosmo Plastech reflects our commitment to excellence in sustainable packaging."

› **www.cosmofirst.com**

IMAGE: MASTERPRESS

Above: Masterpress says it will expand shrink sleeve production by around 40%

Masterpress expands capacity of printed packaging by 40%

Poland-based Masterpress has expanded its production capability for printed packaging.

It has added around 16 million sq m of capacity per year and installed two new sleeve printing machines, which will expand production by nearly 40%. The investment comes in response to actual and anticipated growth in European customer demand, especially in France, Germany, Austria, Switzerland and Benelux.

The two new 12-station and 14-station hybrid printing machines can handle a variety of materials and varnishes in a single printing cycle, enabling UV flexo printing, embossed and Braille printing and web perforation. This expands the range of effects it can offer.

In addition, the new machines increase its ability to offer more environmentally friendly sleeve printing solutions – incorporating features such as energy-efficient UV LED drying and the ability to print on films as thin as 12 microns.

"By investing in our capacity and people, we are focused on our long-term vision of organic growth," said Jeroen de Haan, general manager of Masterpress.

› **www.masterpress.com**

Oben adds BOPA film capacity

Oben has expanded its BOPA film business in the US.

It will end its strategic alliance with AdvanSix that has been in place since 2019.

Under the agreement, Oben produced BOPA film and AdvanSix managed its commercialisation and distribution in the US and Canada.

AdvanSix will now exit the alliance in 2025 and transfer its commercial and distribution responsibilities for BOPA film to Oben. It will continue to be a key resin supplier to Oben.

Oben has now become the direct provider of nylon films, including the Capran and Oxyshield brand names.

Its portfolio also includes BOPP, BOPET, BOPE, CPP and thermoformed products.

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Plastics Europe's plan for circularity

Plastics Europe has devised a plan that it says will move the industry towards circularity while safeguarding global competitiveness.

Its **Plastics Transition** document includes measures that it says will cut plastics sector greenhouse gas emissions by 28% by 2030 and towards net zero by 2050. It says circular plastics could meet 25% of European demand by 2030 and 65% by 2050.

The plan intends to "redesign the European plastics sector" said Marco ten Bruggencate, president of Plastics Europe.

It will involve €235 billion (US$257bn) in extra investments and operational costs. Plastics Europe says this will help transform Europe's plastics industry while keeping it competitive with other plastics-producing regions.

"There is a direct correlation between the industry's competitiveness and its ability to execute the roadmap," said ten Bruggencate.

The three pillars of the transition plans are: to make plastics circular; to help drive lifecycle emissions to net zero; and to foster the sustainable use of plastics.

Based on a projection that European converters will use 65m tonnes of plastics in 2050, it says 22m tonnes (35%) will come from fossil-based plastics, with the remaining 65% from circular plastics. This includes 15m tonnes from mechanical recycling, 12m tonnes from chemical recycling, 11m tonnes from biomass and 3m tonnes from CCU.

There will also be a "need to scale up chemical recycling", according to ten Bruggencate.

› **https://plasticseurope.org**

Global player in film and sheet named Polyvantis

Röhm has formed an expanded film and sheet business – following the acquisition of Sabic's interests in that area – called Polyvantis.

The company says it will be a leader in acrylics and polycarbonate film and sheet.

It will offer products including films, sheets, pipes and rods, for markets including construction, transport and automotive. The global organisation, with sales of around US$700m will have a workforce of about 1,500 employees and 16 production sites across the Americas, Europe, Asia, and Africa.

In December 2022, Röhm bought Sabic's functional forms division for polycarbonate film and sheet products globally. This has been merged with Röhm's acrylic products business. Closing the deal with Sabic is expected by mid-2024, subject to obtaining customary regulatory approvals.

Long-term license agreements have been concluded with both Röhm and Sabic for the respective brands in their segment. The Plexiglas and Acrylite moulding compounds business will remain at Röhm and the polycarbonate Lexan resin business remains with Sabic.

"Polyvantis will remain closely associated with Röhm and Sabic thanks to the shared brands and long-term agreements," said Michael Pack, CEO of Röhm.

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New demands call for advanced stabilisers

IMAGE: BASF

***Whether to lift virgin resin performance or to enhance functionality in recycled resin streams, stabiliser manufacturers are working hard to meet new user demands, writes* Mark Holmes**

Antioxidants and UV stabilisers for plastic compounds have a simple role – to provide protection during processing and long-term stability in demanding end-use applications. However, demands and expectations of end users change continually so antioxidant and additive manufacturers are required to satisfy ever higher performance criteria, meet tightening regulatory limits, and to develop solutions that will function with new bio-based resins and, increasingly, with recycled plastics.

Antioxidant manufacturer **Dover Chemical Corporation** sees the market evolving and changing in two specific areas, in particular. "Firstly, I think a significant portion of polymer producers will switch from standard, commodity antioxidants to newer ones, largely due to regulatory concerns," said Shawn Cook, technical manager – plastic additives. "Of course, this does not mean all polymers – there will be holdouts – but I think most of the big polymer manufacturers will eventually change over. Secondly, I think that with the development of new polymers and their architectures, antioxidants will have to perform better, which also signifies the evolution. After all, I could not imagine the development of a new, premium polymer without the need to address an additive package designed to meet future demands."

Cook adds that regulatory pressure, fueled at least in part by societal pressure, is causing many companies to re-think how they approach additives. Companies know that they need them and that they need good ones, he says. However, additives will often only be heard of when something goes wrong. Increasingly, companies are now

Main image: New end user demands and tighter regulation call for more advanced and higher performing polymer stabilisers

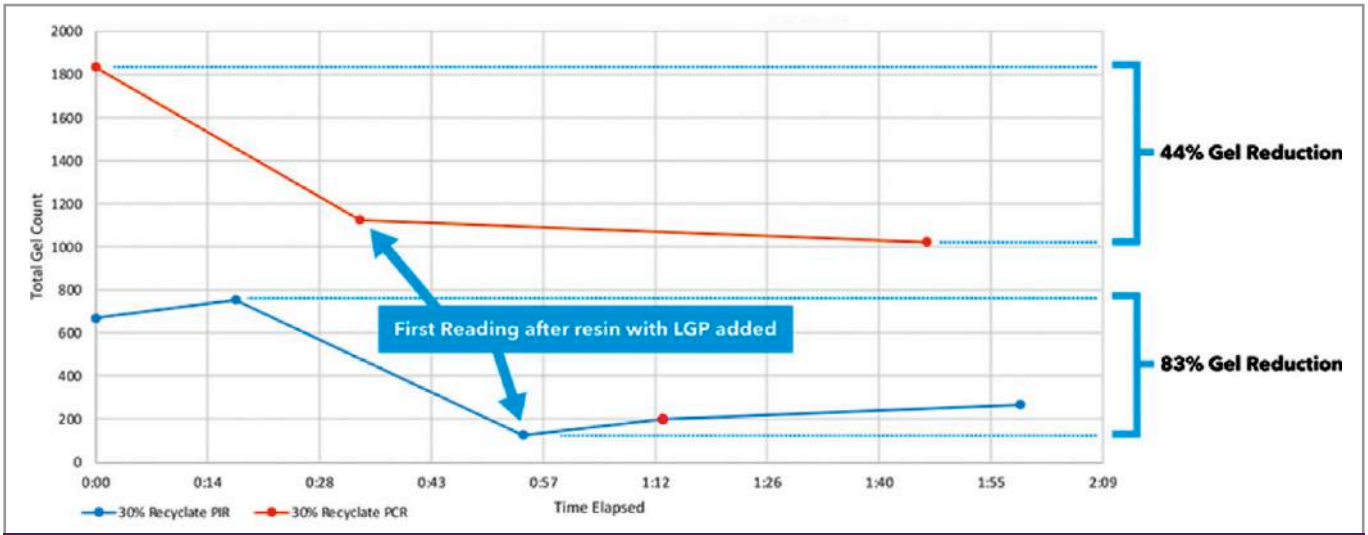

Figure 1: Total gel count in PE film containing 30% PCR and PIR recyclate streams showing the impact of Doverphos LGP-12
Source: Dover Chemical Corporation

thinking about specific additives used further downstream from the resin manufacturers.

