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Lantero Brazil plant puts rigid and flexible packaging under one roof

Grupo Lantero's two plastics divisions - Coexpan and Emsur - have set up shop together for the first time, in a joint manufacturing operation in Brazil.

The new operation brings together Coexpan's expertise in rigid sheet and thermoformed products,

and Emsur's in flexible packaging.

The facility, in Jundiaí (Sao Paulo) was previously a Coexpan plant, but will now be expanded into a shared operation. It is currently about 7,000 sq m in size, but its capacity could be doubled in future, says the

company.

Output will include both rigid and flexible packaging, including PS and PP extruded barrier sheets for FFS, rotogravure printing for labels, and sleeves.

Daniel Richena, general manager of Coexpan-Emsur Brasil, said: "Brazil is the first

manufacturing site of Grupo Lantero to produce rigid plastic sheets and flexible products under the same roof."

Together, the two divisions employ more than 1700 people, and have more than 20 plants worldwide'

► www.coexpan-emsur.com

Biaxplen adds metallisation in Tomsk

Russian BOPP producer Biaxplen - a subsidiary of Sibur - has installed a 5,000 tonnes/year metallisation unit at its plant in Tomsk.

The machine, which Biaxplen says is the only one of its kind in the Urals, coats the film with an aluminium nanolayer using vacuum deposition.

The new unit will cater to the local region's growing demand for quality packaging, says the company.

"This strengthens the competitive advantage of the Tomsk business and adds



Biaxplen has installed a new metallisation unit in Tomsk

high value-added products to its range of grades," said Victor Lushnikov, executive

director at the site.

In addition, the supply of Tomsk-manufactured

metallised films to Siberia and neighbouring regions will redirect similar grades - produced at other sites - to the European part of Russia and EU countries.

Dimitry Povervit, head of Biaxplen's production capacity upgrade, improvement and streamlining function, added: "This is our most powerful and efficient film metallisation unit, with an upgraded design based on the knowledge and experience gained at our other production sites."

► www.sibur.ru

EU project diverts packaging away from landfill



Recypack will divert 57,000 tonnes of packaging waste from landfill each year, says Aimplas

Aimplas of Spain says the Life Recypack project - which it coordinates - will divert 57,000 tonnes of commercial plastic packaging away from landfill every year.

The waste will instead be collected and recycled, and used to make new products.

"The current management of commercial plastic waste in the European Union does not meet the circular economy criteria," said Aimplas. "In 2013, member states

generated more than 1m tonnes - of which 95% was landfilled."

The project will implement four pilot schemes - in Spain and Italy - to separate commercial packaging waste made of polyethylene and expanded polystyrene. At the same time, it will run two recycling schemes in Spain and Hungary.

Once the project is finished, the experience will be repeated in another 250 cities.

► www.aimplas.es

Amaplast: Italy machinery exports continue to rise

Exports of Italian machinery are rising, according to trade association Amaplast.

In the first three quarters of 2017, they rose by nearly 16%, while imports for the same period rose by 12%.

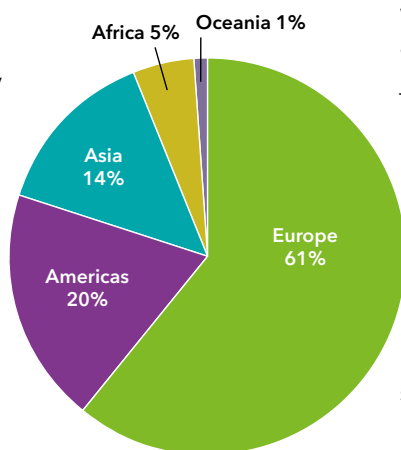
Amaplast estimates that full-year sales will rise by more than 6% to reach €4.5bn – a new all-time high. Exports for the full period are expected to rise around 8% to €3.2bn.

In terms of machine types, there was strong foreign demand for extrusion lines (up 19%), flexographic printers (up 27%) and thermoforming machines (up 51%) – though demand for mono/multi-filament and foaming machines fell, said Amaplast.

Exports of moulds and tools – which represent around one-third of the total – rose by 18% during the period.

Sales within Europe grew by 20%, while sales to Russia more than doubled. Strong

Italian exports by area, January-September 2017



Source: Amaplast/ISTAT foreign trade data

sales to Brazil (up 73%) helped lift performance in the Americas, though there was only modest growth in Nafta countries, due mainly to a reduction in demand from Mexico. Overall, the Americas account for one-fifth of Italy's machinery exports.

Sales to the Far East grew by a relatively modest 4% – with China down 11%

– while Saudi Arabia (-34%) and Iran (-5%) were also weak. Sales to India were almost flat, seeing a rise of just 1%.

"The success of Italian machinery manufacturers is the result of the technological innovation offered to their customers, providing original, optimal solutions for production, recovery and recycling," said Alessandro Grassi, president of Amaplast.

In parallel with rising imports and exports, domestic sales are expected to rise by around 4%, to reach €2.2bn.

"We can look forward to a new record in production and exports at year end," said Grassi.

Member companies also have confidence, he said: Amaplast's end-of-year survey revealed that 55% of respondents expecting improved full-year results (compared to 2016).

➤ www.amaplast.org

Bandera supplies PET line to S Korea

Bandera has supplied a fourth PET rigid film extrusion line to a converter in South Korea.

The new line, which will start up in the spring, has a maximum output of 1200kg/h of co-extruded film, for food packaging and technical applications.

It is based on a double twin-screw extruder, and includes vacuum venting systems and superfiltration – allowing the processing of recycled raw materials.

It also includes an automatic extrusion flat die from Cloeren, as well as a horizontal cooling and polishing roller stack with motorized cross-axis system for thin film processing, and in-line film lamination system.

➤ www.luigibandera.com

➤ www.cloeren.com

Reifenhäuser adds die expertise with EDS

Reifenhäuser of Germany has acquired flat die specialist EDS.

EDS will become a separate independent business unit within Reifenhäuser.

"EDS and Reifenhäuser complement one another when it comes to design and production expertise," says Bernd Reifenhäuser, chair of the management board. "Both have a reputation for close and responsible collaboration with their customers."

Johannes Müller, the previous owner of EDS, will continue to run the

company together with Uwe Gaedike – director of operations at Reifenhäuser who is also responsible for developing its components business.

"This take-over perfectly complements our existing expertise in die production," said Gaedike. "This take-over perfectly complements our existing expertise in die production. Besides machine manufacture, we are positioning ourselves as a leading technological component provider for extruders and dies."

➤ www.reifenhauer.com



Johannes Müller (left) will stay with Reifenhäuser to help run EDS as a separate business unit



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Cosmo adds CPP line as it boosts sales volume

Cosmo Films of India has commissioned a second cast polypropylene (CPP) line – and a fourth metalliser – at its plant in Karjan, near Vadodara.

Both machines have an annual capacity of 7,500 tonnes. The installation takes the company's annual CPP films capacity from 1,800 to 9,300 tonnes/year, and that of metallised films from 15,000 to 22,500 tonnes/year.

The 2.85m CPP line will produce five-layer speciality films – especially barrier

films – for various packaging applications. The corresponding metalliser includes advanced control monitoring and closed loop auto deposition control.

"Apart from being a focussed BOPP player, we have made significant efforts to become a complete film solution provider," said Pankaj Poddar, CEO of Cosmo Films.

■ The company posted a sales increase of 33% for the third quarter of the year, which ended on 31 December 2017. This was partly due

to having a 90% capacity utilisation on a new BOPP line commissioned last year.

However, profitability for the period (in the form of EBITDA) remained unchanged.

For the year to date, sales were up 22%.

"BOPP film margins saw high volatility during the quarter, with some stability returning in December," said Poddar. "We remain focused on speciality and export sales to ensure full utilisation of our lines."

➤ www.cosmofilms.com

Tarkett spends in US and EU

Flooring specialist Tarkett is to invest €70 million, over the next three years to expand its luxury vinyl tiles business.

In the USA, it will invest around €50 million (\$60 million) to increase production capacity at two manufacturing facilities based in Florence (Alabama), as well as building a new distribution centre. Together, this is expected to create around 50 new jobs.

In Europe, the company will invest more than €20m at manufacturing facilities in Luxembourg and Poland.

"These investments will further enhance our strong position in the European vinyl tiles market," said Fabrice Barthélemy, president of Tarkett EMEA.

➤ www.tarkett.com

EU unveils strategy for plastics

The European Commission has unveiled its new **Plastics Strategy** to tackle plastics pollution, setting a target of making all plastics packaging "recyclable" by 2030.

The strategy includes a commitment to define design for recyclability. It also proposes measures to tackle marine waste from

shipping and fishing, as well as land-generated pollution such as micro-beads.

While the prime focus is on single-use plastics products designed, produced, used and recycled in the EU, the strategy also commits to supporting environmental projects in developing countries.

German plastics packagers optimistic

The German Plastics Packaging Industry Association (IK) has surveyed its members on their outlook for 2018 and mostly found them to be optimistic. In the medium term, however, the industry fears "locational disadvantages".

Around 90% of companies questioned consider the current economic situation to be "good", compared with 70% at the start of 2017. Expectations for sales in the first quarter are also up, although expectations for exports are much the same. Almost 60% expect higher raw materials prices, potentially affecting their prices, and the profit



German firms expect higher polymer prices

situation "remains tense".

"This promising forecast should not obscure the fact that Germany as an economic location is faced with growing threats," said Ulf Kelterborn,

General Manager of IK. These include high electricity costs, and an effective tax burden in Germany of over 28%, compared with recent corporate tax cuts in the US and potentially in China.

The association also fears an increasing shortage of skills and shortfalls in the spatial and digital infrastructure, which could hinder growth even more than expected. Reflecting continuing uncertainty after recent elections in Germany, it called for a "viable government" to make "forward-looking decisions in this area as soon as possible".

➤ www.kunststoffverpackung.de



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Plastic machinery sales maintain strong growth in N America

North American plastics machinery sales showed strong growth in the third quarter of last year, according to the Plastics Industry Association's Committee on Equipment Statistics (CES).

Year-on-year growth exceeded 20% compared with the same period in 2016 - to reach nearly \$351 million. This was also a 4% increase in sales compared to Q2 of 2017.

"After hitting a plateau in the second half of 2016, the upward trend in the shipments data re-emerged in the third quarter of 2017," said Bill Wood, the economist who puts the figures together. "Quarterly gains of 20% will not be sustained going forward, but the plastics industry is entering the New Year with more momentum than it did a year ago."

Sales of single-screw extruders fell by 2%, while those of twin-screw extruders - including both co-rotating and counter-rotating machines - rose by 61%. In comparison, sales of injection moulding machines rose 21% during the period.

Demand for ancillary equipment was also strong in the third quarter according to CES estimates, though a direct comparison was not possible due to a change in the number of reporting companies.

These positive results were mirrored by two other sets of data: data from the Census Bureau revealed a growth of 8% in the value of new orders of US industrial machinery; and, figures from the Bureau of Economic Analysis showed that business investment in industrial equipment increased 7.6% in Q3 of 2017, compared to the previous year.

The CES also conducts a quarterly survey of machinery suppliers. In the latest survey, 87% of respondents expect market conditions to hold steady or improve during the next year - up slightly from 86% in Q2.

Survey respondents expect packaging to be the strongest end-market in the coming year. The outlook for demand from the electronics sector also improved.

➤ www.plasticsindustry.org

China remains leading plastics machinery exporter to India

China remains the leading exporter of plastics machinery to India.

According to figures from VDMA, the German trade association, China accounted for almost 31% of India's €749m of imports of plastics processing machinery

in 2016. Germany itself accounted for nearly 24% of the market. Other leading players include Japan, Taiwan and Italy (all above 7%). Although sales from the USA were around half this level, they grew by nearly 75% in 2016.

Full-year figures for 2017 are not yet

available, but VDMA says that German sales to India for the first nine months of the year fell by more than 4% in comparison with the same period in 2016, to reach around €129m.

The figures were released ahead of the PlastIndia show.

➤ <http://plastics.vdma.org>

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AMI launches Extrusion Expo in the USA

The event will be co-located with the company's compounding and recycling events at the Huntington Convention Center in Cleveland

AMI has announced plans to hold its first Extrusion Expo in Cleveland, Ohio, USA on 8-9 May 2019. The free-to-attend exhibition will be supported by AMI's *Film and Sheet Extrusion* and *Pipe and Profile Extrusion* magazines, which will each host focused conference theatres featuring business debates, practical seminars and technical presentations. These will also have free access for exhibition visitors.

The Extrusion Expo 2019 will take place alongside the Compounding World Expo 2019 and the Recycling World Expo 2019 in Halls B and C of the state-of-the-art Huntington Convention Center in downtown Cleveland. The exhibitions are expected to attract over 200 exhibitors and will feature a total of five free-to-attend conference theatres with more than 100 speakers over the two days. There will also be a networking party for attendees and exhibitors at Cleveland's iconic Rock and Roll Hall of Fame on the evening of 8 May.

Kelly DeFino, events team manager at AMI's US offices in Pennsylvania said: "We selected Cleveland as the ideal location for the exhibitions because of its

easy accessibility for huge numbers of plastics extruders, compounders and recyclers. It also boasts modern convention facilities with an excellent choice of hotels, restaurants and entertainment options very close by in the city's revitalised downtown."

