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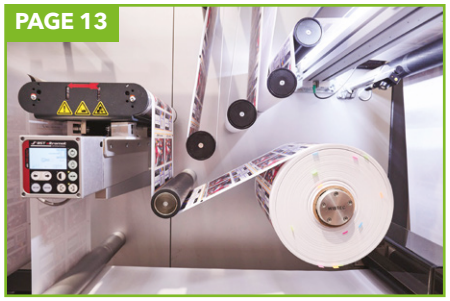

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Bio-on plans PHA plant in Mexico

Bio-on of Italy is to begin producing poly hydroxy alkanoate (PHA) bioplastic in Mexico, in collaboration with textile specialist Innova Imagen.

The agreement will see Bio-on grant exclusive access to Innova Imagen to use the material for 18 months. The new plant will use sustainable raw materials – such as waste from the agave processing – to create the PHA.

"This agreement is worth €0.5m to us," said Bio-on. "It is the first of its kind in the Central-North American region and confirms the success of the business model based on the licensing one of the most innovative technologies in biopolymers."

Tasks related to engineering and the business plan will be implemented by both teams, while engineering and 'Recovery and Fermentation' Bio-on units will develop links between the future PHA plant and other production sites in the area – which have yet to be identified.

"The PHA revolution is already a reality, and those who want to implement radically green technologies and shift towards sustainable production systems have no more excuses," said Marco Astorri, president and CEO of Bio-on.

› **www.bio-on.it**

Astorri: "The PHA revolution is already a reality"

RKW to expand US plant

German film manufacturer RKW has invested nearly US$19 million to expand its US production site in Franklin, Kentucky.

The expansion will enable RKW to offer more of its products in North America, and will create 30 new full-time jobs.

"Not only will this investment allow RKW North America to tap into new markets, it will also create new job opportunities and therefore strengthen the economy of the Franklin area," said Kenneth Budlong, general manager of RKW North America.

The expansion includes the construction of a new 30,000 sq ft manufacturing and warehouse facility, plus investments in new equipment.

› **www.rkw-group.com**

Faerch offers alternative to black CPET food trays in UK

Faerch of Denmark says it is ready to introduce an alternative to the black PET food tray in the UK.

The company says its new product family contains 80% recycled mixed-colour PET, is NIR-detectable by the UK's existing recycling infrastructure and is available in all current shapes and sizes.

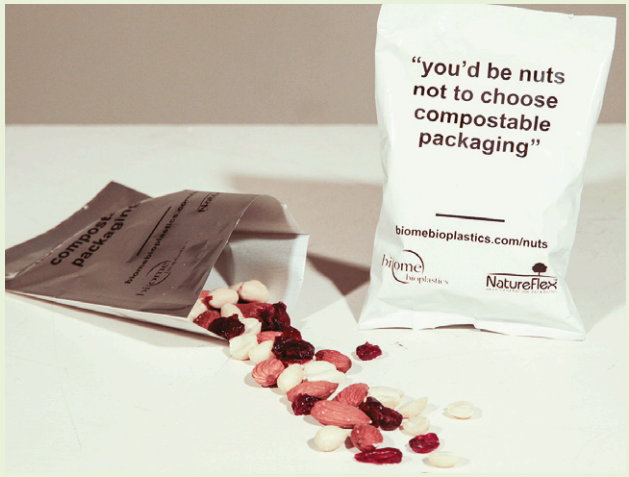
Most food trays in the UK are made from carbon black-based CPET, which are difficult to separate using existing techniques, says Faerch.

The new product has no extra colour added to the recycled input material, resulting in a natural colour with slightly varying shades. Detectability of the trays is guaranteed, says Faerch, as the material has already passed through NIR detection in its prior life as a bottle or tray.

In addition to the tray itself, Faerch offers a linked recycling programme to retailers: for all the product it sells, it will recycle an identical quantity of trays – at its 4PET recycling subsidiary – and processed them into new trays of equivalent quality.

Faerch bought Netherlands-based 4PET in February 2019.

› **www.faerch.com**



Biome Bioplastics and Futamura have teamed up in the UK to demonstrate a range of bio-based and compostable multilayer films. The materials, which will be applied to packaging formats such as multilayer pouches, will help towards meeting the UK Plastics Pact target – that 70% of plastic packaging must be effectively recycled or composted by 2025.

› **www.biomebioplastics.com**

Octal invests in Oman to boost PET sheet

PET resin and sheet producer Octal plans to invest at least US$50m in its PET sheet business in Oman this year.