Dover highlights two current problems in antioxidant technology (both regulatory driven) that require solutions – the emphasis on increasing recycled content in all polymer streams and finding suitable replacements for fluoropolymers (PFAS). "For recycled streams, the technical challenge is to produce an article that has high recyclate content but with the same performance as when using 100% virgin materials," said Cook.

Recycling challenge

"In some cases, the answer is just to use more polymer overall. That is certainly counter to the spirit of using recycled content. No company wants to use more material to make the same articles, but that is the current means to address the issue. I believe the solution lies in engagement throughout the entire system, with collaboration between resin manufacturers, additive suppliers, article producers and recycling companies," he said.

"For PFAS replacements, it is currently a bit of a 'Wild West' situation. There is an industry-wide standard that is soon to be banned with no real viable alternative. Existing solutions are temporary at best, or they would already be used, and new solutions will have to undergo considerable scrutiny. After all, no company wants to commercialise a product and go through lengthy and expensive approvals only to have to repeat the process in a few years. Any solution has to work and be future-proofed," Cook said.

Dover claims it has solutions for these problems, most based on its Doverphos LGP-12 phosphite antioxidant. The company says LGP-12 was designed to be high-performance while minimising current and predicted future regulatory concerns. As an antioxidant, it can help to stabilise recycling streams in-situ to make a higher quality recycled resin, it says.

The use of post-consumer resin (PCR) and post-industrial resin (PIR) in film production often means that recycled streams are of a lower quality than virgin resin, it says. Gels – visual or structural defects in the film – can have a detrimental impact on elongation strength, leading to premature tearing. They can arise from contamination caused by water and debris, as well as cross-linked resins, typically arising from inadequate stabilisation and/or excessive heat. During re-granulation, PCR and PIR exhibit insufficient stabilisation, leading to excessive gel formation that reduces tear and elongation strength of the film.

Doverphos LGP-12, which has an alkylphenol-free composition and is produced from bio-sourced raw materials, can ease gel problems (Figure 1). It is compatible with thermoplastic resins, reduces additive migration and eliminates plate-out and blooming of the phosphite. Introduced during PCR re-granulation, the company says LGP-12 scavenges free radicals generated during the thermal degradation of polymers, preventing gel formation and other degradation byproducts. It can also help preserve the melt flow index of the resin, leading to comprehensive stabilisation and smoother processing.

A secondary property of LGP-12 is its metal affinity and fast film formation as a polymeric liquid. Dover says it has been able to enhance this inherent property into a suitable replacement for fluoropolymers used as processing aids in the polymeric film industry, under the tradename of DoverClear. ›

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Overcapacity issues

According to **Clariant Adsorbents & Additives**, the market for antioxidants and UV stabilisers is facing a long-lasting and deep crisis of overcapacity, with low demand and prices. "During the Covid period, new capacity in China has been built for antioxidants, HALS and some intermediates," said Dr Mohamed Sidqi, global manager for plastics upstream. "Meanwhile, a decrease in polymer production rates and related market prices has put the whole industry in a difficult situation."

Sidqi adds that drivers for new developments in antioxidants and UV stabilisers are based on natural and sustainable stabilisers, focusing mainly on antioxidants. For UV absorbers, drivers are mainly replacement of benzotriazoles, which are on the EU SVHC (substance of very high concern) list.

In performance terms, one of the major obstacles to overcome, when it comes to plastics circularity, is the need to maintain high polymer quality over multiple recycling cycles. "New concepts for polymer stabilisation and new additive solutions are required to improve original plastic quality. This is crucial for recycling, for recyclate quality and for achieving plastics circularity," said Sidqi.

"Recycling is one of the interesting technical areas where a lot of development is being undertaken in both mechanical and chemical recycling. Most polymer producers are acquiring recycling companies or building their own recycling lines. The high cost of recycled materials, availability and quality of waste remain a real challenge. Some additive solutions largely based on traditional antioxidants are available, mainly for mono-material polymers. However, those solutions are not sufficiently efficient to ensure circularity," Sidqi adds.

Sustainable investment

Softening demand has been evident through 2023, according to specialty additives maker **SI Group**, which says that restocking, initially anticipated for the middle of the year, is now shifting towards the fourth quarter. "Although demand for certain legacy products is weak, companies like SI Group are using the time to invest in their sustainability developments and innovation pipeline, while expanding product offerings such as Evercycle," said Jeroen Frederix, market development manager – circular economy.

IMAGE: BAERLOCHER

Left: Baerlocher's Baeropol T-Blends can improve the quality of PIR and PCR content used in PE film

"Without question, the challenge of ramping up the levels of recycled content and the desire to increase recycled content in plastics is driving new developments in sustainability. SI Group has already seen this for a long time in non-food packaging and consumer goods, but we see these impacting other markets such as the automotive, industrial and building segments," he said. "SI Group is leading the way in providing customers with innovative bio-sourced products, such as Naugard Bio-XL and broadly applicable products for plastics recycling, such as those in the Evercycle portfolio."

According to SI Group, increasing demand for recycled feedstock content that makes products more sustainable (circular) means challenges arise in maintaining product performance. The company says this means antioxidants and UV stabilisers that

IMAGE: BASF

Above: BASF's additives plant at Kaisten in Switzerland is one of two sites piloting its ISCC Plus Biomass Balanced (BMBcert) product introductions

protect plastics need to be upgraded across the value chain to work not only with the extended lifetime challenges of the polymers but also the recycled-stream challenges to which they will be applied. It says it has invested significant capital over the past three years – including commissioning of a new R&D facility at Houston in the US – to make improvements to antioxidants and UV stabilisers in these areas.

One of the biggest challenges to fulfilling market demand for recycled resins is availability of good quality feedstock and proper sorting processes at scale. "More flexibility in feedstock sourcing will support the growth of the mechanical recycling industry," said Frederix. "Understanding the relation between feedstock impurities, or cross-contaminants, and the performance of both stabilisation packages and polymer is crucial. In addition, chemical recycling mid-term will play a crucial role in the circularity of plastics, provided key hurdles in the policy domain like acceptance of the mass-balance approach are overcome. With these virgin-like polymers hitting the market, there is an opportunity to rethink with the polymer producers how to properly stabilise and enable resins for a more circular future."

Last year, SI Group launched the first generation of its Evercycle additive products, designed to support circular economy-based goals such as performance enhancement and recyclability initially in PET and polyolefin applications. It says it is now focusing efforts on improving and expanding the portfolio to additional specific, tailored solutions such as multilayer film and automotive compounding. This will increase coverage across different additional feedstock types and recycling streams.

Slower activity in antioxidant and UV stabiliser demand is also reported by **BASF**, although the company's expectation is that this will recover in the medium term and that sustainability will be a key driver in that. "Sustainability and regulation are clearly driving all new developments in plastics and the additives that protect them. As the plastics industry becomes more circular, renewable, bio-based, and increasingly regulated, antioxidants and UV stabilisers must adapt to these new expectations," said Dr Achim Sties, senior vice president, plastic additives.

"The public is learning to ask more questions about the safety and content of their consumer goods. This requires a new approach from the industry to demonstrate the safety of their products, beyond what is already required for the legal production and sale of additives to the market. The combination of these two trends is inspiring resin producers to develop new sustainable materials," he said. "While many existing additive solutions can readily be used in these applications, there is also a need for new, more sustainable antioxidants and UV stabilisers to match these polymers."

Parallel solutions

However, Sties adds that plastics recycling rates have not scaled with the rate of production. He says several parallel solutions are needed to address this larger problem. Most importantly, recycled plastics must be able to perform at, or near, the same level as virgin resins. This is technically possible, particularly with advances in collection and sorting infrastructure, but the inherent damage to plastics from their first life must still be mitigated by an appropriate additive package to prevent further damage during processing.

Sties also notes that research into biodegradable or bio-based plastics has exploded. While these materials are often used in limited applications, the same technical needs for processing stability and UV protection are expected. Additives need to be tailored accordingly, he says.