More than 30 companies have already reserved stands at the Cleveland event, including: Aaron Equipment; Aesse; B&P Littleford; Brabender; Cathay Industries; Chemours; CPM Extrusion Group; Dr Collin; Econ; Entek Extruders; Entex; Ferro; Fortune International Technology; Intertek; JSW; Kaneka; M Holland; Mixaco; Modern Dispersions (MDI); NFM; OCSiAl; Omya; Perry Videx; Piovan; Shamrock; Sikora; Toyota Tsusho; TPEI; Vertellus; Welset; Zeppelin; and Zoltek.

Andy Beevers, director of events and magazines at



The Extrusion Expo 2019 will take place at the Huntington Convention Center in downtown Cleveland

AMI, said: "There has been an extremely positive response to our first focused exhibitions for the plastics compounding and recycling industries, which we are holding in Essen, Germany this June. We have subsequently received numerous requests for similar free-to-attend shows in North America. Adding the Extrusion Expo to the Cleveland event made perfect sense given the substantial crossover between the different markets, plus AMI has a track record of running conferences for the extrusion sectors in North America."

AMI has a broad portfolio of successful conferences for the extrusion and compounding industries in the USA, attracting thousands of paying delegates each year. These include: Polyethylene Films; Multi-layer Flexible Packaging;

Stretch and Shrink Film; Medical Fluid Bags; Thin Wall Packaging; Polymers in Flooring; Profiles; Medical Tubing; Compounding World Forum; Fire Retardants in Plastics; Polymers in Cables; Performance Polyamides; PVC Formulation; Conductive Plastics; and Polymer Foam.

Levent Tounjer, sales manager at AMI explained: "This event will deliver real value for both visitors and exhibitors alike. Visitors will benefit from free focused conference sessions compiled by AMI's highly experienced editors, consultants and programme producers, plus they will be able to visit leading suppliers in the adjacent exhibitions focused on their particular sectors of the industry. For exhibitors, it will be very cost-effective and time-efficient way to meet large audiences from their specific target markets."

The Extrusion Expo will be relevant for anyone involved in the production and application of thermo-plastic films, sheets, laminates, pipes, profiles and tubing. For more information on exhibiting at the Extrusion Expo 2019, visit:

➤ www.extrusion-expo.com/na



A networking party will be held at Cleveland's music museum, the Rock and Roll Hall of Fame

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Searching for green precursors



Researchers are using everything from urban waste to milk proteins as potential sources of new bioplastics. Lou Reade reports

While petrochemical stocks show no sign of running out - and production of conventional plastics continues to rise - researchers continue to focus on alternative feedstocks for plastics, with many of them focusing on using 'waste' products.

A good example is **RES Urbis**, a three-year project funded by the European Union that aims to convert urban waste into bio-based products - including PHA, a biodegradable plastic that is seeing increasing use.

The project aims to make the products in a single biowaste refinery.

Urban bio-waste includes the organic fraction of municipal solid waste, excess sludge from urban wastewater treatment, and some waste from the food processing industry.

Products made using the process include PHA, but includes related materials such as solvents used in PHA processing, and fibres that could be used to make PHA biocomposites.

"Economic analysis will be based on a portfolio of PHA-based bioplastics, which will be produced at pilot scale and tested for applications including biodegradable commodity film and packaging interlayer film," said the project organisers.

The project - which runs for another two years - is coordinated by the Sapienza University of Rome,

and includes 21 other partners from across Europe.

Bran new material

Other materials are also ripe for exploitation. Wheat bran - most commonly used to feed livestock - could soon prove to be a key precursor in the production of plastic packaging.

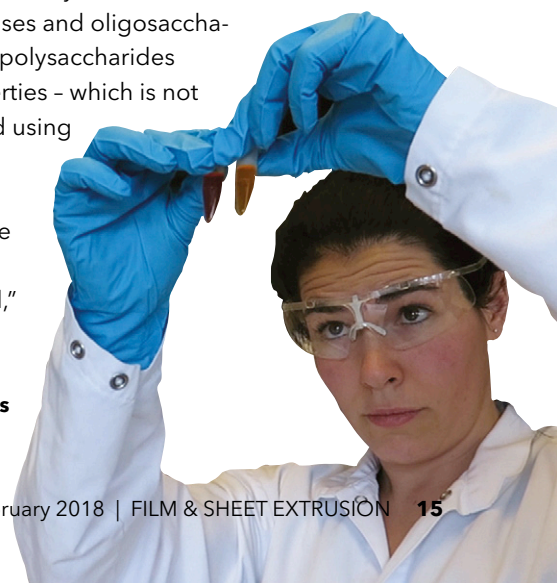
Researchers at **KTH Royal Institute of Technology** in Stockholm, Sweden, have developed a process to extract valuable bio-molecules from this part of the grain, with a view to using it as a raw material.

The extraction process uses high pressure hot water, and carbohydrate-active enzymes to harvest the wheat bran's hemi-celluloses and oligosaccharides. Using this process, the polysaccharides retain their antioxidant properties - which is not the case if they are processed using ordinary alkaline extraction.

"In bran and other cereal tissues, the hemicelluloses are difficult to extract because they're tightly interconnected,"

Right: KTH has developed a process to extract biomolecules from wheat bran

Main image: VTT has developed cellulose packaging that combines compostability with a high barrier



Right: Aimplas will validate the industrial applications of new compounds of PEF - a potential alternative to PET

said Francisco Vilaplana, associate professor in glycoscience at KTH. "One way to do it is with alkaline, but that also destroys the part of the molecule that gives it its antioxidant functions. Here, the researchers used a cascade approach - where they first extracted the hemicelluloses in polymer form, then used the enzymes to selectively tackle the 'un-extractable' residue.

"In this way we maximise total yields of valuable biomolecules from the bran," he said.

The group is studying possible applications for these biopolymers, including active food packaging films. The research was reported in the journal *Green Chemistry*.

Cellulose barrier

VTT of Finland has developed a cellulose-based packaging material that combines compostability with high barrier performance.

The material combines different grades of cellulose, which have different - but complementary - properties. It is suitable for dry and greasy products, such as nuts, cereals, coffee, condiments and raisins, but can also be used for products that require a long shelf life.

The packaging, which can be heat-sealed, protects the product from atmospheric gases and humidity while forming a barrier against the grease or mineral oil in the product.

"By optimising the layer structure, we can improve the technical properties and reduce the amount of materials used," said Ali Harlin, research professor at VTT.

He said that, if the package was made of a single

Right: The Recubio project will create biodegradable flexible multilayer structures for food packaging



cellulose-based material, it would be very thick and heavy. He estimates that the material can be commercialised in three to five years.

In the commercialisation phase, the amount of packaging being produced will affect the price of the material. The use of material must also be economically feasible.

The technology was presented at the recent Davis World Economic Forum - and was one of five winners of a \$1m prize from the Ellen MacArthur Foundation, aimed at solving the problem of microplastics in the sea.

PET alternative

Aimplas, the Spanish plastics research centre, is a member of the pan-European EnzOx2 project, which is investigating new technologies to obtain chemical compounds from biomass.

One of the applications of the substances obtained will be the manufacturing of PEF derivatives - a renewable substitute for conventional PET.

During the three-year project, the partners - under the coordination of the Spanish National Research Council (CSIC) - will develop new bio-chemical technologies using oxidative enzymes. Their aim is to produce high added value products from biomass - as an alternative to petrochemical-based raw materials.

Specifically, it is expected to obtain 2, 5-furandicarboxylic acid, a building block for a new plastic called PEF - which can be used as a substitute for PET.

Aimplas will be responsible for validating the industrial applications of new compounds and its features as a monomer in the formulation of a PET alternative.

The EnzOx2 project will also look to obtain of flavour and fragrance compounds, as well as pharmaceutical ingredients, by selective hydroxylation of plant lipids.



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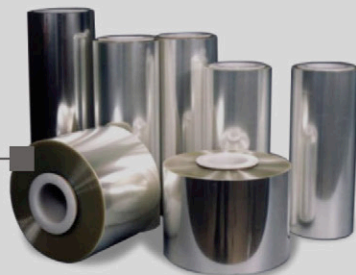
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Better breathability for PLA

NatureWorks has developed a durable hydrophilic formulation of its Ingeo PLA that improves skin health in hygiene applications such as diapers - by improving fluid management and breathability.

In diapers, the combination of custom surface treatments with Ingeo-based nonwoven fabric for the topsheet can reduce the use of super absorbent polymer (SAP) or pulp by up to 30%, allowing the creation of

thinner products.

"This innovative technology delivers higher performance than polypropylene in fluid management metrics that are key to delivering superior skin health," said Aman Kulshrestha, principal scientist at NatureWorks.

Benefits of the system include: a surface energy that can be tailored using topical treatments; improved permanence and durability, which

reduces the amount of topical treatment needed; higher breathability, thanks to Ingeo's high water vapour transmission rate; and ease of manufacture.

The formulation helps to prolong hygiene product shelf life. Also, melt spinning and calendering optimisation studies identified fabric improvements to improve softness, tensile strength and elongation.

➤ www.natureworkslc.com

Biodegradable barrier

Aimplas is involved in a separate research project in Spain, which is looking to create biodegradable flexible multilayer structures for use in medium-barrier food packaging.

The Recubio project, led by **Plásticos Romero** and Aimplas, will look at how to overcome the problem of recycling complex, multi-layer structures - which often use a range of different plastic materials and adhesives.

Plásticos Romero, which makes plastic films using blown film extrusion, printing and lamination, has developed a sustainable alternative to traditional structures that it says is technically feasible and overcomes the typical limitation of biodegradable materials - a poor barrier to gases such as oxygen and water vapour.

In the project, a coating has been applied to a biodegradable PLA film to give it the required barrier properties

The final complex structure is formed by this coated film, which has later been laminated with a three-layer structure that provides rigidity and sealability to the final packaging - and will also protect the barrier coating.

Below: Lactips has won funding to turn milk protein into plastic

Milk source

Meanwhile, French company **Lactips** says that its bioplastics project, Ecolactifilm, has attracted funding of €1.5m from the European Union's H2020 SME phase 2 programme.

The company produces water-soluble and biodegradable thermoplastic pellets from casein, a protein found in milk. The material, called Ecolactifilm and can be used in water-soluble or edible packaging.

Lactips said the funding would allow it to expand from 20 to 30 staff, and generate a turnover of €20m (\$24m) by 2020, according to a report in *Dairy Reporter*.

The process begins by making pellets of the material, which can then be extruded into film. The company says that its first application will be to make a dissolvable film for dishwasher tablets.

The material will biodegrade in less than three weeks, says the company. In addition, it has an oxygen barrier and can support printing.

Welding strength

Researchers at **Iowa State University** have characterised the weld strength of PLA plastic films.

At last year's Antec conference, David Grewell of the department of agricultural and biosystems engineering presented results of the research - which also involved Dukane Ultrasonics and Branson Ultrasonics.

"A characterisation of the mechanical properties of PLA was completed with a tensile test to determine which welding parameters were the most influential on the material strength," said Grewell.

For impulse welding of PLA film, the most important factors that affected weld strength were heating time and temperature, he said. The researchers also calculated interfacial healing activation energy in order to predict interfacial healing. ➤





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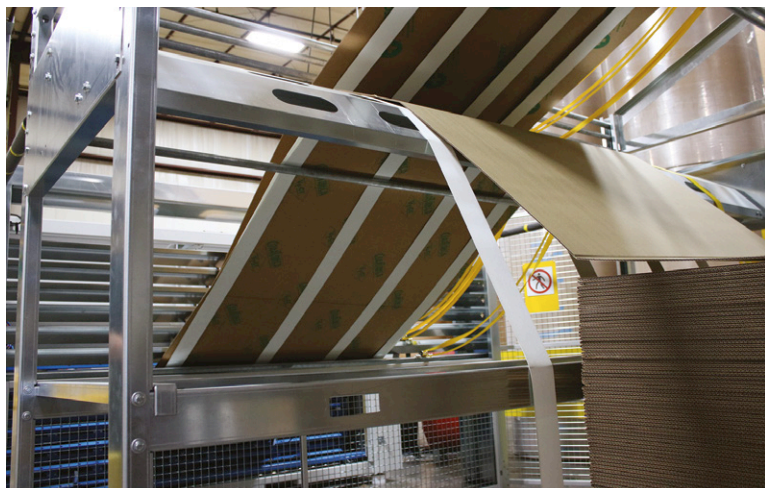
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Above:
Biocompack
will raise
awareness of
biodegradable
plastics with
manufacturers
of paper
packaging

Ingeo 4032D, a film grade PLA from Nature-Works, was used to make biaxially oriented films - which were then joined using impulse welding, and tested.

One characteristic the researchers calculated was the 'weld factor' - defined as the 'failure load of the welded samples, divided by the failure load of the base material'. This was used to derive the activation energy of the film.

Experimentally, the researchers showed that tensile strength increased in proportion with weld time to the 1/4th power.

"Bonding is more difficult to achieve at lower temperatures because of insufficient durations of weld time, and chain fracture at higher temperatures will cause an increase in the failure load for longer weld times," said Grewell.

The researchers concluded that impulse welding produced good results with weld times as low as 25 seconds, and as high as 300 seconds.

Bio expansion

Novamont is to double the production capacity of its Origo-Bi family of bio-based polyesters at its plant in Patrica, Italy by early 2018.