The bulk of the investment will expand PET sheet capacity by improving existing machinery, increasing operational efficiencies and generating cost savings, said the company.

Nicholas Barakat, CEO of Octal, said: "Our investment going forward is driven by customers' need for a superior product that meets their packaging and environmental requirements."

He said Octal has boosted sales to South America and recently increased capacity in its Cincinnati, US plant to 40,000 tonnes/year.

Octal says that, between 2016 and 2018, its volumes rose by 10% and revenues were up 24%, adding that 2019 promises to keep "delivering favourably".

The company said the increase in its PET sheet business has been driven by increased volumes – firstly by operational efficiency, then by capacity.

Scott Ewen, chief financial officer of Octal, said: "Cost control and cost reduction initiatives have been fundamental in ensuring financial sustainability over the long term."

› **www.octal.com**

Change of ownership for USA-based Paragon Films

US-based stretch film manufacturer Paragon Films is to change hands – between two venture capital companies.

Wellspring Capital Management is to buy the firm from Wind Point Partners – which acquired the company just over two years ago.

Terms of the transaction were not disclosed – but a recent Bloomberg report said that the deal could be worth as much as US$500m.

The transaction is expected to close within 45 days, according to the companies.

Alex Washington, managing director at Wind Point, said: "Paragon is a case study in Wind Point's investment strategy of assisting family-owned companies to effect a successful leadership transition and unlock additional areas for equity value creation."

Paragon was founded in 1988 in Tulsa, Oklahoma as a producer of stretch film. It later expanded to three USA production plants – in Oklahoma, North Carolina, and Washington.

› **www.paragonfilms.com**

NEWS IN BRIEF...

Spanish film producer **Poligal** has closed its Narón production plant in Spain, in order to boost competitiveness. The company says that current market conditions, ongoing raw material price rises and excess installed capacity have combined to reduce profitability at the plant – leading to its closure. Poligal says it will continue to serve its customers from its plants in Portugal and Poland.
www.poligal.com

USA-based **RLR Industries** has expanded by acquiring the thermoforming business of **ALP Lighting Components**. This sale supports ALP's focus on injection moulding, compression moulding and metal fabrication. It follows ALP's earlier sale of its extrusion business in 2018 – and will result in the company closing its plant in Olive Branch, Mississippi. The two companies have worked together for around 30 years.
https://rlrindinc.com
www.alplighting.com

Indian ancillary expansion

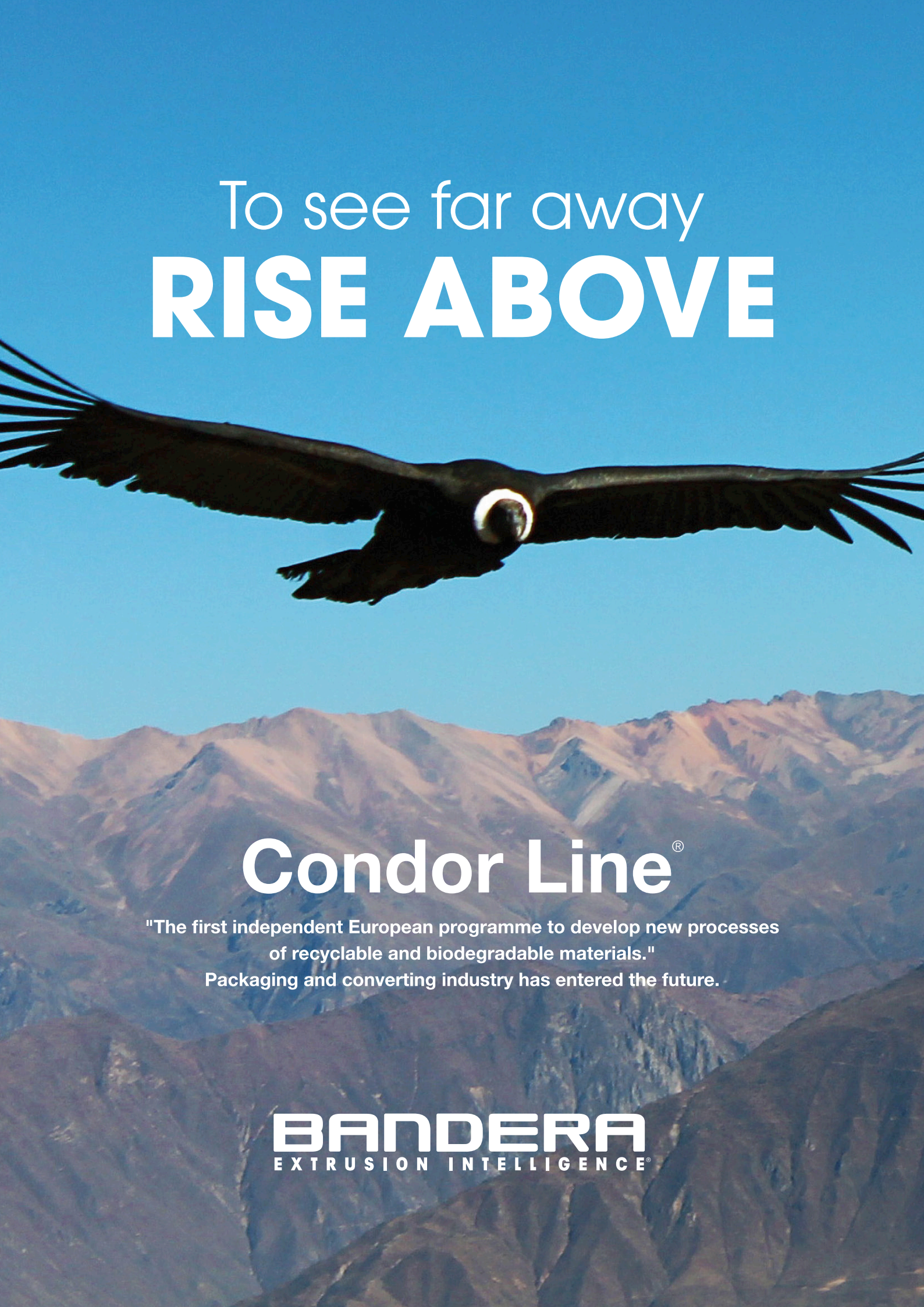
Motan-Colortronic's subsidiary in India has moved to larger premises in Chennai – allowing the company to triple local production.