According to BASF, there is a great need to find additive solutions to support an accelerating plastics recycling market. "Technically, recycled plastics present more challenges than virgin materials because they have suffered and aged through their first life. Therefore, new antioxidant and stabilisation solutions are needed to address the challenges of each application and material stream," said Sties.

As part of the company's broader Valeras sustainability portfolio, it has introduced a range of additives under the IrgaCycle brand to address the mechanical recycling market. Five core products address some key challenges for recycled polyolefins – gel formation, processing instability, UV sensitivity and other mechanical failures. Knowing

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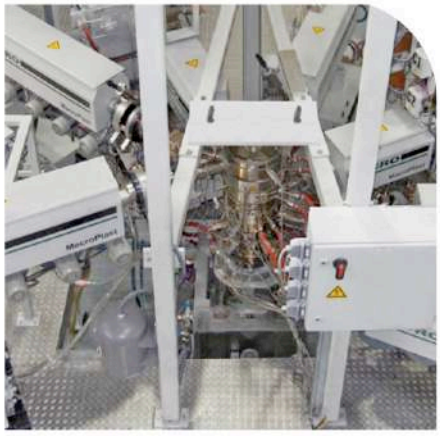

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that the recycling market and streams are highly variable – regionally, seasonally and by consumer demand – the company expects to develop new solutions to support increasing recycled content concentrations and performance demands.

"Recycled polyethylene designed for film applications can exhibit high levels of gel formation and poor processing stability. To resolve these issues, additives must be included in processing as early as possible to prevent thermal degradation during regranulation and to provide appropriate stability for subsequent film extrusion processes. For example, IrgaCycle PS 031 G restabilises rPE films and prevents crosslinking even after multiple heat and extrusion cycles," said Sties.

Further technical challenges foreseen by Sties include contamination of the recycled polymer by residual pigments and waste, as well as other mixed plastics. "Additives will play a key role in enabling high quality performance of recycled materials while mitigating any negative interactions associated with contamination in the material stream."

BASF Plastic Additives recently launched two specific antioxidants as Biomass Balanced (BMB-cert) grades. The additives will enable customers to produce polymer grades that have a significantly lower product carbon footprint than conventional offerings. As the substitution is based on the International Sustainability and Carbon Certification (ISCC) Plus mass balance attributed content concept, customers can expect identical product performance with no change to specification or regulatory status (so no requalification required).

The company has received (ISCC) PLUS certification for certain grades of plastics additives produced at manufacturing sites in Kaisten in Switzer-

IMAGE: BASF

Above: This floating photovoltaic prototype at BASF's McIntosh plant in the US uses its new Tinuvin 2730 ED stabiliser

land and McIntosh in Alabama in the US. It says the two sites are acting as pilots prior to global implementation.

Floating ideas

BASF has also developed a new UV stabiliser system, Tinuvin 2730 ED, which is formulated to extend the lifetime of polyolefin in high exposure conditions to more than 30 years. The company expects it to play a role in expanding installation of floating plastic photovoltaic (PV) systems, which provide an alternative to land-based installations that do not compete with agriculture or other requirements.

A proof-of-concept floating solar system has already been installed at BASF's McIntosh additives manufacturing site at Alabama in the US as part of its 2050 net zero CO_2 emissions programme. Developed in conjunction with Noria Energy, the floating pontoon solar system features a flat-pack design based around a TPO floating frame. The pilot system powers three aerators that are used to improve water quality in a pond at the facility.

"Now that we have the installation and the proof of concept at McIntosh, they're [Noria Energy] working with our energy management team to look at installations at our Wyandotte site. That's also going to be a large-scale pilot for the Noria-specific design, which will be a hundred times the size of the pilot we have in place. We're also looking into our Geismar Verbund site, which currently can support a 5 MW system," according to Neil DeLoggio, BASF's business development manager for plastic additives in the Americas.

The Baeropol T-Blend product line from **Baerlocher**, which includes its Baeropol RST stabiliser, has formed the basis for a set of additive blends that it says have been found to be particularly useful in polyolefin recycling applications. The additives are available in a dust-free pastille form, which is good for recyclers that often struggle to handle powders.

Baerlocher says that the Baeropol T-Blends are also playing a role in film reprocessing, where they can be fed directly into the cutter-compactor unit using low-cost volumetric feeders. The company says the improved quality of the recycled material is evident in, for example, blown film production where gelling and bubble breaking is reduced and more homogenous mechanical performance is achieved.

Making predictions

Researchers at **Fraunhofer LBF** (Institute for Structural Durability and System Reliability) say they have developed an online rheological investigation

Stabilisation key to TPO roofing success

Polyolefin-based roofing membranes have achieved a prominent position in low-slope roofing solutions in North America, according to Andrea Landuzzi, global marketing director technology solutions – polymer additives at Solvay, and that success is now spurring considerable interest in both Europe and Asia, where TPO products are gaining market share against PVC, bitumen and other materials.

The key attractions of TPO membranes include good physical performance, puncture resistance, flexibility, and ease of fabrication, installation and sealing. A further attraction, Landuzzi says, is that they are design-friendly, supporting easy integration of building integrated and building applied photovoltaic (BIPV and BAPV) systems.

Extending service lifetimes is an important goal for membrane manufacturers, who are looking for advanced stabilisation systems that provide the required durability in the most extreme thermal and UV conditions and that will accommodate forecast climate change impacts.

IMAGE: SOLVAY

Solvay says latest TPO roofing membranes require advanced stabilisation chemistry

Solvay's Cyasorb Cynergy Solutions B Series stabilisers are said to provide very good UV resistance (to 60 kJ/m^2) and thermal stability (up to 135°C) in TPO membrane formulations, surpassing the current standards for TPO sheet roofing in North America, Europe and China. Membranes produced using the additive are discoloration resistant and protected against microcrack formation, the company says.

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Researchers at Fraunhofer LBF are using online rheometry to speed up development of optimally stabilised compounds

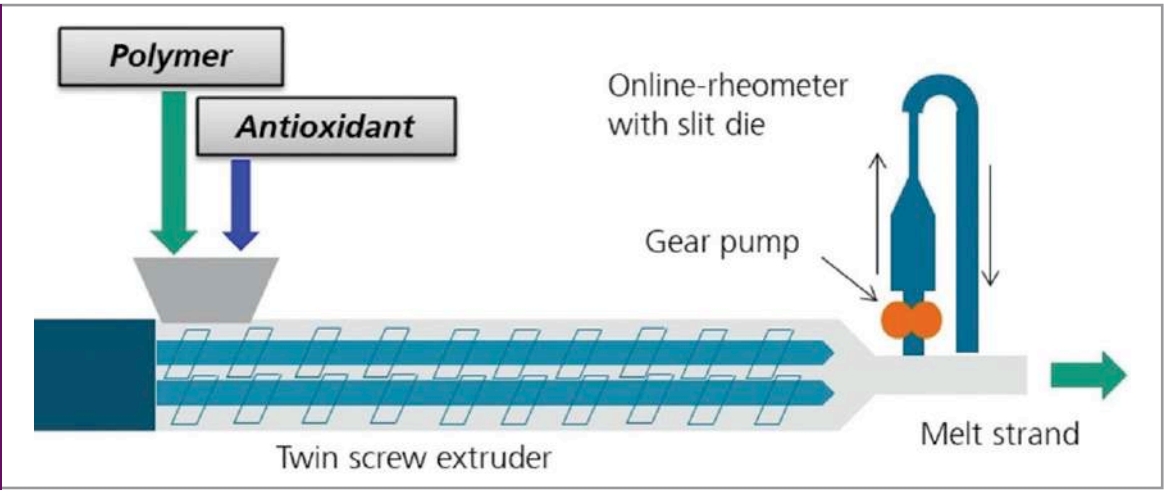

Image: Fraunhofer LBF

method for accelerating development of antioxidant formulations. Plastics degrade by auto-oxidation when in contact with air, a process initiated by elevated temperature or light that propagates as a radical chain reaction, causing cleavage of the polymer chains. The Fraunhofer researchers say the polymer chains are primarily attacked by the OH-radical resulting in the formation of hydroperoxide moieties, which trigger follow up reactions leading to OH-radical regeneration.