The plant, which currently has an output of 50,000 tonnes/year, will open a second line - allowing it to reach a capacity of 100,000 tonnes/year. By this time, the bio-based content of the polymer will be higher than it is now, said the company.

Novamont says that Origo-Bi - which is made from vegetable oil monomers - is used to improve the technical, economic and environmental properties of its Mater-Bi compostable bioplastics.

"Doubling the production capacity of the Patrica plant is a further step towards building an Italian bioplastic and biochemical supply chain integrating research, agriculture and industry and developing products that can deliver solutions to major environmental problems," said Catia Bastioli,

managing director of Novamont.

At the same time, Italy's **Bio-On** has begun building a new €15m plant that will produce natural and biodegradable polyhydroxyalkanoate (PHA) biopolymers.

The site, at Castel San Pietro Terme, near Bologna, will cover 30,000 sq m - of which 3,700 sq m is covered.

When the facility becomes operational during the first half of this year, it will have an annual production capacity of 1,000 tonnes, though the company says this could be doubled rapidly if required.

According to Bio-On, the new material has the same thermal and mechanical performance as conventional products.

Paper links

Cortec says that its BioPouch - a vapour phase corrosion inhibitor that is used to protect metal parts - is derived from agricultural by-products, and made using its Nano VPCI technology.

The pouch itself contains compounds that adsorb onto the surface of the metal to protect it from corrosion. It is typically used to protect metal piping, internal surfaces of equipment such as compressors, and metal components in transit.

EcoCortec is also a partner in a €2 million pan-European project - called Biocompack - which is looking to raise awareness of biodegradable plastics among manufacturers of paper packaging. According to the project organisers, there is a "lack of awareness among paper packaging producers on new bioplastics materials".

Project partners include the National Institute of Chemistry in Slovenia - the lead partner - as well as the Polish Packaging Research Institute (Cobro) and the Polish Chamber of Packaging Recycling and Recovery.

The project aims to forge stronger links between R&D institutions and companies in the area of paper-plastics packaging, with the goal of introducing verified biodegradable materials these types of products.

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Such applications today require diverse properties – lightweight; stiffness and impact strength; transparency; sealing effectiveness; hot fill, retort and microwave ability. NX UltraClear PP now is an attractive alternative to other glass-clear materials such as A-PET and PS for many sheet extruded/ thermoformed applications, while also offering sustainability and recyclability advantages.

Glass-clear transparency

In addition to setting a new clarity standard for PP, Millad NX 8000 can give PP applications a glossier aspect than normally possible with standard nucleated PP.

Lightweight & productivity gains

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plastic options, NX UltraClear PP reduces part weight and allows thermoformers to produce more trays per kg or to use less material.

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Recycling & sustainability

The market for recycled PP in a wide range of products makes the material a good circular-economy choice. PP also consumes the least amount of energy during production and has low carbon dioxide emissions, and thermoformed NX UltraClear PP mono-material applications are easy to recycle.



Photo courtesy of Knauf Industries.



For thermoforming and sheet packaging, NX UltraClear PP offers glass-clear clarity and benefits such as easy seal and impact and heat resistance.



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Medical extrusion applications - whether in pharmaceutical packaging or alternative materials for blood bags - are continuing to boom. Lou Reade reports



Health boost: medical materials and applications

Film and sheet extrusion is critical to the medical sector - with applications ranging from special films for wound care, all the way through to pharmaceutical packaging.

Constantia Flexibles recently invested a "double-digit million euro" amount to expand production capacity at its Constantia Patz pharmaceutical packaging site in Austria.

It will install a slitting machine in a new class 8 cleanroom, and a double-sided lacquering machine for foils and laminates. The extra capacity is expected to come on stream early 2019.

"Our investments will meet growing demand for different blister foil specifications manufactured on focused production lines with high hygiene, quality and safety standards," said Pierre-Henri Bruchon, executive vice president for the division.

Constantia Patz is in Loipersbach and employs around 350 people at its plant. It produces blister foils and coldform for pharmaceutical companies worldwide. The site already operates four certified cleanrooms for lacquering, laminating, slitting and printing of aluminium-based specifications.

Constantia adds that its packaging includes sophisticated design features and other technolo-

gies to help customers distinguish between real and counterfeit medicines.

"Counterfeit products of every description can be detrimental to health," said Alexander Baumgartner, CEO of Constantia. "Product counterfeiting and the related impact on health also lead to a loss of confidence in the original brand. Anti-counterfeiting involves taking steps to increase the counterfeit protection of products."

Counterfeit pharmaceuticals are particularly prevalent in developing countries, says Constantia: the United Nations Office on Drugs and Crime (UNODC) estimates that the market value of counterfeit anti-malarial medicines in West Africa alone is over €300 million, it says, while in Southeast Asia more than a third of anti-malarial drugs are counterfeit - containing chalk or detergents instead of active ingredients.

Special laser technology and security graphics software are needed to produce design elements with guilloche modules - a pattern comprising several interlaced, overlapping polylines - as well as relief modules and grids. Other complex print designs and unique optical effects can be achieved with color-shifting inks, among other things, to stop

Main image:
Tekni-Films is close to commercialising a replacement for PETG in medical trays packaging



Above: Constantia is expand production capacity at its pharmaceutical packaging site in Austria

branded products from being counterfeited.

An aluminium foil that has a logo and security features integrated into its surface offers further protection. Features like this cannot be removed without damaging the material.

“By continuously enhancing the counterfeit protection of our packaging solutions, we are responding to the growing number of counterfeit products,” said Baumgartner.

Anti-stat standards

Clariant has developed an amide- and amine-free anti-static masterbatch concentrate for polyethylene (PE) films used in pharmaceutical production. The material, Mevopur Peam 176045, was launched at CPhI Worldwide in Germany last October.

Changes in industry standards mean that, by 2020, plastics used in pharmaceutical manufacturing, including anti-static films, will need to comply with the same standards as plastics packaging used for finished pharmaceuticals.

Anti-static additives are used in the PE ‘clean-room films’ that line containers and dispensers for active pharmaceutical ingredients (APIs), and in the tubes used to transfer powdered and liquid API during drug production, said Clariant.

“They are important because the anti-static properties reduce the risk of dangerous conditions like explosions,” said Stephen Duckworth, head of the medical and pharmaceutical business at Clariant.

Historically, these anti-static films have mainly relied on ‘migrating’ ethoxylated amine- or amide-based anti-stats that had a degree of compliance to regulations for food contacting materials, said Clariant.

The new product has already been tested to the stricter new United States Pharmacopeia (USP)

pharmaceutical standard for pharmaceutical-contacting plastics – called USP665 – that is scheduled to come into force in 2020.

The company has also completed testing on ingredients in its Mevopur and Remafin-EP product ranges, to bring them into compliance with USP 661.1 before it comes into force in 2020.

Clariant is completing the testing process now to help customers ‘future-proof’ packaging launched in the interim and, in addition, to offer data to support the ICH-Q3D guidelines for risk assessment of elemental impurities in drugs.

“The ICH-Q3D guideline strengthens the risk assessment process by evaluating not only the pharmaceuticals themselves, but also the packaging to ensure it is not the source of elemental impurities in drugs,” said Duckworth.

Though manufacturers must prove compliance of their finished pharmaceutical packages and drug delivery devices to the new standard, Duckworth says customers who choose Mevopur and Remafin-EP products for use in those packages or drug delivery devices can develop and test their products with an added measure of confidence and will be able to avoid the costs of testing and submitting twice.

“If our own tests have indicated there is a low risk of an ingredient in the packaging interacting with the drug, the customer can proceed with additional tests – such as required leachable and shelf life stability testing – with a greater confidence that the package concept is going to get through these tougher regulations,” he said.

Changing hands

Tekni-Plex, a US specialist in barrier pharmaceutical packaging and other plastics products, has changed hands. Owner American Securities has sold the company to another private equity firm, Genstar Capital.

Based in Wayne, Pennsylvania, Tekni-Plex has 2,500 employees across the world, and manufacturing sites in many countries including the USA, China, Costa Rica and Germany.

“We have invested heavily in our organisation so that our brands hold leadership positions in their key market segments,” said Paul Young, CEO of Tekni-Plex. “Our strong emphasis on innovation and R&D will continue to drive new products.”

David Golde, director at Genstar, added: “We have great conviction in Tekni-Plex’s business model and the opportunity to grow the company through investments in assets, technology and strategic M&A.”

Meanwhile, Tekni-Films – a subsidiary of Tekni-



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Above: New Medalist grades of TPE from Teknor Apex compete with PVC for cold storage bags and pouches

Plex - says it is on the verge of commercialising its TekniMD PX film - which could replace PETG in thermoformed medical trays packaging.

"The material is gaining traction globally in a number of sterile barrier tray applications whose companies want a cost-effective alternative to PETG for products such as orthopedic devices, pre-filled syringes and infusion assemblies and tubing," said Melissa Green, senior director of marketing at Tekni-Films.

TekniMD PX films also are being specified for non-sterile totes and retainers that are used for work-in-progress transfers between different company facilities.

The PX film line offers a wider processing window than PETG, claims the company.

"We have several trials in the middle of stability testing and expect many of those to be commercialised when that testing is concluded," according to Green.

It films were on show at the MD&M West exhibition in the USA - where it also presented its ultra-high barrier PVDC coating and other multi-layer packaging structures with high oxygen and water vapor barrier properties.

Low-temperature performance

Teknor Apex has developed a new range of medical-grade thermoplastic elastomers (TPEs) in its Medalist range, for cold-storage bags and pouches.

The materials have low-temperature toughness superior to that of PVC, weigh less at comparable film gauges, and open the possibility of running thinner products without sacrificing performance.

The compounds have 70% the density of PVC, with a typical specific gravity of 0.90. They have greater toughness in cold-storage applications -with brittle points as low as -60°C, compared to -40°C for PVC. This higher toughness allows downgauging from standard thicknesses or replacing multi-layer structures with monolayer films. The new compounds exhibit tensile and tear strength properties comparable to those of PVC and better moisture barrier, according to the company.

"Our new TPEs combine the low-temperature toughness of elastomers with the biocompatibility, processability, and cost-performance balance characteristic of all Medalist medical compounds," said Ross van Royen, senior market manager of regulated products.

"They enable medical manufacturers to achieve weight savings and other economies while providing the same product performance as standard PVC."

Blood boost

At AMI's Medical Fluid Bags conference in October 2017, Mark Brucks, market development manager at **Eastman Chemical**, told delegates how the company's DEHT plasticiser has been tested in PVC blood bags.

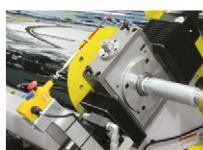
The plasticiser, known as Eastman 168 SG, is similar in structure to DEHP, but is not a phthalate and does not produce any known biologically active metabolites.

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TC welding for ostomy bags

Kiefel says that its KXT series of thermo-contact welding lines has become a leading method of producing ostomy bags - a growing market, according to industry estimates. An ageing population - and increasing cases of certain cancers - has led to a greater need for ostomy products, says the company.

Modern ostomy bags are usually made of very thin polyolefin film with a two- to four-layer structure. An integrated carbon filter prevents odours, while a plug-in system connects the pouch to the patient's stoma care. "Leak tightness, robustness and reliability are indispensable," said Kiefel.

The KXT produces up to 2,400 bags per hour in different sizes. Elements such as filters and gaskets can be integrated immediately in the various welding stations.



Kiefel's KXT thermo-contact welding lines can produce up to 2,400 stoma bags per hour in different sizes

The research, carried out in collaboration with the BloodCenter of Wisconsin in the US, aimed to evaluate the stability of red blood cells in DEHT-plasticised containers compared to those stored in standard DEHP-plasticised containers. The researchers also assessed the performance for fresh frozen plasma (FFP).

Red blood cell parameters - including complete blood count, ATP and haemolysis (%) - were measured after 0, 35 and 42 days. A range of plasma factors was measured at 0 and 30 days, and 1 year. In both bases, plasticiser concentrations in the fluids were also measured, using liquid chromatography-mass spectrometry.

After 42 days, haemolysis of the red blood cells was well below 1% - a key criterion set by the FDA. There was also a 72% lower migration from DEHT bags than from DEHP bags.

Results for plasma parameters showed no statistical difference between DEHT and DEHP bags, said the researchers. In these bags, DEHT migration was 90% lower than for DEHP.

"Based on this data, Eastman 168 SG is a potential replacement for DEHP PVC blood bags, and FFP storage bags," said Brucks.

PVC alternatives

Bing Yang, sales development manager at **Kraton Polymers**, explained how the company's G1645 styrenic block copolymer (SBC) has been used in a three-layer structure - with cast PP film - as an alternative to PVC in blood bags.

The SBC increases seal strength, impact performance and tensile strength, compared to a PP-only structure, while also boosting optical properties, he said.

The company is now developing a new grade, MD1653, which has much higher melt flow - and subsequent better processing - than G1645, but with no loss in properties. It has now prepared film structures using 70% MD1653 and 30% PP.

"The new grade achieves the same physical properties as G1645 but is easier to compound and has higher melt flow - providing a broader formulating latitude," said Bing Yang.

On the machinery side, **Kuhne** said that water-quenched PP blown film - as produced in its Cool Bubble process - can be used as an alternative to PVC in blood bags.

The technique is used to make three-layer medical film, alternating PP homopolymer (in the outer layers) with PP terpolymer (in the middle layer).