For optimum protection of the polymer, the researchers say two different types of antioxidant must be added. A primary antioxidant, often containing a phenolic structure, quenches the OH-radical. A secondary antioxidant, consisting of sterically hindered alkyl-derivatives of functional groups such as phosphites or thioethers, react with the hydroperoxide without OH formation. Both types of antioxidant act in a synergistic way and a typical commercially available stabiliser package containing both antioxidants in equal amounts was used in the institute's experiments.

Commercially available virgin plastic grades are typically formulated with appropriate stabiliser packages for the expected use for reasons of resource efficiency and economy. As has been mentioned previously, when recycling plastics some of the stabilisers will have been depleted during the previous life cycle.

Fraunhofer LBF says the traditional way to optimise stabiliser content is to compound a series containing varying amounts of antioxidants, then characterise them offline using tests such as melt volume rate (MVR, DIN 1133-1) or oxidative induction time (OIT, ASTM D3895-19). As a result, the first reliable results are obtained only after the compounding step has been completed.

The LBF researchers aim to gain an indication of the efficacy of the stabiliser content during the compounding step. To achieve this, the viscosity of the melt is used as a response and recorded while varying the recipe using an online rheometer fitted behind the screw tips of the twin-screw extruder. It measures the flow curves of the shear as well as the elongational viscosity.

First experiments were carried out on a minimally stabilised virgin polypropylene (PP) with the amount of stabiliser added varied at selected screw speeds. The reduced process-related degradation was immediately reflected in an increase in viscosity in the flow curves. Above a certain additive level there was no further increase in viscosity, meaning that for the actual processing conditions the stabiliser concentration had reached the limit above which no further improvement could be achieved.

The researchers say the experiments show that online rheology provides the formulation developer with high value information regarding the efficacy of a processing stabiliser during compounding. They add that, because the flow curves of different polymers are not identical, their information content is much higher than a single value from an MVR measurement. It is also possible to include the flow curves of the elongational viscosity in the evaluation.

The Fraunhofer team concludes that, when supported by an appropriate AI-based system, online rheology could provide a promising tool to implement stabilisation during the production of recyclates, offering the ability to make real-time adjustment according to the ageing stage of recycled feedstock.

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Film manufacturers must control the harmful effects of static electricity and can do this with equipment including corona treaters and specialist air nozzles that treat the film surface

IMAGE: VETAPHONE

Electric effect: static control

Static electricity can cause problems – especially in film production – but can also be hazardous within a factory environment. Controlling static is therefore a key requirement for film extruders.

US-based film and bag manufacturer A-Pac has installed two **Vetaphone** corona treaters at its production facility in Grand Rapids, Michigan.

The equipment helps improve surface treatment quality and replace American-made treaters on two of its three blown-film extrusion lines.

A-Pac makes a wide range of poly bags including flat, wicketed, gusseted, side-weld, bottom-seal, staple-pack, and custom print as well – as poly bags on the roll. It also offers three types of plastic film and tubing. The company first installed surface treatment equipment when it switched from solvent- to water-based production.

"We installed our first corona treater in 2018 and the second in 2020," said Tim Takken, plant manager at the facility.

The Vetaphone treaters are both C models, designed to provide a high dyne level on any extruded material. A special design and the use of efficient generators delivers precise, consistent power requirements. An advanced electrode design eliminates fluctuations in dyne levels across the web width and guarantees no undesirable treatment to the reverse side. They also feature a 'quick-change' system that allows the operator to carry out segment set-up and maintenance in minutes.

A computerised iCorona generator is at the heart of the process, offering a wide regulation band that combines high efficiency with minimal energy loss. Power regulation uses pulse width modulation (PWM). Built with a resonant feedback system, iCorona generators automatically match electrical power to the material, ensuring optimal surface treatment and efficiency, it says.

A-Pac treats only part of the web – 8in diameter on one line and 4in on the other – though Takken says they sometimes go down as small as 2in.

"We're in a niche market so flexibility and control are vital, especially as we supply both the medical and food sectors – where we are obliged to conform to ISO 2001:2015, FSSC 22000, USDA and FDA standards," he said. ›

Main image: Vetaphone corona units provide surface treatment to A-Pac, says plant manager Tim Takken

IMAGE: EXAIR

Above: Exair says its Peek 1/2 NPT produces powerful blowoff

Non-marring nozzle

Exair says a new non-marring nozzle provides precise blowoff in a range of applications.

The Peek 1/2 NPT Super Air Nozzle has been engineered to produce powerful blowoff without damaging expensive equipment. Being constructed from Peek, it provides non-marring protection to production items and resistance to damage from harsh chemicals and temperatures up to 320F (160°C).

The 1106 model provides blowoff while reducing air consumption and increasing safety, says Exair. It guides airflow to a single point of convergence for strong force and dramatic noise reduction over typical blowoffs.

Safe operation is assured, as Exair says all nozzles are CE-compliant and meet or exceed OSHA standards for dead-end pressures.

The 1106 is designed to replace wasteful nozzles or open pipes in critical applications. The company's super air nozzles are also available in Type 316 stainless steel and zinc-aluminium alloy – and in special materials on request.

In addition, the company says its Intellistat ion air nozzle helps prevent static build-up in sensitive processes. Like the Intellistat ion air gun, the new nozzle is a lightweight solution – rated Class 5 for cleanrooms and controlled environments as per ISO 14644-1.

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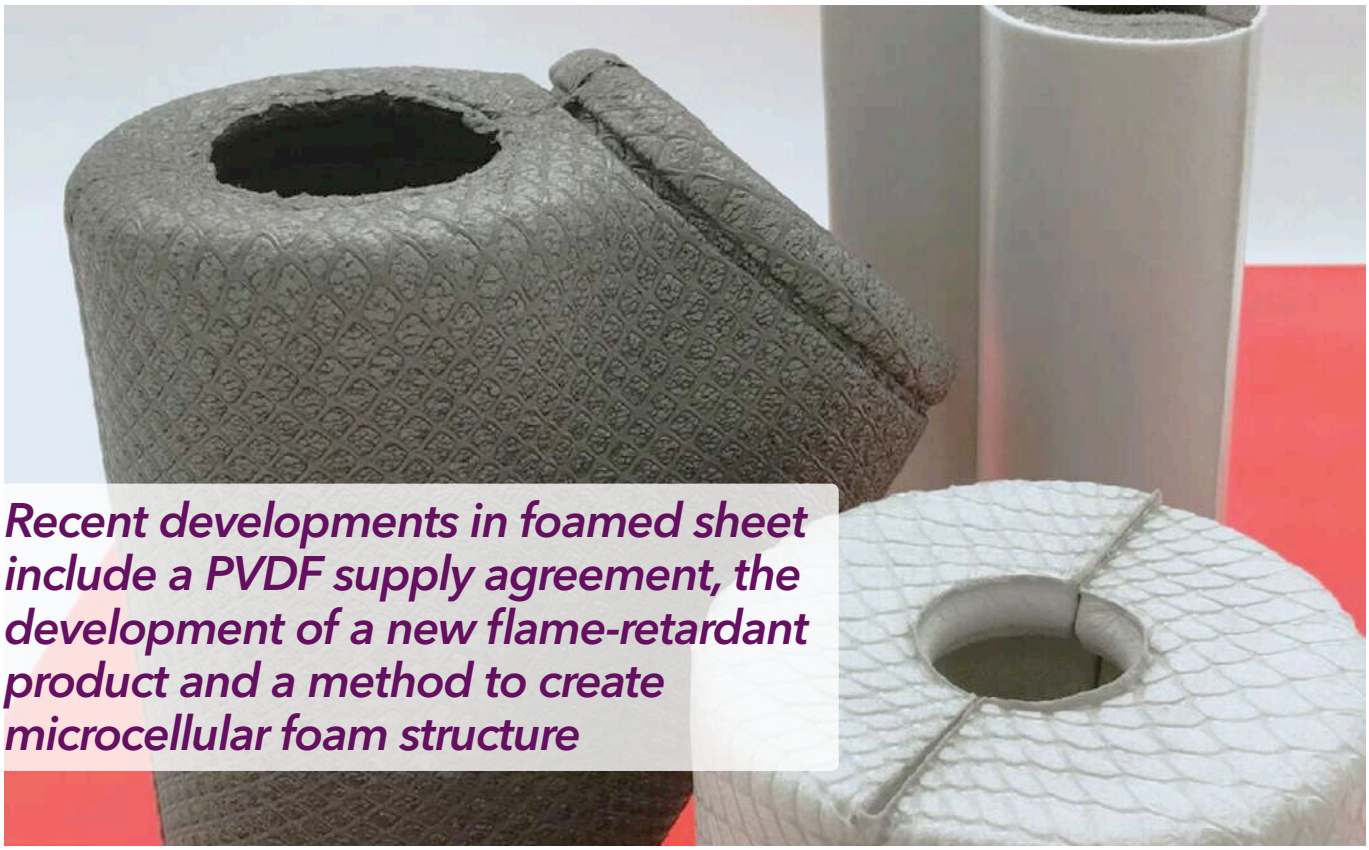