The film is typically 100-200 microns thick, and can be made at outputs up to 400kg/hour.

Adolfo Edgar, vice president for blown film system in the US and Canada at Kuhne, said that the technique produced film with lower crystallinity - and therefore better optical properties - than one cooled by a standard chill roll.

"Desired film properties for medical bags are achievable and can be tailored," he said.

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Setting the standard in materials testing

The latest testing and quality control techniques help to minimise the chance of defects in plastic film and sheet products. Lou Reade reports

For any kind of manufactured product, quality is king – and this mantra is even more important when manufacturers work hand in hand with their customers in the design of a product – such as an engineered film.

Packaging specialist **Pregis** has invested \$1 million in a new 1,000 square foot testing laboratory, for its blown film manufacturing facility in Grand Rapids, Michigan.

The manufacturing facility provides custom film rollstock to converters for packaging applications that protect a wide variety of products. Laboratory staff will be involved in customer-driven research and development, as well as quality testing.

“Having an onsite facility will better equip us to provide faster solutions for our customers, and allow us to accelerate our R&D work,” said Tom Wetsch, chief innovation officer at Pregis. “With customers increasingly looking at customised

structures – and accelerating the pace of their development – we needed the right resources in place to support them.”

The facility produces polyethylene film that is converted into flexible packaging for applications including food (standup pouches, form-fill-seal), medical (breathable bags and pouches), industrial, and surface protection.

The lab will include analytical testing equipment and physical testing – including peel, tensile, impact resistance, tear, hot tack and coefficient of friction – to support all these applications.

“Customers are placing more stringent quality demands on suppliers – including roll flatness, wind quality and physical performance properties enabling them to optimise speeds in pouch converting or vertical and horizontal filling lines,” said Wetsch. “Our new lab capability will help them meet many of those objectives.”

Main image:
Pregis says its new \$1m testing laboratory will offer a range of analytical test equipment

Thickness measurement

A new **ASTM** test standard promises to provide a better way of measuring the average thickness - and thickness variability - of plastic film.

ASTM International's D20 committee on plastics developed the standard, called D8136.

"The new test method is more accurate - and easier to use - than existing methods," said Rob Lawrence, a mechanical engineer at SolveTech and a member of the D20 committee. "It will help almost the entire chain in the plastic film industry, and will likely improve quality."

Lawrence said that polymer producers, film producers and film buyers would all find the new standard useful.

"It will be most useful for aiding transactions between film producers and film buyers, putting them on the same page regarding thickness and variability," he said. "It will help the buyer find quality suppliers, and recognise quality suppliers for their efforts."

The committee is looking for companies to participate in a full inter-laboratory study for the standard, and is looking for feedback from those already using it.

Revised standard

At Antec 2017, Brenda Colegrove, a principal research scientist at **Dow Chemical**, explained details of a project to revise the ASTM D7310 standard - which governs the detection of defects on plastic film using optical sensors.

One goal of the project - which involved both materials and machinery suppliers, and film producers - was to clarify the definition of 'defect'. There are now three specific definitions of a defect: gels - particles of plastic that are unblended with

the matrix; contaminations - any foreign body that reduces the transparency of the film; and structural defects - such as air bubbles or wrinkles.

In her Antec presentation - co-written with Richard Garner of **Borealis** - she described an anonymous 'round robin' process in which six resin producers submitted LDPE samples, which were then extruded into film and tested. Variability in any element of the process - including the melt extruder, chill rolls, air knife and camera - could affect reported gel results.

"The key learning was that no two equipment setups were identical," she said.

Some of the differences included: screw geometries; distances between die and chill roll - from 2mm to 47mm; chill roll temperature - from 25 to 55°C; screw speeds; and take-off speeds.

It was also clear that there was a large variability in settings, the vocabulary used was not always clear, and that film thickness varied.

Analysis showed that the most important factors were: die temperature, and temperature profile of the extruder; extruder torque and pressure; screw mixing elements; sensitivity and grey levels (of the camera); chill roll setting - especially for small gels - and air knife setting; and, the lighting source.

In a second round robin, samples of HDPE and PP were also analysed, while extrusion temperature profiles were set by the resin supplier. ASTM is analysing the data from this.

Sheet degradation

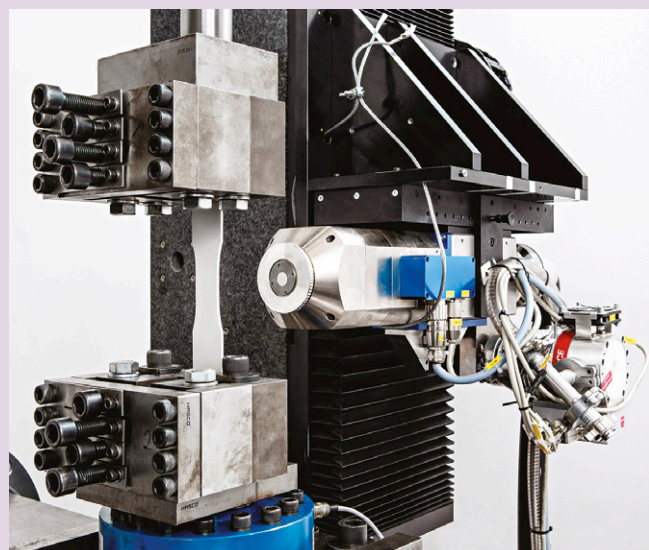
Researchers at the **University of Minnesota** in the USA have devised a method for degrading polyethylene sheet samples in an oxidative environment, in order to assess stress cracking.

The model system is hot, chlorinated water - and

Detecting damage at the microscopic scale

Scientists at the Fraunhofer Institute for Structural Durability and System Reliability LBF have combined mechanical testing of components with radiographic examination. While they subject a sample - such as a plastic product - to a load, they use X-ray equipment to follow the progress of damage. Because the equipment has a resolution of a few microns, it can detect the smallest signs of damage as it begins to occur, or pick up the smallest irregularities.

"This new process represents a huge advance in regards to detail resolution and precision, as well as the retrievability of possible causes of damage," said Oliver Schwarzhaupt, of the LBF.





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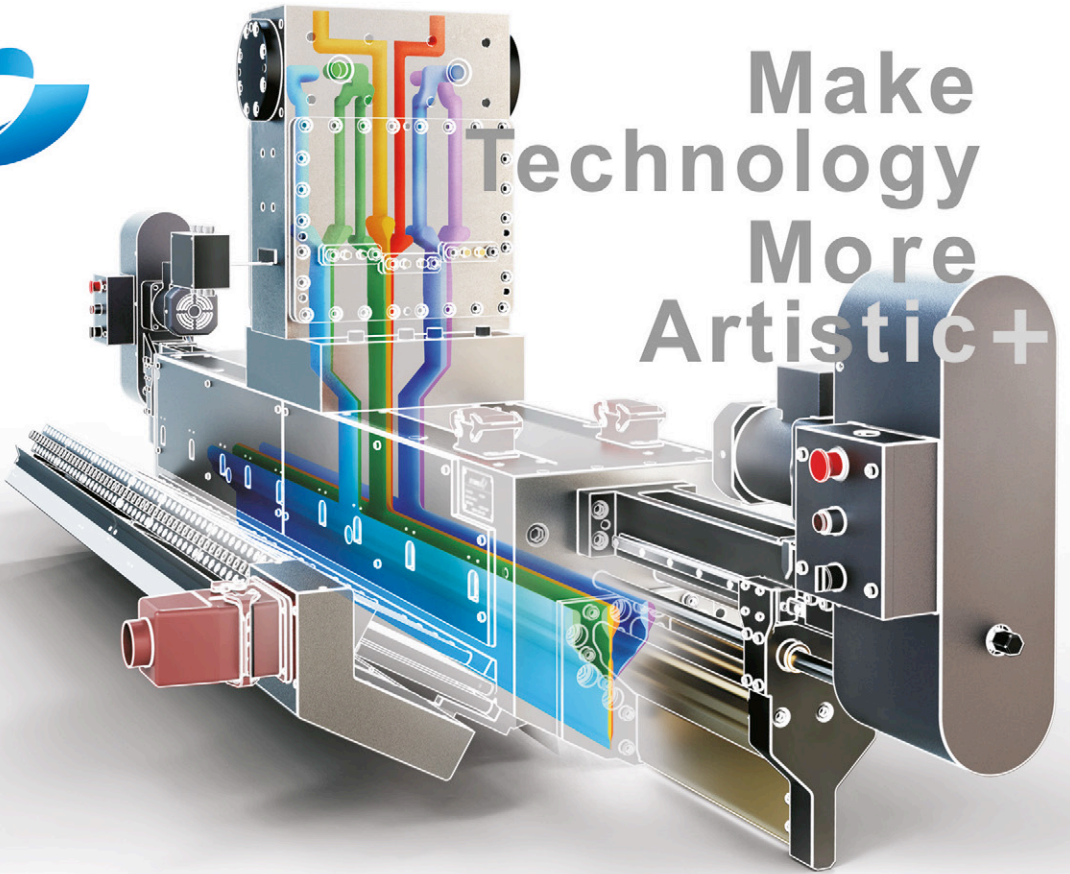
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Above: X-Rite's MetaVue VS3200 is a non-contact imaging spectrophotometer tailored for the plastics industry

this is applied in a water batch at 60-65°C. Under these conditions, the molecular weight of thin PE sheets was reduced by 60% - and the strain at break was reduced by 90% after 1,000 hours of exposure.

While many pipe samples are tested under similar conditions, the researchers said there was a need to test film in this way - to determine the performance of film-based products such as geomembranes.

In the experiment, PE samples of 45-60 microns in thickness - with an initial molecular weight of 169K - were exposed to chlorinated water for up to 1,000 hours. Molecular weight loss as a function of time was obtained.

"An extensive set of mechanical data as a function of molecular weight is required to develop a model for stress cracking," the researchers told Antec delegates. "Hence, it was important to verify that this combination of oxidative conditions and specimen material/thickness can lead to significant loss of molecular weight for a relatively short exposure time."

Film delamination

The delamination of film from a substrate is a common - though still poorly understood - phenomenon. Researchers from the **University of Illinois at Chicago** - in collaboration with **Avery Dennison** - have studied how the process progresses over time.

In particular, the research addressed three issues:

- which physical and geometrical parameters play the main role in delamination;
- what is the root cause of slow delamination growth; and,
- the formulation of a quantitative model of the process.

"Film debonding from a substrate is generally quite complex," said the researchers, in a presentation made at Antec last year.

There are two main delamination modes: one considers buckling of the film when it is partly

delaminated from the substrate (known as buckling-delaminating); and another, known as wrinkling, which assumes no delamination as the substrate deforms coherently with the film.

According to the researchers, the main parameters determining the film-adhesive-substrate system conformability are: film compression rigidity (the product of elastic modulus and thickness); the viscoelastic properties of the adhesive; and, the geometry (curvature) of the substrate. The mechanical properties of the substrate are less important, especially when it is thick and has significantly higher rigidity.

"Delamination usually starts from a random defect. So, a design defect is introduced to control the location and direction of delamination growth - which allows a quantitative characterisation of the process," said the researchers. "Slow delamination growth is to a large extent controlled by viscous deformation of the adhesive."

Non-contact analysis

X-Rite has expanded the MetaVue family of non-contact imaging spectrophotometers with a version tailored to meet the needs of the plastics industry.

MetaVue VS3200 is the first non-contact instrument for industrial applications that combines colour imaging with spectrophotometry to characterise complex materials. Aimed at the lab or quality control operations, it offers versatility and colour accuracy for measuring a variety of samples, says X-Rite.

"Many quality control programs rely solely on visual colour evaluation due to the shape and size of the sample," said Dave Visnovsky, product manager at X-Rite.

"MetaVue's flexibility to measure a range of wet and dry samples - large and small - allows manufacturers to add instrument-based quality control to their process in order to ensure colour accuracy - eliminating waste and rework."

The device has an adjustable aperture size, ranging from 2 to 12mm, enabling measurement of a wide range of samples. Users can measure difficult samples such as small and non-planar items.