IMAGE: SEKISUI ALVEO

Recent developments in foamed sheet include a PVDF supply agreement, the development of a new flame-retardant product and a method to create microcellular foam structure

Light relief: latest in foamed sheet

Foaming processes help to reduce weight – especially in thin products such as sheet. However, foamed sheet can be imbued with remarkably advanced properties, including high mechanical strength and flame retardancy.

For instance, Swiss polyolefin foams manufacturer **Sekisui Alveo** recently added a flame-retardant foam for construction applications to its Alveolit product line.

Alveolit TA FR 3505 now carries a Class B flammability rating. This is the company's first foam to achieve this rating under EN 13501. The high fire-resistance rating opens up a range of possibilities to create solutions in construction and industrial applications, it says.

"This is our first foam to achieve the Class B flammability rating in accordance with EN 13501-1," said Fabian Leuthard, application development manager at Sekisui Alveo. "We look forward to seeing it used in new applications that the new rating makes possible."

The product is a physically crosslinked closed-cell polyolefin foam, aimed at applications such as pipe insulation, pipe wrapping and flat roof applications.

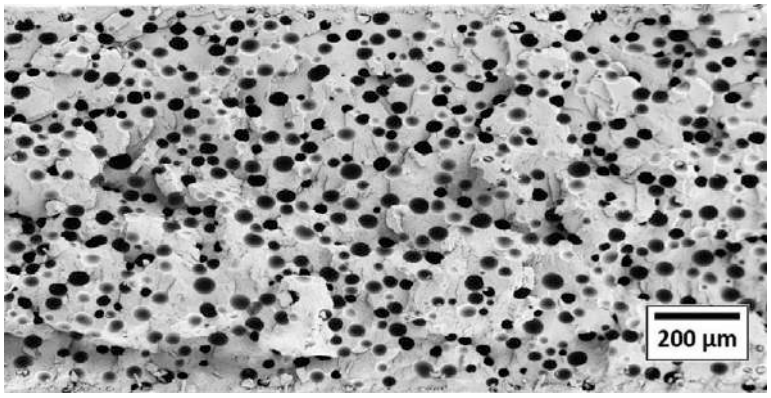
Class B designates a high level of fire safety – with only Class A being higher. It indicates that the material will not lead to a flashover situation. Alveolit TA FR 3505 was formerly rated Class E, but the new classification opens up a wider range of applications.

Tests on the materials were conducted according to the European standards EN 11925-2:2020 and EN 13823: 2020. The test method used is known as 'single burning item' and was conducted in accordance with standard EN 13823. It is suitable for determining the reaction to fire behaviour of building products, excluding flooring. The test evaluates the potential contribution of a product to the development of a fire in a fire situation – simulating a single burning item in a room corner near that product.

The sample tested was an anthracite-coloured Alveolit TA FR 3505, 5mm thick, with a density of 29

Main image: Sekisui Alveo has added a flame-retardant foam to its Alveolit product line

IMAGE: PROMIX



Above: Microcell technology from Promix can be used to create micro-cellular foamed sheet

kg/m^3, glued to a galvanized steel sheet 1mm thick. The foam is offered in a range of thicknesses, available on request. Thicknesses from 3mm to 10mm can be certified according to standard EN13501-1:2019 on demand.

Cutting material costs

At this year's Fakuma, **Promix Solutions** presented ways of foaming, mixing and cooling polymer melts. Its aim was to cut raw material costs, reduce carbon footprint and raise production capacity.

For instance, its Microcell technology, which creates a microcellular foam structure in the polymer by adding atmospheric gases (N_2 and CO_2). This reduces product weight by 20-50%, which saves on raw materials.

The technology is suitable for a range of products, including packaging films, sheets, foam core and corrugated pipes as well as profiles, cable sheathing and blown films. It can be used for many raw materials – including PP, PE, PET, TPE, TPU, PA, hard and soft PVC and bioplastics. It is available for both new extrusion lines and as a retrofit.

PVDF supply

Solvay has signed a long-term agreement with **Zotefoams** – a manufacturer of lightweight cross-linked polyolefin block foams – for the supply of its Solef polyvinylidene fluoride (PVDF).

Zotefoams will use the material to make its Zotek F high-performance closed cell crosslinked aerospace foam. It will be used for a range of aerospace interior applications including ducting, carpet underlay and insulation.

"This opens exciting new perspectives for weight reduction as well as noise and vibration management for interior components," said Marc Doyle, executive vice president for aerospace and defense at Solvay.

Solef PVDF is inherently flame retardant and combines high of purity with good mechanical properties. It can provide weight savings of up to 70% in aircraft interiors, says the company.

James Bridges, director of high-performance products at Zotefoams, added: "As the commercial aviation sector strives to meet stringent carbon reduction targets, the lightweighting capabilities of Zotek F are more in demand than ever, so this partnership could not be more timely."

The material is manufactured at Solvay sites in North America, Europe and Asia – to the same standards of purity and consistency. Its worldwide availability gives it a high level of global supply security, says the company.

Jacket JV

Flexible foam specialist **Armacell** has established a joint venture with AIS – which makes fire protection systems – to manufacture insulating jackets in the US.

No details were revealed about the commercial terms of the deal.

"Both companies have a track record in insulation and energy conservation," said Ciro Ahumada, vice president for the Americas at Armacell.

The joint venture company, Armacell AIS, will operate from Armacell's existing facility in Yukon, Oklahoma. It will manufacture and sell thermal insulation jackets for the US heating, ventilation and air-conditioning (HVAC) market, as well as acoustic and passive fire protection jackets.

Andrew Bennion, managing director of AIS, added: "By combining our technologies, we are confident of providing our customers with state-of-the-art jacketing solutions."

Carpenter acquisition

US-based **Carpenter** has acquired the engineered foams division of Recticel.

This includes the former Foam Partner and Otto Bock operations. Carpenter says the acquisition creates the world's largest vertically integrated manufacturer of polyurethane foams and speciality polymer products.

"We are excited to welcome the employees of Recticel, Foam Partner and Otto Bock," said Brad Beauchamp, CEO of Carpenter. "Combining these businesses with ours will result in the best flexible foam company throughout all market segments and geographic locations."