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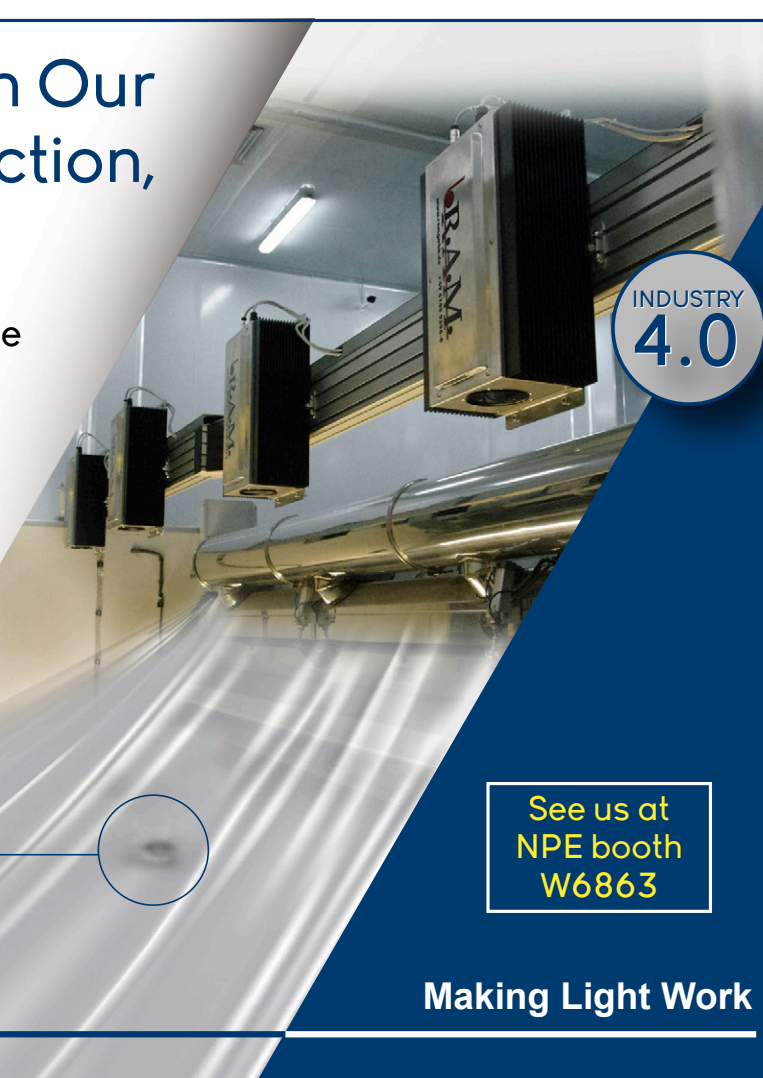
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Material innovation

The latest developments in polyolefin materials show everything from easier processability to higher productivity. Lou Reade reports

Polyolefins are probably the most widely used of all extruded polymers, with applications ranging from solar energy and shrink films to thermoformed trays and food packaging.

Borealis, in collaboration with its sister company **Borouge**, recently launched the Anteo range of low density polyethylene (LLDPE) packaging grades, aimed at multi-layer applications.

Anteo has good processability at lower extruder pressure, better sealing integrity and improved puncture resistance in combination with strong optics for enhanced shelf appeal, say the companies. More than 100 Borealis and Borouge customers have already tested the material, which is available worldwide.

The first available grades are called FK1820 and FK1828.

The materials are made using Borstar Bimodal Terpolymer (BBT) technology, at the Ruwais plant in the United Arab Emirates (UAE). BBT combines two

co-monomers - using a new catalyst design and two-reactor system - to give PE resins with superior performance, say the companies.

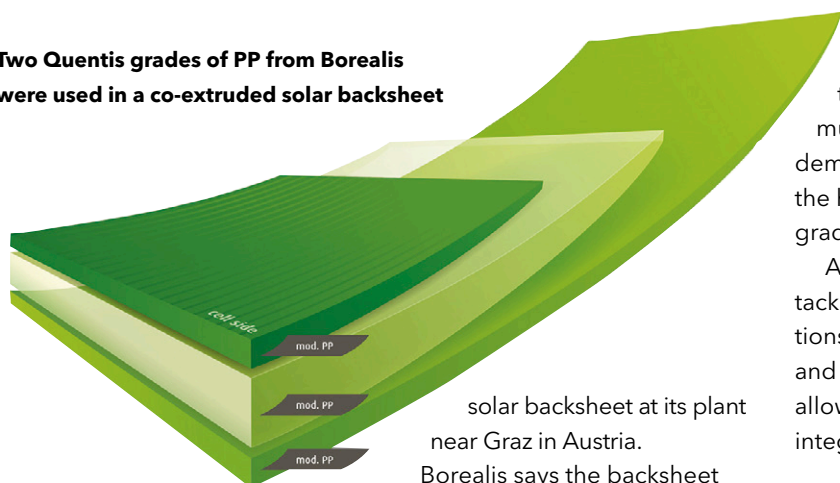
Some of Anteo's benefits include: easy processability - and a 15% lower extruder pressure than for conventional metallocene LLDPE sealants; good seal integrity and high sealing speed - resulting in lower energy consumption and less material waste; superior puncture resistance; and high quality optics, for enhanced shelf appeal.

PP for backsheets

Borealis has also developed a co-extruded polypropylene (PP) solar backsheet for photovoltaic applications. The core and outer layers of the Icosolar CPO 3G backsheet film are made using Borealis' new umbrella brand for solar grades and products, called Quentys. Two grades of Quentys - SF700CL and SF900WL - will be sold directly to its new manufacturing partner, Isovoltaic, which then produces the

Main image: Anteo LLDPE grades from Borouge and Borealis are aimed at multi-layer packaging applications

Two Quantis grades of PP from Borealis were used in a co-extruded solar backsheet



solar backsheet at its plant near Graz in Austria.

Borealis says the backsheet will boost the operational reliability

of PV modules due to: increased module output, thanks to high reflectivity; superior water vapour transmission rate (WVTR) and acetic acid permeability; and, high hydrolytic stability and insulation properties.

Because there are no adhesive layers, there is no risk of inner-layer delamination. Also, co-extruded PP – as a single-step production technology – ensures high production quality and homogeneity, and reduces manufacturing complexity, which further increases its appeal as a replacement for conventional PET-based backsheets, says the company.

In addition to the solar backsheets, Borealis plans to introduce other polyolefins for the solar industry – including grades to make encapsulant films.

Butene boost

Nova Chemicals has developed three new polyethylene butene film resins – the Novapol PF-Y818 series – which it says can help film manufacturers boost output and performance compared to traditional butene linear low density polyethylene (LLDPE).

Each resin has the same performance properties, but is formulated with a different set of additives for the specific needs of film extruders. They can be used in a range of flexible film applications including food packaging, stretch film, industrial liners and collation shrink.

“We have shown productivity output gains up to 20% with our customers,” said Alan Schrob, group market leader at Nova Chemicals. “These gains led to higher revenue per film line and could allow deferment of capital expenditures on new blown film lines.”

The higher melt strength of the resins increases bubble stability on blown film lines, allowing them to run faster. It also allows extruders to simplify structures and blends by reducing or eliminating the need for low density polyethylene (LDPE).

At the same time, Nova has developed three new high-performance sealant resins for multi-layer film structures: VPsK914, for the most demanding packaging applications; SPsK919, for the heavy duty sack market; and SPs116, a versatile grade for a variety of applications.

All the new resins have: a wide sealing and hot tack window, which improves packaging operations; high clarity with low haze and high gloss; and a balance of stiffness and toughness that allows structure redesign for improved package integrity and durability.

Grease resistance

Separate to this, Nova has developed a family of HDPE films with high grease resistance – making them suitable for a range of food packaging applications. As part of the process, the company also devised a semi-quantitative method to measure the level of grease or oil permeation.

“It is now possible to develop cost-effective and recyclable PE film packaging structures with good grease barrier performance by using certain single site catalysed PE resin architectures,” said Dan Falla, in a presentation to delegates at last year’s Antec conference.

Grease-resistant plastic packaging usually uses high spec resins such as EVOH, but these make recycling more difficult. Nova began a study to assess the effectiveness of its PE resins for grease resistance – and as part of this, developed a new measuring method.

Existing tests generally involve depositing grease on one side of a film and examining it under controlled conditions (usually at elevated temperature) for a period of time – until the grease is detected on the other side.

In its own method, Nova firstly restricted the testing time to 48 hours. This avoided the need to interfere with equipment while the test was in progress, and was also long enough to differentiate films with poor grease resistance. Nova also used image processing – rather than visual identification – to assess the degree of grease permeation.

Here, Nova used computer software to calculate the area stained by the grease, rather than using visual comparison. It placed a 20 x 20cm piece of tested film over a 10 x 10cm thin layer chromatography (TLC) plate, in which the silica contains a fluorescent indicator. The two were then pressed together, and placed in an oven. The TLC plate was then photographed, and analysed using image processing software. The grease absorbs light at 254nm so appears as dark regions on the plate.

“The dark portion of the image corresponds to

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Novapol PF-Y818 resins improve on traditional butene LLDPE, says Nova



the fraction of grease breakthrough," said Falla.

Nova tested a range of three- and nine-layer films, containing recyclable and non-recyclable resins - including traditional high barrier materials like EVOH, as well as its own Surpass LLDPE and HDPE resins.

It found that some formulations using only polyolefins had a grease barrier the was comparable with EVOH - and that its HDPE had a particularly strong effect.

"Without the presence of HDPE in the film structure, the amount of grease penetration is quite high," said Falla.

Adding toughness

Topas has engineered a number of multi-layer films with its cyclic olefin copolymer (COC) to show that it can increase toughness, strength and stiffness.

COC polymers are used in many types of packaging, including soft shrink, easy tear pouches and rigid thermoformed trays.

The company designed a series of experiments to study how COC's glass transition temperature, modification and blow-up ratio influenced key blown film properties in three-layer packaging films, which were made mainly from polyethylene.

"By splitting COC into at least two layers in five layer structures, further significant property enhancements are possible without changing COC content," said Paul Tatarka, who presented a paper on the subject at Antec.

Tatarka said that the design of experiments (DOE) was not intended to create films optimised for any specific application, but to show how COC will influence PE film properties that are important to all flexible packaging products. For instance:

- when a discrete layer of COC is added to PE film, what happens to film properties;
- whether changes to the film are influenced by COC glass transition temperature; and,

- whether diluting COC with PE compromise any advantage of using it in the first place.

The study found that adding one or more discrete layer of amorphous COC to LLDPE-based blown film reduced total haze. At the same time, it more than doubled secant modulus - a measure of stiffness - and boosted tear resistance. It also had a moderate positive effect on impact resistance, and reduced tensile properties.

Formula advances

Speakers at recent *Polyolefin Films* conference organised by **AMI** detailed new grades and potential process improvements.

Matt Sonnycalb, applications development and technical services engineer at **LyondellBasell**, said that its recently launched Petrothene NA321 grade of LDPE offers a high melt index of 2.0, as well as high quality optics and bubble stability, and ease of processability.

The new grade is made in a tubular reactor, while its NA345 predecessor is from an autoclave reactor. While autoclave grades typically have better optics, some blown film extruders find them problematic to process in grooved feed extruders, says the company.

Target applications for the new material include food packaging - for products such as bread bags - as well as other high visual impact films.

Performance in grooved feed extruders was comparable to that of the earlier autoclave grade, said the company. When the grade was blended with 20% butene LLDPE, properties such as tensile strength were improved - though others such as optics and tear balance were mixed.

Overall, the new grade offered potential for increased output - due to significant decrease in extrusion pressure; a potential for downgrading, with increased modulus; better TD tear performance and tear balance; and less physical property sensitivity to blending with butene LLDPE.

Jacob Lance, technical manager for polymer additives at **Dover Chemical**, told delegates that correct selection of stabilisers can help to overcome problems such as bloom and plate-out.

"Plate-out during production can cause delays, while post-production polymer bloom can cause quality issue," he said.

Solid phosphates, which are commonly used as stabilisers, can often cause these effects, and he said there were three main ways to solve it: lower the loading until it is compatible; switch to a compatible additive; or use anti-bloom technology.

The first scenario is the easiest, but may result in a loss of performance. >



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Right: Sabic says its pilot plant will develop 'next generation' PP

The second option is to switch to a high molecular weight liquid phosphite like LGP11, which has better compatibility with the polymer. Its compatibility during cast film production can be mimicked with a laboratory two-roll mill. A red pigment is added to formulations, and will stick to the rolls if the additives migrate. A 'blank' LLDPE resin is processed straight after, and the amount of pigment it picks up will be proportional to the amount of plate-out.

One way of increasing the loading of LGP11 is to use inorganic acid scavengers like ZnO and DHT4V, he said.

The third scenario is to use an anti-bloom additive, which lowers the melting point (and potentially the crystallinity) of a phosphite stabilizer like SP2.

Eliminating plate-out and blooming gives a number of benefits, including less need for cleaning - which boosts safety and machine uptime - and the ability to run the machine hotter and faster, as phosphite levels are higher.

Trimodal licence

Norwegian industrial polymer service provider **Norner** has signed the first licence agreement for its Norner Trimodal Technology (NTT), which it describes as a breakthrough in the production of PE polymers.

The company has not disclosed the identity of the licensee, but said the value of the licence was "multi-millions of dollars".

NTT is based on three polymerisation reactors where a small fraction of a third high molecular weight polymer is introduced in a third reactor containing comonomer. It is said to cost-effectively upgrade existing bimodal plants.

The company said the technology enables a higher comonomer content in the highest molecular weights, which boosts the performance of the

Below: NTT was developed in Norner's polymerisation laboratory in Norway



materials in terms of improved pressure and stress crack resistance, impact resistance and processability.

Norner foresees applications in a number of areas, including extruded film.

PP pilot plant

Sabic has brought onstream a pilot plant that will develop "next-generation polypropylenes" for uses including advanced packaging.

The gas-phase polymerisation licensed technology plant, in Sittard-Geleen in the Netherlands, includes a dedicated extrusion line and will support the production at nearby full-scale plants.

Lina Prada, global PP technology director at Sabic, said: "We are making a significant step in growing and developing our capabilities in Geleen, where we have solid expertise in polyolefin developments from all aspects - catalyst, process, material and application."

The pilot plant, which will be operated by 13 people, was constructed in modular form in nearby Enschede.

"The new facility complements other polyolefin innovation centres in Riyadh, Bangalore, Shanghai and Houston," added Lada Kurelec, global business director for polypropylene at Sabic.