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Screen test: latest in melt filtration

Recent developments in melt filtration include a screen changer with backflushing, a new way to enhance efficiency and how a retrofit helped a film recycler boost performance

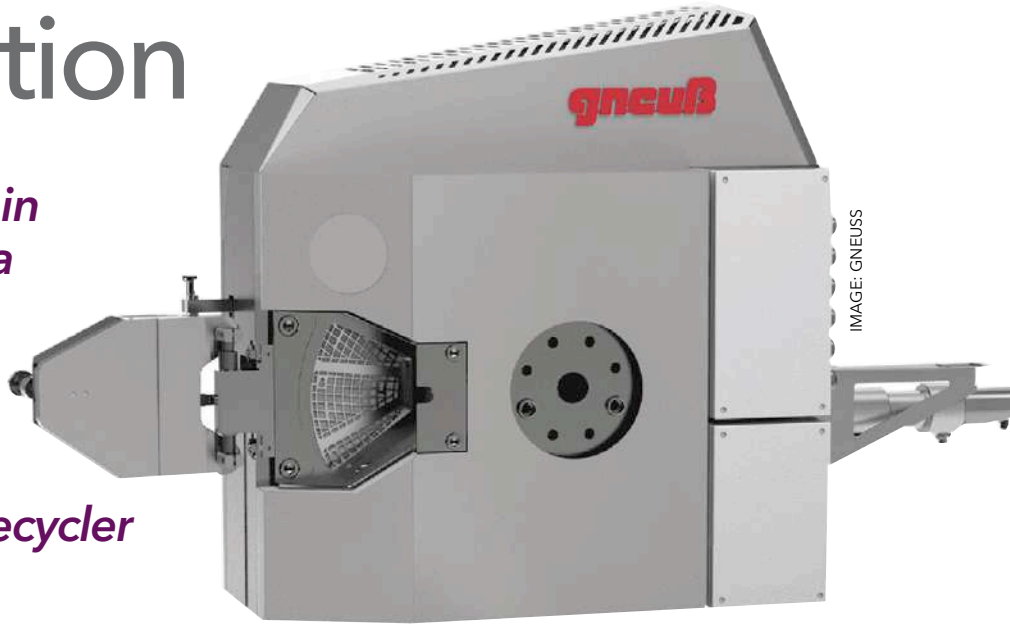

IMAGE: GNEUSS

Main image: A Spanish film recycling company has installed a Gneuss RSFgenius to raise product quality

The rise in demand for recycled material – especially for film and sheet products – has led to a corresponding increase in the importance of melt filtration. Ensuring that raw material is purged of contamination is critical in the production of high quality end products.

Gneuss has helped a Spanish film recycling company to raise product quality, by retrofitting one of its lines with a more efficient melt filtration system.

Llorens GMR – based in Barcelona – offers collection, preparation and reuse of industrial waste. It has several reprocessing and recycling lines, including a relatively new one for reprocessing post-industrial waste film from LDPE and LLDPE. However, the filtration fineness that could be achieved with its original equipment was unable to remove critical contaminants from the polymer.

Llorens decided to add an RSFgenius melt filtration system from Gneuss as a fine filter, to remove contaminants measuring 56-100 microns. It achieves this at constant melt pressure, ensuring that gels and black specks are removed. As a result, Llorens can use the material produced on this line for high-value cast and blown film applications. Its customers can then meet the legal requirement for recycling content – allowing them to manufacture high-quality film.

Gneuss systems can handle high melt pressures and materials with variable degrees of contamination. At the same time, they operate process constant and with a high level of automation. Exchange of the filter elements takes place under normal production conditions, without disturbing the process.

RSFgenius also has long intervals between filter element changes – with a minimum of back flushing material – thanks to its efficient, automatic self-cleaning system.

In recent years, the company has installed a large number of these systems onto LDPE/LLDPE recycling extrusion lines, for fine filtration. Gneuss can offer complete retrofit packages comprising a filtration system, melt pump – if necessary – and integrated control system to maintain ease of operation.

EPS recycling

Epsilyte, a US-based provider of insulative materials, has signed a strategic partnership with **Fimic** of Italy.

Fimic's equipment is used to filter recycled EPS, addressing the challenge of physical contamination and ensuring that the material meets the necessary purity and quality.

Fimic said there were several reasons for Epsilyte choosing it as a partner. One was the company's versatility in handling contamination. Fimic's equipment has shown versatility in handling varying types and levels of physical contamination – which is common in EPS recycling. This helps Epsilyte produce high-quality recycled materials. Fimic's technology also cuts the risk of damage to recycling equipment, helping Epsilyte to optimise operational efficiency and reduce downtime. ›

Right: Recycling of PE and PP are typical applications of Ettlinger's ERF 1000 continuous melt filter

Finally, Fimic helped maintain a reliable delivery schedule, aligning with Epsilyte's production needs.

"The collaboration with Fimic serves as a foundation of our improved capability to process a variety of recycled polystyrene," said DJ Harris, plant engineer at Epsilyte.

The company is now on the verge of acquiring its second Fimic machine.

Separate to this, Fimic recently installed two of its RAS-type filters on PET recycling lines processing highly contaminated PET waste. In both cases, contamination of the input material is as high as 5%, which it says is higher than the contamination previously expected for food grade applications. It defines these waste streams as "not coming from hot-washed bottle flakes only".

In the first project, its RAS filter is used as the first in two filtration steps where the applied filtration is 150 or 120 microns using a laser screen and achieves an output performance of 2,000 kg/h. In the second project, the RAS filter is the only filtration step in the application, where the applied filtration is 80 microns on a laser screen and achieves an output performance of 700 kg/h. Effective filtration maintains the high throughput even when the intrinsic value (IV) levels on the infeed material are different and inconsistent, the company says.

Boosting efficiency

PSI-Polymer Systems says that plastics converters can raise efficiency of their screen changers by using an enhancement such as its Super Plate.

Below: Epsilyte will use Fimic's filtration equipment to produce recycled EPS

Super Plate adds efficiency and life to screen packs by allowing better use of the surface area – which reduces screen replacement frequency and cost. The gain is achieved by lifting the screen pack away from the flat, solid surface of the breaker plate. A conventional breaker plate's open area is typically 50-55%, meaning that 45-50% of the screen rests on a solid surface. As a result, screen life diminishes as the small corresponding area over the breaker plate holes is blinded – and material must cross less clogged areas of the wire cloth to reach a through-hole.

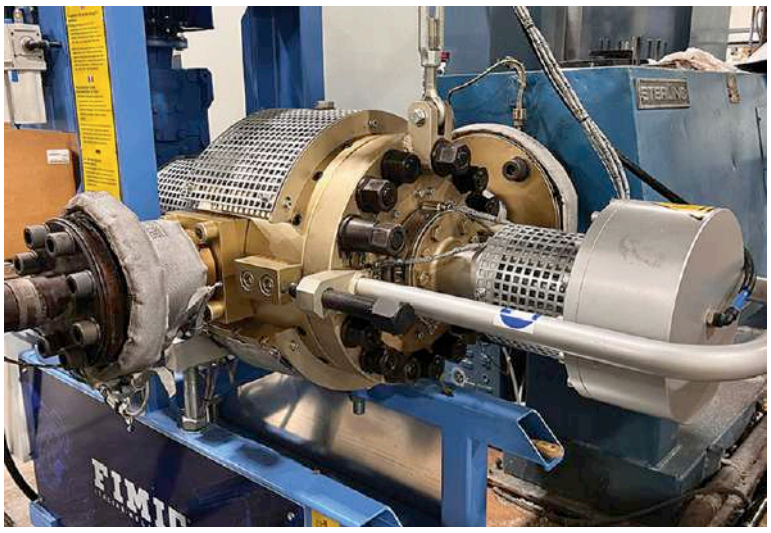

IMAGE: FIMIC

IMAGE: MAAG

Using a Super Plate exposes up to 95% of the screen to through-flow of the melt stream. This can yield a 30-55% gain in effective filtration area over a conventional design, it claims.

The Super Plate is a precision-manufactured grid of stainless-steel diamond-shaped blades, which are cross-welded to provide high strength and support.

Cost efficiency

Germany-based **Maag** says that high-performance melt filters – such as the ERF series from its **Ettlinger** subsidiary – can help to make more high quality recyclate available to converters.

The ERF 1000 – with its four rotating, perforated drums – can filter up to 10 tonnes of plastic melt per hour. Benefits include continuous operation in a stable process at consistent pressure and long operating times without filter changes. The very low melt loss – in the range of a just few percent – as well as the possibility of changing each drum individually and without interrupting production also contribute to high cost-efficiency.

Lower-throughput versions, such as ERF 350 (around 3,000 kg/h) and ERF 500 (up to 6,000 kg/h) are also available. All three sizes are energy-efficient and suitable for filtering common thermoplastics, including soft PVC. The proportion of contaminants can be up to 16%. In principle, ERF melt filters can be used on any extrusion line – either single- or twin-screw. Their compactness makes them suitable

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Right: The CMF-BF continuous piston screen changer from Britas includes a backflush function

for retrofitting on existing extrusion lines. Typical applications include recycling and sheet and film extrusion. In film recycling in particular, the finest mesh size of 60 microns can help achieve benchmark qualities, it says.

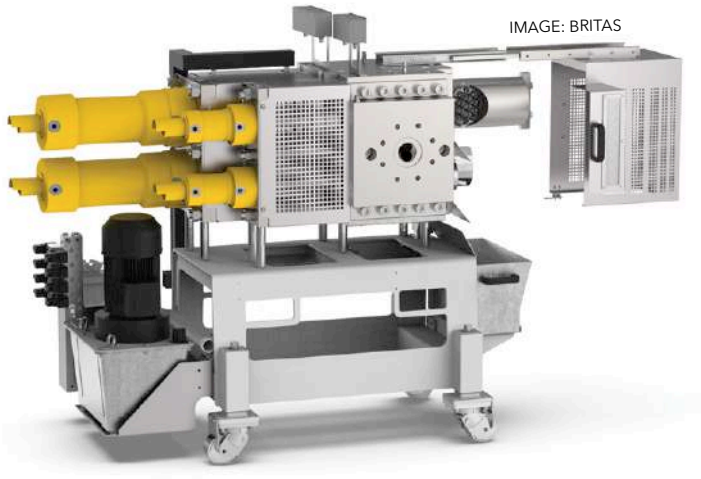
Backflush function

At the recent Fakuma exhibition in Germany, **Britas** exhibited its CMF-BF continuous piston screen changer with a backflush function.

The screen changer series includes four filter types – including both discontinuous and continuous types, which cover all customer needs. They are designed for recycling plastic waste with relatively low contamination. Piston screen changers are typically used in the post-industry and post-production sector as well as for virgin materials. Depending on the required throughputs and different operating modes, customers choose between the discontinuous version – which typically has one piston – rather than the continuous version, which has two pistons.

"Our unique backflush procedure has many advantages," said Heiko Henss, CEO of Britas Recycling Anlagen. "The loss of melt is considerably reduced, while the process is more efficient and quicker – meaning our customers save time and money."

IMAGE: BRITAS



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MASTERBATCH

Black grades cut GHGs

Cabot has launched its Replasblak circular black masterbatches with certified material.

It says the three new products are its first ISCC Plus-certified black masterbatch products. The grades – Replasblak rePE5475, rePE5265 and rePE5250 – are 100%, 70% and 60% circular black masterbatches, respectively.

The first claims to deliver more than a 60% greenhouse gas (GHG) reduction compared to a standard black masterbatch. It delivers medium tint strength, making it suitable for sheet extrusion applications. The second claims to reduce GHGs by nearly 50% and delivers high gloss and jet pigmentation in thermoplastics. The third claims to cut GHGs by nearly 50% and delivers high tint strength – so is suitable for sheet extrusion applications relevant to the automotive sector.

› **www.cabotcorp.com**

ADDITIVES

Alternative to pearlised BOPP

Void Technologies says its new voiding agents serve growing demand for recyclable opaque films.

Its VO+ PE 1300 series can be used to make voided polyethylene (PE) film structures that are compatible with existing PE recycling streams and meet the needs for a range of recycle-ready packaging applications.

The series is being used to develop voided machine direction oriented (MDO) HDPE films that combine low density and high opacity – which it says is not feasible with mineral pigments such as TiO_2.

VO+ PE 1300 offers a PE alternative to pearlised BOPP, says the company.

"We are seeing strong demand for this new product because it enables the recycle-ready packaging designs that brand owners and converters are seeking," said James Gibson, CEO of Void Technologies.

› **www.voidtechnologies.com**

POLYSTYRENE

Styrenics help to build a future

Italy-based EdilPlast has used styrenic polymers from Ineos Styrolution in a new range of building products.

Cover Innovation is a new roofing sheet solution that uses Luran S Eco – a sustainable material from Ineos Styrolution.

"This has allowed us to reduce our ecological footprint by using sustainable materials in our production," said Giulio Mantelli, president of EdilPlast's parent company, First Corporation. "The new material has proven to be an optimal solution for products exposed to atmospheric agents."

IMAGE: INEOS STYROLUTION

Luran S is an acrylonitrile styrene acrylate (ASA) polymer that offers long-term performance when exposed to UV light and heat. Its low maintenance and high weather resistance make it an ideal material for many outdoor applications.

It can be mixed with PVC – or used to cover it – for applications such as roof tiles, gutters and drain down pipes. The company says that Luran S Eco is its first sustainable ASA solution – with up to 39% lower carbon footprint. Using these materials will help EdilPlast to raise its use of bio-attributed raw materials from 30% to 50%.

› **www.ineos-styrolution.com**

BIOPLASTICS

Bio-based raw materials for sustainable packaging

Neste and Mitsui Chemicals have used bio-based materials to make more sustainable food packaging solutions for Co-op, a brand of the Japanese Consumers Co-operative Union (JCCU).

In the first phase of the collaboration, bio-based raw materials will replace their fossil equivalents to make packaging for a seaweed snack. In future, the companies intend to use the packaging for other products.

Neste supplies its Neste RE, a polymer feedstock for made from bio-based raw materials. Through Mitsui Chemicals, the feedstock is processed into renewable polypropylene (PP) – under the brand name Prasus – then turned into food packaging for JCCU.

› **www.neste.com**

› **https://jp.mitsuichemicals.com/en/**

GRINDING

Wet system for film recycling

Hellweg Maschinenbau introduced its wet grinder – with a forced feed system for film recycling – at this year's Fakuma.

Its new drive concept uses low-power motors rated from 45 kW to 110 kW. These enable low power consumption of the order of 70-90 kWh. This ensures low operating costs – which are further reduced by high throughputs of up to 5,000 kg of film per hour, says the company.

Films in various materials – including PET and LDPE – are force-fed to the grinders using tamping screws, which means smooth operation even with contaminated input materials. Depending on the version, the grinders are fitted with five or seven rotary blades plus two or three static blades.

The blades use double scissor-cut technology which helps to raise cut quality and allow dust-free operation. As a result, the shredding process produces optimum quality flakes with even particle size distribution and geometry.

› **www.hellweg-maschinenbau.de**

SENSORS

Monitoring dosing flow

Woywod has introduced a flow sensor that uses ultrasonic waves to monitor – in real time – whether the screw of a dosing unit is conveying material to the target area.

IMAGE: WOYWOD

Volumetric and gravimetric dosing equipment can encounter conditions that prevent material from being discharged from the dosing unit, such as bridging of material in the storage hopper.

Even when using gravimetric routines, there is a variable time offset due to causality checks of the measured values in the gravimetric measurement routines. It can take several minutes before finding that no material is being discharged – and an error is displayed via the control. This can have serious consequences in the production process, says the company.

As an example, the short-term non-dosing of an additive such as a catalyst, UV stabiliser or blowing agent could create problems. To avoid such complications in advance, the material flow sensor is the ideal solution for intensive, fast monitoring of material flow, says Woywod.

› **www.woywod.de**

CPP FILM

Moving into film production

South Korean packaging manufacturer JaeKwang has begun producing its own film for the first time – using a five-layer CPP line from Reifenhäuser.

Last year, the company installed the line. It has an output of 1300kg/h.

"We are keen to take on as many steps as possible in the manufacturing process ourselves," said Hong-Soo Kang, CEO at JaeKwang.

The companies ensured that the CPP machine was tailored to meet the needs of the end product.

› **www.reifenhauser.com**

THERMOFORMING

Faster production, same size

Kiefel recently launched its new Speedformer KMD 78.2 Premium steel rule cutting machine for the production of thermoformed packaging.