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We preview AMI's first Breathable Films conference, taking place in Cologne, Germany, in March

Breakthroughs in breathable film

Breathable films have a microporous structure that allows vapour transmission - and have major applications across a range of industries including construction, pharmaceutical, medical, food packaging and personal care.

Factors such as increased demand for premium hygiene products, a growing construction industry and huge opportunities in food contact applications, the breathable films market is likely to expand steadily over the next five years.

AMI launches a new conference, *Breathable Films 2018*, covering developments and innovations in raw materials, machinery, testing techniques, film formulation, extrusion and processing technologies. At the same time, it will address market trends - such as facilitating cost reduction without compromising film performance, and safety criteria. The conference focuses on the latest global trends and technical developments within the industry and looks at the

polymers and additives used in breathable films such as PE, PP, PU and PTFE.

The two-day event takes place on 7-8 March 2018 in Cologne, Germany and brings together speakers from across the supply chain to evaluate and discuss the trends, challenges and opportunities facing the breathable films industry, across multiple end-use applications.

Material advances

The opening session looks at the latest advances and developments in materials for breathable films which are improving multiple end-use applications. **Dr David Whiteman**, Technical Service and Development Manager for Films and Packaging at **Imerys Mineraux** in Belgium starts by explaining how engineered calcium carbonate is supporting innovations in breathable film for diapers, hygiene, medical, construction, and agricultural applications. >

Main image:
Medical products are key applications of breathable film



Expert speakers at Breathable Films 2018 include (from left): **Dr Livio Buongiorno**, Market & Application Development Manager at **A. Schulman Plastics**; **Dr Océane Lamarzelle**, Development & TS Manager for Functional Polyolefins at **Arkema** and **Dr Krijn Dijkstra**, Global Marketing Manager for **Arnitel & Arnite A** at **DSM Engineering Plastics**

This is followed by a talk from **Dr Océane Lamarzelle**, Development & TS Manager for Functional Polyolefins, Extrusion Coating-Lamination Speciality from **Arkema SA** in France who talks about tuning membrane breathability by playing on polymeric compositions in applications like construction wrapping, sport and medical clothing or roofing. The third presentation in the session, focusing on the position of copolyester based breathable monolithic films in a fast changing world, is presented by **Dr Krijn Dijkstra**, Global Marketing Manager for Arnitel & Arnite A at **DSM Engineering Plastics**, in the Netherlands. Performance and external drivers for the two markets of surgical gowns and outdoor apparel are the key take-aways from this presentation.

After the refreshment break, sponsored by **SML**, the session continues with a paper from **Onur Kir**, Polymer Technologist at **ExxonMobil** in Belgium

who discusses how performance polymers are enabling the development of comfortable, attractive and cost-effective solutions for breathable hygiene films. The final talk in the session, from **Dr Paola Massari**, Senior Researcher at **Basell Poliolefine** in Italy, looks at improving food shelf-life with new families of PP copolymers for transparent and breathable films.

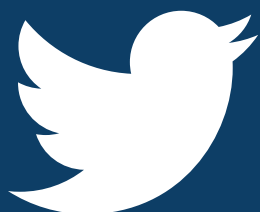
Exploring the market

The second session takes the form of a panel discussion and explores the breathable films landscape with a closer look at further opportunities, challenges and trends for this dynamic industry. The panellists include **Ali Sisman**, Managing Director of Hygiene and Medical at **Hassan Group** in Turkey, **Jana Klvačová**, Sales Manager, Breathable Films and Laminates at **Fatra** in the Czech Republic, **Robert Koplín**, Head of Centre of Competence Breathable films and Printing at **RKW** in Germany and **Christoph Lentz**, Sales Director, Hygiene Film Division, Trioplanex at **Trioplast** in France.

Next generation compounds

The final session of the day looks at creating value and improving functional performance through advances in compounds, additives and masterbatch. **Gianluigi Mariani**, Managing Director of **Fi-Plast** in Italy, kicks off the session with a presentation on new generation PE compounds and masterbatches for breathable film production. This is followed by **Dr Livio Buongiorno**, Market & Application Development Manager - Hygiene & Personal Care at **A. Schulman Plastics** in Italy who looks at value

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creation with functional performance of breathable films. The final paper of the day from **Simon Waddington**, Business Development Manager at **Interface Polymers** in the UK, covers a new generation of di-block polymer additives for the ultimate adhesion between dissimilar polymer films.

At the end of the day, a networking drinks reception is held in the exhibition room, where delegates and speakers debate the conference so far and attendees have the opportunity to network with industry peers.

Innovations in production

Day two of the conference begins with **Dr Phil Jacoby**, President of **Jacoby Polymer Consulting** in the US, explaining how beta nucleation can be combined with solid state stretching to produce novel polypropylene (PP) films that have high porosity and breathability. This is followed by a case study analysing the microstructure of breathable films for diaper backsheet with an investigation into the structures of pores, calcium carbonate particles and agglomerates from **Linar Shagiev**, R&D Department at **Danaflex** in Russia. The third talk, from **Dr Arkadiusz Kotlewski**, R&D Manager at **Low & Bonar** in the Netherlands, focuses on nonwoven carriers which are improving breathable membranes. The final speaker in this session is **Dr Lennart Ederleh**, Technical Sales Director Extrusion Equipment at **Windmöller & Hölscher** in Germany, who discusses breathable backsheet film using the right extrusion technology.

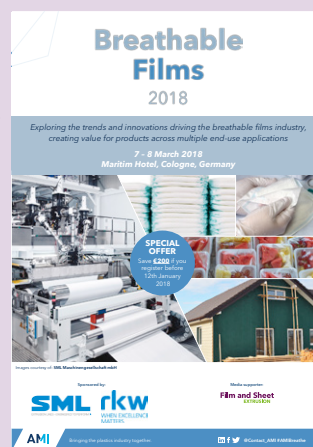
Quality assessment and analysis

The final conference session begins with a case

About Breathable Films 2018

Taking place in Cologne, Germany on 7-8 March 2018, AMI's Breathable Films 2018 conference provides an international forum for all companies involved in the manufacture, supply and specification of breathable films, be they end users, manufacturers, converters or suppliers.

For more information on the conference, and to book your place, visit the [conference website](#) or contact organiser Alexandra Fish on +44 (0) 117 314 8111. Email: alexandra.fish@ami.international.



study looking at the challenges of producing high quality breathable films and is presented by **Chris McGowan**, Director of Sales - EMEA, Film Extrusion & Converting at **NDC Technologies** in the UK and **Thorsten Weidenfeller**, Prokurist/Chief Technology Officer at **Realtime Application Measurement (R.A.M.)** in Germany. **Andrew Sharp**, Business Development Director at **Perfotec** in the Netherlands, then focuses on innovations in measuring the rate at which fresh produce breathes to reduce waste and increase the shelf-life of fruit, salad, vegetables and flowers. Closing the conference is **Dr Noel Deferm**, CEO of **Hammer-IMS** in Belgium, who explains how its M-ray technology provides scratch-less and high-coverage thickness measurement of films as a clean alternative to nuclear gauging.



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Speakers announced!

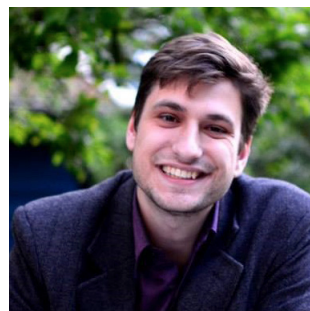
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Inside the regulatory machine

AMI's second Plastics Regulations conference takes place in Cologne, Germany on 14-15 March 2018, providing an insider view of legislation impacting on the polymer industry. This year's event also introduces a co-located food contact workshop

With the final REACH registration deadline for existing chemicals approaching fast and EU regulation of food contact plastics materials continuing to evolve, keeping up to date with the latest developments in European legislation is essential for plastics processors, materials producers and end-users. Taking place in Cologne in Germany on 14-15 March 2018, AMI's second Plastics Regulations 2018 conference provides a well-timed opportunity to do just that, presenting impartial and well-informed guidance focused specifically on the needs of the plastics industry.

Plastics Regulations 2018 provides advice on a range of legal and compliance issues that potentially impact on polymer producers, compounders, processors and end-users. This year's event also introduces a one-day food contact materials

workshop - Food Contact Materials 101 EU and US: What you need to know - that will be run by members of the transatlantic Food Contact Materials and Food Safety Practice team at specialist law firm **Steptoe & Johnson** on 13 March. This article previews expert speakers and topics featured in the conference and workshop programme.

Plastics Regulations 2018 will open with a close-up review of the current regulatory landscape and some of the challenges likely to affect those working in the plastics industry. It will be kicked off by **Simon Tilling**, Partner at **Burges Salmon** in the UK, who will discuss the UK's Brexit decision and the possible legal implications for chemicals regulation. He will be followed by **Dr Frank Freidel**, Senior Regulatory Manager REACH at **TSGE Consulting** in the UK, who will explore the

Main image: Plastics Regulations 2018 will provide a one-stop opportunity to update on regulations impacting on plastics producers and users



Expert speakers at Plastics Regulations 2018 include Steptoe & Johnson Director EHS Regulatory Dr Anna Gergely, Henkel Corporation Scientific Fellow Dr Grant B Kenion, EXPRA Managing Director Joachim Quoden, and Burges Salmon Partner Simon Tilling

challenge of staying ahead of changes in regulatory affairs after the REACH 2018 deadline.

The conference will then move on to discuss regulation and innovation. Dr Ana Vesperinas, Patent Advisor at Barker Brettell in the UK, will consider how plastics firms can ensure innovation and regulation work together to achieve a “best of both worlds” end result.

REACH compliance

The conference focus will turn to polymer and chemical compliance in the next session. Marcus

Navin-Jones, Partner at Keller and Heckman in Belgium, will look at polymer impurities and degradation of products as one of the current issues regarding REACH. He will be followed by Dr Rolf Wittlinger, Manager Product Stewardship Plastic Additives at BASF in Germany, who will present a paper on managing the registration and evaluation of phenolic benzotriazole UV absorbers under REACH. The third presentation in this session focuses on the challenges and opportunities of nanomaterials regulation and will be given by Dr Anna Gergely, Director EHS Regulatory at Steptoe & Johnson in Belgium.

The REACH focus will continue with a presentation by Claudio Mereu, Joint Managing Partner at Fieldfisher in Belgium, who will discuss the interplay between REACH and RoHS and medical device manufacturing. Then Caroline Raine, Consultancy Lead at the National Chemical Emergency Centre (NCEC) in the UK, will explore the real-world implications of placing a chemical product on the market in an EU member state and the European poison centre harmonisation in relation to REACH.

Data sharing is a key element in the REACH process and this will be covered in a presentation

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Polymer distribution in North America

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Questions answered!

- What is the size of the polymer market and how much is supplied through distribution channels?
- Who are the leading players? What market share do they hold?
- How are the dynamics of global polymer supply changing?
- How will polymer imports from Asia and the Middle East together with the booming US shale capacity, impact on the distribution industry?
- How will the industry grow over the next five years?

Another special offer!

Polymer distribution in Europe, published April 2015 now available at 50% discount

AMI Consulting offers a full range of strategic client services and is Europe’s largest consultancy dedicated to providing business research and analysis for the global plastics industry.



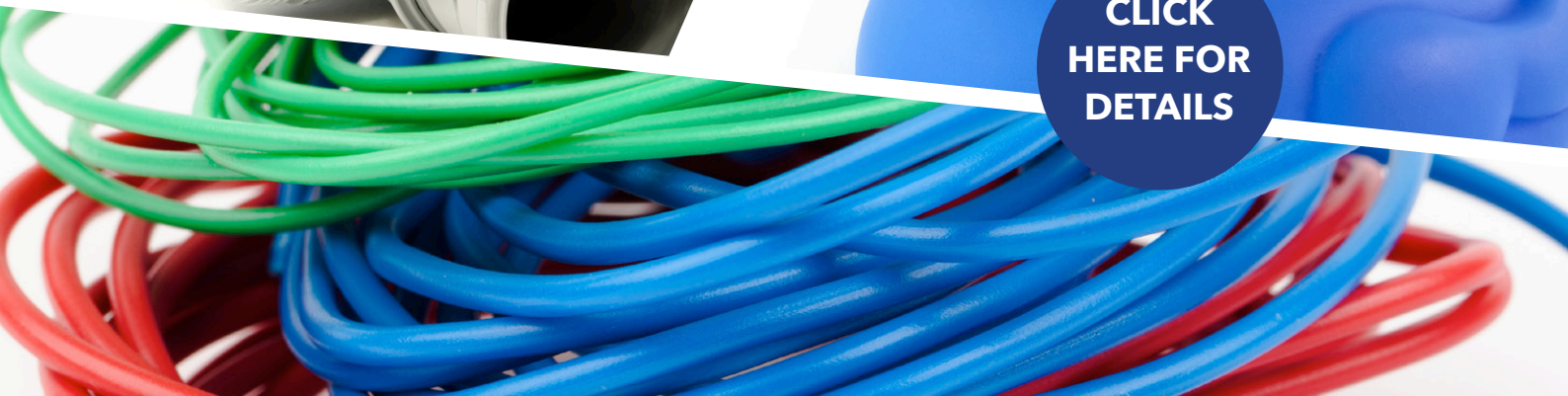
PVC Formulation

2018

*International conference on the PVC industry, compounding,
recipes and market trends*

February 27-28, 2018

Pittsburgh Marriott City Center, Pittsburgh, Pennsylvania, USA



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by **Eléonore Mullier**, Senior Associate at **Step toe and Johnson** in Belgium. She will be followed by **Alfred Voskian** and **Jytte Syska**, Partners at **Syska Voskian Consulting** in Denmark, who will discuss EU REACH and CLP (Classification, Labelling and Package) regulations and their impact on European plastic compounding operations.