The company says that the new model is faster and more precise than its predecessor, the KMD 78.1.

"It not only has improved performance capabilities but also enables fast and simple tool change – making it easy to switch film between production runs and increasing machine utilisation," said Armin Dietrich, global director of polymer packaging at Kiefel.

› **www.kiefel.com**

IMAGE: KIEFEL

Download these new product brochures

Simply click on the brochure cover or link to download a PDF to your PC or smartphone

DIING KUEN: BLOWN FILM

In this brochure, Taiwan-based Diing Kuen provides all the specifications of its blown film technology to produce mono, two three, five and seven layers.. The film lines are divided into four categories: HTRL horizontal top rotating; EBLR vertical top rotating; BFL fixed; and other types.

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AMUT: FOIL EXTRUSION LINES

Built on more than 50 years of plastics expertise, Amut's range of extrusion lines for production of foil and sheet covers a broad range of applications. They can produce mono or multi-layer sheet as thin as 150 microns and as wide as 3.3m at rates up to 4 tonnes/hr or more.

❯ CLICK HERE TO DOWNLOAD

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.

❯ CLICK HERE TO DOWNLOAD

BRUCKNER: BOPP/BOPE FILMS

Brückner Maschinenbau says its BOPP/BOPE film lines offer benefits including high stiffness and sealing strength, excellent transparent barrier, outstanding puncture resistance and linear tear opening behaviour. Find out more in this brochure.

❯ CLICK HERE TO DOWNLOAD

HAN KING

Han King, based in Taiwan, has produced this brochure outlining its machines for blown film extrusion, covering five-layer film, three-layer co-extruded film, agricultural film, geomembranes; plus other products in stretch hood, lamination and bags.

❯ CLICK HERE TO DOWNLOAD

VAN MEEUWEN: ADDITIVES

Van Meeuwen's functional additive range for plastics film and sheet producers includes anti-blocks, anti-statics, anti-fogs and specialty fluids. Suitable for plastic packaging applications, products comply with EU food contact regulations.

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

Vina Aus Labels

Head office:	Ho Chi Minh City, Vietnam
Chairman:	Lam Chi Thien
Founded:	2006
Ownership:	Private
Annual sales:	Around US$55 million
Employees:	Around 1200
Profile:	Vina Aus Labels, founded in 2006, is a manufacturer of labels and flexible packaging. It supplies a number of industries including food and beverage, pharmaceuticals, agriculture, household and cosmetics. The company has two divisions – in the north and south of the country. As well as expertise in multi-layer blown film, it also has extensive experience in printing – especially in rotogravure.
Product lines:	The company's range of products includes shrink sleeve labels, wrap-around labels and shrink film. It also produces metallised and aluminium foil labels. It is a major supplier of labels to the Vietnamese brewing sector, as well as exporting to major brand owners in neighbouring countries. Overall, its three sites have an annual capacity of 25 billion labels, 13bn shrink and wrap-around labels, 12bn foil or metallised labels, 4,500 tonnes of blown PVC film and 4,800 tonnes of blown PE film.
Factory locations:	The company has three production plants in Vietnam. In Hanoi, it carries out printing and lamination. In Dong Nai, it has converting, printing and laminating capacity. Finally, in Ho Chi Minh City, it produces blown film. Products include PVC and PE shrink film, as well as LLDPE for lamination.

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

Film and Sheet EXTRUSION FORTHCOMING FEATURES

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

January/February 2024
Bioplastics
Polyolefins for film/sheet
Materials testing/quality control
Medical materials/applications

March 2024
Thermoforming
Additives for film
Control and instrumentation
Barrier films

Editorial submissions should be sent to Lou Reade: lou.reade@amiplastics.com
For information on advertising in these issues, please contact:
Claire Bishop: claire.bishop@amiplastics.com Tel: +44 (0)1732 682948

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Film and Sheet November 2023
The November issue of Film and Sheet Extrusion has a cover feature reporting on recent construction applications for film and sheet, plus other features on advances in thin-wall packaging, sheet developments and the R-Cycle digital passport scheme.

› CLICK HERE TO VIEW

Film and Sheet October 2023
The October 2023 issue of Film and Sheet Extrusion magazine includes feature articles on recycling/ granulation, extruder developments, biaxial film and mineral fillers. There is also a preview of exhibitors at PEWE North America.

› CLICK HERE TO VIEW

Compounding World December 2023
The December2023 issue of Compounding World provides in-depth features on the latest developments in flame retardants, anticounterfeiting taggants, lab compounders, and purging compounds, along with news from the global compounding industry.

› CLICK HERE TO VIEW

Plastics Recycling World November/December 2023
The November/December edition of Plastics Recycling World looks at how colour can play a part in transforming post-consumer recycled plastics. This issue also explores some of the latest innovations in recycling of PET and reviews developments in inline monitoring.

› CLICK HERE TO VIEW

Pipe and Profile November/December 2023
Pipe and Profile Extrusion's November-December 2023 edition has a front cover feature looking at wood-plastic composites in an expanding number of application areas, while other features are about pipe joining, mixing technology and dealing with extruder wear.

› CLICK HERE TO VIEW

Injection World November/December 2023
The November-December 2023 issue of Injection World has a cover feature on how hot runner technologies raise the performance bar, plus features on foam moulding, new automotive applications, and a look-back at Fakuma 2023.

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

GLOBAL EXHIBITION GUIDE

2024

4-6 March	Plast-Alger, Algiers, Algeria	www.plastalger.com
13-15 March	Plastics & Rubber Vietnam, Ho Chi Minh City, Vietnam	https://plasticsvietnam.com
23-26 April	Chinaplas 2024, Shanghai, China	www.chinaplasonline.com
6-10 May	NPE 2024	www.npe.org
21-24 May	Plastpol, Kielce, Poland	www.targikielce.pl/en/plastpol
4-7 June	FIP, Lyon, France	www.f-i-p.com
11-12 September	Plastics Extrusion World Expo Europe, Brussels, Belgium	https://eu.extrusion-expo.com
23-27 September	Colombiaplast, Bogota, Colombia	https://colombiaplast.org/en
24-26 September	Fachpack, Nuremburg, Germany	www.fachpack.de
24-28 September	Taipeiplas, Taipei, Taiwan	https://www.taipeiplas.com.tw/en/index.html
8-10 October	Plastprintpack West Africa, Abidjan, Ivory Coast	www.ppp-westafrica.com

AMI CONFERENCES

12-14 February 2024	Polyethylene Films, Tampa, USA
27-28 February 2024	Stretch and Shrink Film Asia, Bangkok, Thailand
28-29 February 2024	Specialty Packaging Films Asia, Bangkok, Thailand
12-13 March 2024	Agricultural Film Europe, Barcelona, Spain
23-24 April 2024	Innovations in Pouches, Barcelona, Spain
23-25 April 2024	Stretch & Shrink Film Europe, Valencia, Spain
14-15 May 2024	Masterbatch Europe, Vienna, Austria
24-26 June 2024	Rigid Packaging North America, Cincinnati, USA
25-26 June 2024	Multilayer Flexible Packaging North America, Chicago, USA
23-24 July 2024	Agricultural Film North America, Tampa, USA

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

www.amiplastics.com

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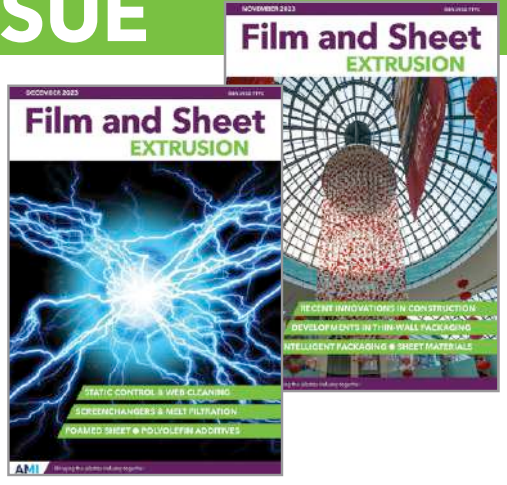

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