Additive regulation

The final session of Day One will see **Daniel Friedrich**, Scientific Project Manager and Lecturer at **Lucerne University of Applied Sciences - Engineering and Architecture** in Switzerland, explain the process of self-regulation in the bio fibre-reinforced plastics industry and the power behind the use of eco-labels. And the first day programme will be brought to a close by **Michael Scherzinger**, Solution Specialist at **Adjuvo KFT** in Hungary, who will update attendees on European moves to regulate packaging inks and detail some key national-level legislation.

Circular economy

Day Two of Plastics Regulations 2018 will be opened by **Joachim Quoden**, Managing Director, **EXPRA - Extended Producer Responsibility Alliance** in Belgium, who will discuss the current status of the Circular Economy Package initiative for packaging and the outcome of the EU Plastics Strategy. The focus then turns to food contact. **Dr Grant B Kenion**, Scientific Fellow at **Henkel Corporation** in the US, will explore the US FDA food contact notification system and discuss the case for harmonised acceptance in the EU. This will be followed with an explanation of Chinese food contact materials and articles regulatory compliance from **Cathy Yu**, Head of Food and Food Contact Regulatory Affairs Department at **Hangzhou CIRS** in China.

Dr Jürgen Towara, Head of Food Contact Compliance EU at **Intertek** in Germany, will then

discuss food contact approaches in the ASEAN Union, Japan and Korea. And **Tjoena Siere**, Consultant at **AdFoPack** in the Netherlands, will complete the food contact regulatory coverage with a discussion of regulation on food contact materials in the Netherlands.

The final session of the conference opens with a brand owner's perspective on understanding and demonstrating compliance with food contact material legislation by **Dr Stamatios Stamenitis**, Principal Scientist Scientific and Regulatory Affairs at **Wrigley** in Germany. He will be followed by **Siobhan Murphy**, Senior Regulatory Scientist at **The REACH Centre** in the UK, who will detail a way forward for biocides in plastic food contact materials. And the conference will be brought to a close by **Dr Sarah Saminadin Peter**, Food Contact Expert - Health, Environmental & Regulatory Services (HERS) at **Intertek** in Germany, who will explore the process of European compliance for materials in contact with drinking water.

Food contact workshop

Plastics Regulations 2018 will be preceded by a one-day workshop. Run by the transatlantic food contact and food safety practice team at law firm Step toe and Johnson, Food Contact Materials 101 EU and US: What You Need to Know is targeted at legal and regulatory compliance officers wanting to acquire a solid understanding of all current aspects of EU and US food contact compliance.

The workshop will be a one-stop-shop opportunity for participants of Plastics Regulations 2018 to get a comprehensive overview of requirements for EU and US food contact compliance. It will be delivered by **Dr Mitch Cheeseman**, Managing Director at **Step toe and Johnson** in the US, and **Gyöngyi David** and **Dr Anna Gergely**, Associate and Director EHS Regulatory respectively at **Step toe & Johnson** in Belgium.



About Plastics Regulations 2018

Scheduled for 14-15 March 2018 at the Maritim Hotel in Cologne, Germany, Plastics Regulations 2018 will provide expert analysis and guidance on a wide range of international legislative and regulatory issues that impact on polymer producers, compounders, processors and end users, including REACH, Food contact regulation, and the potential impacts of Brexit.

The event will be preceded by a Food Contact Materials workshop run by international law firm Step toe & Johnson. This event, which is optional, will cover all the essentials of food contact plastics regulation in the EU and US markets.

To find out more about the conference and/or the pre-conference workshop and to book your place visit the [conference website](#) or contact Conference Organiser Jasmine Coles. Email: jasmine.Coles@ami.international Tel: +44 (0) 117 314 8111

Expert data and robust research for the industrial and agricultural films sector

Reports published by AMI consulting:

To be
Published
March 2018

Polyethylene films, the global market 2018

The rapid projected growth in production of polyethylene films in some regions of the world, including North East Asia, will give rise to increased levels of global trade in certain types of films and bags during the next five years and beyond.

This report will enable your company to formulate coherent plans for its future progress within the polyethylene film industry and prepare meaningful market strategies to fully exploit business opportunities.

Save EUR 1,000 by ordering before the publication date

Agricultural films, the global market 2017

Rapid growth in the use of innovative plastic films drives developments in sustainable, efficient and smart farming. Find out about the market drivers and inhibitors, growth prospects and who the leading global producers of silage, mulch and greenhouse films are.

Palletisation films, the global market 2017

The global palletisation films industry dramatically consolidates - a result of major cuts in margins. Find out who is left among the leading producers of pallet stretch wrap, shrink hoods and stretch hoods, understand the competitive dynamics between the film types and learn about their future prospects.

AMI Consulting offers a full range of strategic client services and is Europe's largest consultancy dedicated to providing business research and analysis for the global plastics industry.

For more information contact us on:
**+44 (0)117
924 9442**

Collation films,
the European
market 2016
40%
discount

Palletisation films,
the European
market 2016
40%
discount

Heavy duty sacks,
the European
market 2016
40%
discount

Agricultural films,
the European
market 2014
50%
discount

For more information please email sarah.phillips@ami.international
or our website www.ami.international/cons

Single-Serve Capsules 2018

Identifying opportunities
and overcoming obstacles
in the single-serve
capsules industry

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Single-Serve Capsules USA brings together industry-elite speakers to debate and evaluate the trends, innovations, challenges and opportunities facing the industry through the entire value chain of plastic and metal capsules. Following the hugely successful launch event in Europe, this unique forum includes coffee roasters, brand owners, capsule fillers, capsule moulders, material suppliers, technology and machinery suppliers.

In addition to a packed programme of expert presentations, the forum provides numerous opportunities to network with key industry stakeholders, as well as an exhibition showcasing the latest innovations.

PS: Great sponsorship opportunities available!

JOIN US & BE PART OF THE EVENT

June 19-20, 2018, The Westin Chicago North Shore, Wheeling, Illinois, USA

To register as an exhibitor or delegate and to get more information on sponsorship packages, please contact the Conference Organizer, Agata Swietek at
Tel: +44 (0) 117 314 8111 Email: agata.swietek@ami.international

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FLEXIBLE PACKAGING

All-PE laminate will boost recyclability

Dow Packaging and Specialty Plastics has developed a polyethylene (PE) resin formulation that allows the creation of an all-PE laminate for flexible packaging.

It says that the material will be particularly useful in India, where there are tough new rules governing plastic packaging: guidelines issued in India by the Ministry of State for Environment, Forest and Climate Change call for non-recyclable, multi-polymer packaging to be phased out, said the company.

Flexible packaging typically uses many layers of different polymers and additives that are difficult to separate and recycle. Dow's mono-material laminate maintains high performance while being easily recyclable after use, it says.

"Our all-PE laminate will allow fully recyclability of flexible packaging waste in India," said Bambang Candra, Asia Pacific commercial vice president at the company.

"We will work with local brand owners to help them meet the new regulations."

The technology will be on show at the PlastIndia exhibition, held in early February.

► www.dow.com

BARRIER FILM

New generation BOPP film cuts oxygen transmission

Toray Plastics (America) has developed its third generation of Torayfan high barrier BOPP film.

The new Torayfan CB3 portfolio uses the company's proprietary formulation and a patented PVdC-free coating. The films offer high oxygen and moisture barrier protection and are available in sealable and non-sealable versions.

The 70- and 80-gauge CB3 films are a thinner alternative to thicker OPP films and enable source reduction, yield, and economic benefits, says the company.

CB3 films, which are highly transparent, are suited for bags, pouches, stand-up pouches, and



flow wrap. Among their applications are nuts, seeds, salted snacks, cookies, dried fruit, and confectionery.

Tammy Williamson, associate product manager of the Torayfan PP films division, said the new CB3 technology has an oxygen transmission rate (O2TR) of 0.06cc/100in²/day at 73F, 0% RH, without any compromise to moisture-barrier properties. Earlier CB films

have an O2TR value of 0.25.

"With CB3, manufacturers can specify a transparent package with even greater shelf stability, without PVdC issues," she said.

CB3 films can also replace acrylic-coated and AIOx-coated films, EVOH sealant web films, and metallised BOPP films. They run on VFFS and HFFS equipment.

► www.toraytpa.com

IN MOULD LABELS

Thicker film expands IMLs

BOPP film specialist Treofan is adding a new, 70 micron thick film product to its EUP range of high-performance in-mould labelling (IML) films.

Matte on both sides, the EUP70 technology platform was developed to meet the requirements of sheet-fed offset printing. Its high stiffness enables high processing speeds with high quality, while the low density ensures optimal area yield.

Until now, the EUP product family was available in thicknesses of 50 (EUP50) and 60 (EUP60) microns.

"The new 70 micron version is in response to our customers' ever-growing requirements when it comes to processing efficiency and quality," said Joachim Jung, responsible for product management and business development at Treofan. "Its development is a result of close collaboration with machinery manufacturers, converters and brand owners in the in-mould labeling industry."

► www.treofan.com



SOFTWARE

ERP helps flexpack producers

Open Systems, a US-based ERP software developer, has released the latest version of Traverse Flex-Pack - which provides integrated accounting, distribution and manufacturing functionality for flexible packaging manufacturers.

Version 11 of the software is built on a new platform that helps users take advantage of mobile technology, says the company.

The software can be used across the range of flexible packaging formats and operations, including blown film extrusion, bag making and stand-up pouches, printing and laminating.

Paul Lundquist, vice president of corporate development, said: "It handles the complex needs and standards unique to the flexible packaging industry."

Features of the software include:

- specialised quoting for volume pricing;
- integrated processes, including converting, printing, extrusion, slitting and laminating;
- a custom product, created by defining length, width, gusset and other factors; and,
- complete tracing via barcode, from receipt of raw materials through all manufacturing processes.

➤ www.osas.com

ANCILLARIES

Monitoring software minimises energy consumption in dryer

Maguire Products has developed monitoring software for its VBD vacuum dryer that makes constant adjustments to keep power consumption to a minimum.

While vacuum dryers already use less energy than conventional desiccant dryers, their energy efficiency is greatest when they operate close to their throughput capacity - and this varies depending on the demands of the extrusion process.

"The new software eliminates the penalty for low-throughput operation by using data from previous heating cycles to adjust the current cycle - ensuring that the minimum energy is used while achieving adequate and complete heating of the resin," said Frank Kavanagh, vice president of sales and marketing. "We now offer the

software as a standard feature on all VBD dryers, and it is available for upgrading existing dryers at no cost."

If operated at full capacity of 300lbs (136kg) per hour, the VBD-300 dryer typically has an energy consumption of 46 Watts/kg/hr when drying polycarbonate at 250F (121°C). Now, the same dryer can operate at nearly the same low level of energy consumption at throughputs of only 25lbs (11kg) per hour with no operator intervention.

All controllers for VBD dryers now include a standard onboard energy consumption display and logging capability. The controller shows both real-time and time-averaged values in the industry standard of Watts/kg/hr.

➤ www.maguire.com



AUTOMOTIVE

Vacuum lamination makes Tesla doors

US car manufacturer Tesla is using Kiefel's vacuum laminating technology to make internal door panels for two of its electric cars.

In each case, the interior fittings must be lightweight. For the Model X - an SUV - a PP door carrier is given a surface of TPO

film with foam backing using vacuum lamination on an inline Kiefel machine. Kiefel machines also handle the next step in the process - called edge-folding.

After success on this project, Tesla scaled up production and used the technology for its higher

volume Model 3. Four inline vacuum laminating systems are used to produce paneling for the vehicle - in a cycle time of 50 seconds.

Kiefel developed a new inline system concept - including tools that can be changed in just six minutes - for the edge folding.

"Tesla will make more than 2,000 Model 3 vehicles per day - so short cycle times and rapid tool changes are indispensable," said Wolfgang Eglseer, sales manager at Kiefel.

Tesla has two plants in the US and two in Mexico that use this technology.

➤ www.kiefel.com



Plastics Regulations

2018

*Responding to new and future regulatory developments
that will impact on the plastics supply chain*

14-15 March 2018
Maritim Hotel, Cologne, Germany



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Biax Film 2018

The international
conference and exhibition
for the bi-oriented film
industry

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AMI is delighted to announce the launch of *Biax Film 2018*, the only global conference dedicated exclusively to the bi-oriented film industry.

In recognition of changing demand patterns and supply dynamics, AMI is bringing together its widely respected BOPP Film and BOPET Film conferences to create a unique forum for the entire BOPP, BOPET, BOPA and BOPE supply chain.

In addition to the extensive two-day programme of conference sessions, there will be an accompanying exhibition with plenty of networking opportunities during the refreshments breaks, lunches and an evening cocktail reception.

PS: Great sponsorship opportunities available!

JOIN US & BE PART OF THE EVENT

19-21 June 2018, Austria Trend Hotel Savoyen, Vienna, Austria

To register as an exhibitor or delegate and to get more information on sponsorship packages, please contact the organiser Sabrina Redl on Tel: +44 (0) 117 314 8111 Email: sabrina.redl@ami.international

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WORLD EXTRUSION

Download these new product brochures

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

BG PLAST: FOIL AND SHEET PLANTS



This brochure provides information on BG Plast's Complete Extrusion Plants for producing foils and sheets for multiple uses including thermoformed packaging, chemical tanks and containers, applications in cars, household appliances, footwear, lighting and construction.

[CLICK HERE TO DOWNLOAD](#)

MACCHI: FILM EXTRUSION



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.

[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](#)

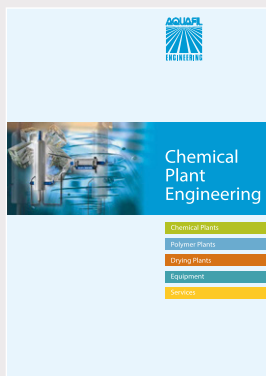
W&H: VAREX II FILM SYSTEMS



Varex II is Windmüller & Hölscher's latest universal system for high output blown film production. This publication details the critical Varex II system features that ensure production of the highest quality films with minimal scrap and highest plant efficiency.

[CLICK HERE TO DOWNLOAD](#)

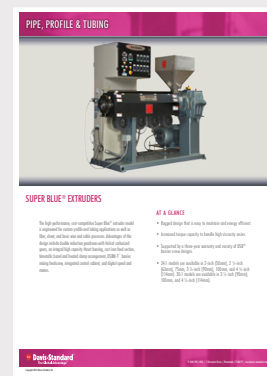
AQUAFIL: PLANT ENGINEERING



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.

[CLICK HERE TO DOWNLOAD](#)

DAVIS-STANDARD: EXTRUDERS



The Super Blue range of single screw extruders from Davis-Standard is designed for cost effective production of a wide variety of polymer products. This brochure details the key features of the range, which extends from 50.8mm to 114.3mm screw diameter.

[CLICK HERE TO DOWNLOAD](#)

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

Medical Fluid Bags 2018

The international conference on polymer bags for fluid containment in medical applications

[CLICK HERE FOR DETAILS](#)



AMI is delighted to announce the launch of *Medical Fluid Bags 2018*. This conference will cover the latest advances in the design & production of polymer bags and pouches for fluid containment in medical applications.

The conference will examine:

- The latest developments in the market
- Plastics and additives options
- Film calendaring and extrusion technologies
- Bag production techniques
- Design trends and new market opportunities
- Product testing and compliance issues

Medical Fluid Bags 2018 will take place after AMI's Medical Tubing 2018 conference, which is being held at the same hotel on 19-20 June. Special rates are available for delegates and exhibitors wishing to attend both events.

JOIN US & BE PART OF THE EVENT

21-22 June 2018, Maritim Hotel, Cologne, Germany

To register as an exhibitor or delegate and to get more information on sponsorship packages, please contact the organiser Kaja-Marie Beiswanger on Tel: +44 (0) 117 314 8111 Email: kaja-marie.beiswanger@ami.international

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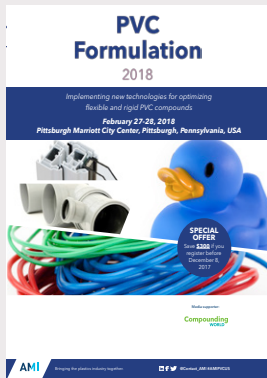
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Learn more about AMI's upcoming conferences

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

PVC FORMULATION USA



AMI's successful PVC Formulation conference takes place for the first time in North America on 27-28 February 2018 in Pittsburgh, PA, USA. The event covers business issues, market trends, sustainability, technology developments and materials innovations.

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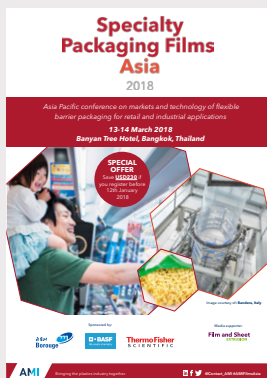
BREATHABLE FILMS 2018



Taking place in Cologne, Germany, on 7-8 March 2018, Breathable Films is a new conference from AMI focused on the developing area of micro-porous films. It will address emerging application areas as well as new material and processing developments.

[CLICK HERE TO DOWNLOAD](#)

SPECIALITY PACKAGING FILMS ASIA



AMI's fifth conference focused on the Asia-Pacific packaging films market will convene in Bangkok, Thailand, on 13-14 March 2018. Its expert speaker line up will address the latest application trends and materials innovations, including high barrier.

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PLASTICS REGULATIONS 2018



AMI's second Plastics Regulations conference takes place in Cologne, Germany, on 14-15 March 2018, bringing together expert speakers to deliver critical advice on REACH, biocides, nanomaterials, the circular economy, printing inks and food contact polymers.

[CLICK HERE TO DOWNLOAD](#)

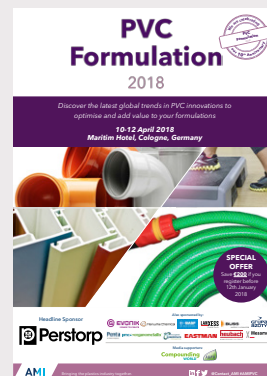
THIN WALL PACKAGING USA 2018



The 7th AMI international conference on thin wall packaging will take place on March 20-21, 2018 in Chicago, IL, USA. The event offers a unique networking opportunity for buyers and suppliers to debate the latest developments in light weight plastics packaging.

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PVC FORMULATION 2018 EUROPE



The 10th anniversary edition of AMI's European PVC Formulation conference takes place in Cologne in Germany on 10-12 April 2018. This industry-leading event covers business developments and technical innovations in all PVC markets.

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

Argha Karya Prima Industry

Head office:	Bogor, Indonesia
President:	Wilson Pribadi
Founded:	1980
Ownership:	Public (listed on Indonesia Stock Exchange)
Profile:	Argha Karya Prima Industry (AKPI) was founded in 1980 in Jakarta and began making BOPP film in 1982. Its flexible packaging film is used by a host of end-use industries including tobacco, food products, while it is also a producer of laminated paper and adhesive tapes, among other products. It is also a producer of BOPET film.
Product lines:	The company has two main brands: Arlene and Areta. Arlene is the most prevalent product, encompassing a wide range of BOPP films - from plain films for printing and lamination, through heat-sealable products for printing and over-wrapping through to metallised, matte, acrylic-coated and oxo-biodegradable films. The smaller Areta range includes clear and metallised BOPET films, as well as PVDC-coated grades, corona-treated versions, a special grade that has high OD, as well as an 'enhanced' film with high metal adhesion and superior printing and lamination quality.
Factory locations:	The company has two manufacturing plants: its Indonesia facility has a capacity of 67,000 tonnes/year of BOPP and 11,000 tonnes/year of BOPET. Its second plant - at sister company Stenta Films in Malaysia, which began business in 1991 - has a capacity of 17,000 tonnes/year of BOPP. In-house technology includes eight lines from Brueckner of Germany. The company exports more than 50% of its output: its main overseas market is Asia, but it also exports to the Middle East, Africa, North and South America, and Europe.

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

Film and Sheet FORTHCOMING FEATURES EXTRUSION

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

March 2018

Thermoforming applications
Additives for film
Control & Instrumentation

April 2018

Flat die developments
Agricultural films
Film winders
Show preview: Chinaplas 2018

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

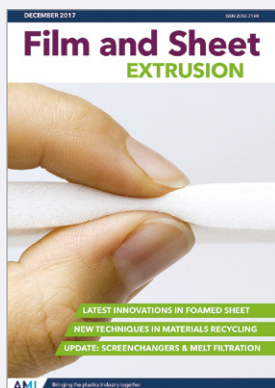
For information on advertising in these issues, please contact:

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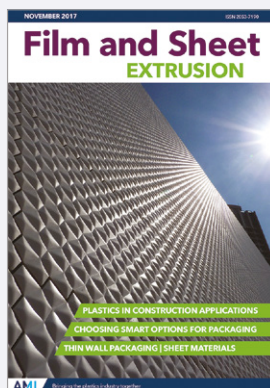
AMI publishes five process-specific FREE plastics industry magazines. Simply click on the cover below to read each magazine. Or download the issue in the relevant Apple or Android app



Film and Sheet December 2017

The December edition of Film and Sheet Extrusion magazine looks at new developments in foamed sheet production. It also reviews the agricultural films market and highlights some innovations in plastics recycling, melt filtration and static management.

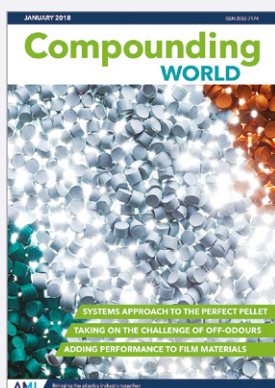
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Film and Sheet November 2017

The November edition of Film and Sheet Extrusion magazine reviews some of the latest applications of plastics in the construction industry. It also looks at developments in thin wall packaging production and highlights recent innovations in intelligent and active packaging.

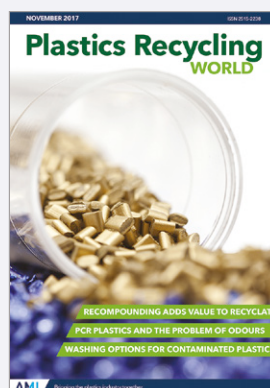
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Compounding World January 2018

The January 2018 edition of Compounding World takes a look at the latest innovations in pelletising technology. This issue also explores developments in odour and emissions control, additives for films and polymer foaming.

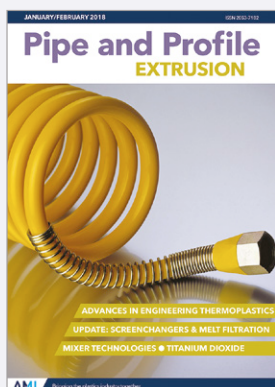
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Plastics Recycling World November 2017

The November issue of AMI's new magazine Plastics Recycling World looks at how recomounding technology allows plastics recyclers to add value to recycle. The edition features other technology developments in washing plant, odour reduction and process monitoring.

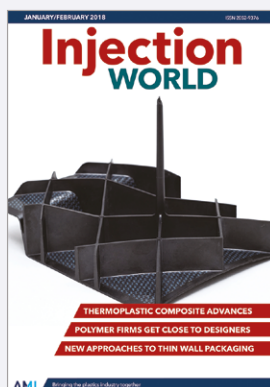
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Pipe and Profile January/February 2018

The January/February 2018 edition of Pipe and Profile Extrusion considers how engineering plastics and composites are being utilised in extruded applications. Other features cover titanium dioxide and technology advances in melt filtration and mixers.

[CLICK HERE TO VIEW](#)



Injection World January/February 2018

The January-February issue of Injection World examines the advances being made with overmoulding thermoplastic composites. It also looks at how polymer firms are collaborating with product designers, and the latest in thin wall packaging.

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Film and Sheet
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Pipe and Profile
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Injection
WORLD

Plastics Recycling
WORLD

GLOBAL EXHIBITION GUIDE

2018

7-12 February	PlastIndia, Gandhinagar, India	www.plastindia.org
11-13 March	Plast Alger, Algiers, Algeria	www.plastalger.com
20-22 March	Plastics & Rubber Vietnam, Ho Chi Minh City	http://plasticsvietnam.com
22-24 March	MECCSPE, Parma, Italy	www.mecspe.com
27-29 March	Plastprintpak Nigeria, Lagos, Nigeria	www.ppp-nigeria.com
24-27 April	Chinaplas, Shanghai, China	www.chinaplasonline.com
7-11 May	NPE, Orlando, USA	www.npe.org
9-11 May	Plastic Japan, Osaka, Japan	www.plas.jp
15-18 May	Elmia Polymer, Jönköping, Sweden	www.elmia.se
22-25 May	Plastpol, Kielce, Poland	www.targikielce.pl
29 May-1 June	Plast, Milan, Italy	www.plastonline.org/en
11-14 June	Argenplas, Buenos Aires, Argentina	www.argenplas.com.ar/en
19-20 June	Plastics Design & Moulding, Telford, UK	www.pdmevent.com
20-23 June	Interplas Thailand, Bangkok	www.interplasthailand.com
27-28 June	Compounding World Expo, Essen, Germany	www.compoundingworldexpo.com
27-28 June	Plastics Recycling World Expo, Essen, Germany	www.prwexhibition.com
15-19 August	Taipei Plas, Taipei, Taiwan	www.taipeiplas.com.tw
19-22 September	Indoplast, Jakarta, Indonesia	www.indoprintpackplas.com
24-28 September	ColombiaPlast, Bogota, Colombia	www.colombiaplast.org

AMI CONFERENCES

7-8 March 2018	Breathable Films, Cologne, Germany
13-14 March 2018	Specialty Packaging Films, Bangkok, Thailand
14-15 March 2018	Plastics Regulations, Cologne, Germany
20-21 March 2018	Thin Wall Packaging, Chicago, USA
10-11 April 2018	Multilayer Flexible Packaging, Chicago, USA
16-18 April 2018	Stretch & Shrink Film, Madrid, Spain
24-25 April 2018	Plastic Pouches, Vienna, Austria
19-21 June 2018	Biax Film, Vienna, Austria

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