"Now, we not only cover the increasing demand for high quality peripheral units and systems, but also provide shorter delivery times," said Srikanth Padmanabhan, MD of the subsidiary.

At the recent opening ceremony for the facility, the company exhibited a number of units – including its new Metrovac SG blower station.

Sandra Füllsack, CEO of Motan Group, said: "For a long time we have been convinced that India is the market of the future. It was always our goal to be on site when the market was ready for our products."

› **www.motan-colortronic.com**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Expo panel shines spotlight on role of women in plastics sector

A panel discussion at the upcoming Plastics Extrusion World Expo will debate a number of key issues surrounding the professional development of women in the plastics industry.

'Women in Plastics: Empowering Industry Change' is a special panel featuring high-achieving women from across the world of plastics sharing their perspectives on breaking through in this traditionally male-dominated industry.

Among the topics being explored, the 45-minute panel will look at the different paths these leaders have made into the plastics industry, how the modern workplace is changing to become more inclusive, and future challenges and opportunities for the next generation of women entering into plastics or other manufacturing professions.

Panellists in the Women in Plastics include (left to right): Lauren Hickey, Jennifer Profitt, Meli Laurance, Candace Sanders and Molly Bridger

The panellists include:

- Lauren Hickey, director of marketing and product management at masterbatch manufacturer Americhem;
- Jennifer Profitt, plant manager at profile and sidings producer Associated Materials;
- Meli Laurance, regional commercial industry manager for plastics at global pigment specialist BASF Colors and Effects;
- Candace Sanders, assistant plant manager at PVC product supplier Genova Products; and,
- Molly Bridger, group director of marketing at thermoplastic materials manufacturer Simona America.

Organised by AMI, the Plastics Extrusion World Expo will take place at the Huntington Convention Center in Cleveland, Ohio, USA on May 8-9, 2019. It is being held alongside the Compounding World Expo and the Plastics Recycling World Expo. By registering in advance, visitors will receive free admission to all three exhibitions, featuring more than 200 suppliers, plus free entry to five conference theatres hosting technical presentations, educational seminars and business debates. Attendees also have the option to buy tickets for a networking party at Cleveland's Rock and Roll Hall of Fame on the evening of May 8.

Admission to the tradeshow and its conference theatre will be free-of-charge to visitors who register in advance **here**.

To book a free ticket, which is valid for both days of the event, visit: **ami.ltd/Register-AMI-Expos**

Reifenhäuser expands expertise in water cooling with Plamex takeover

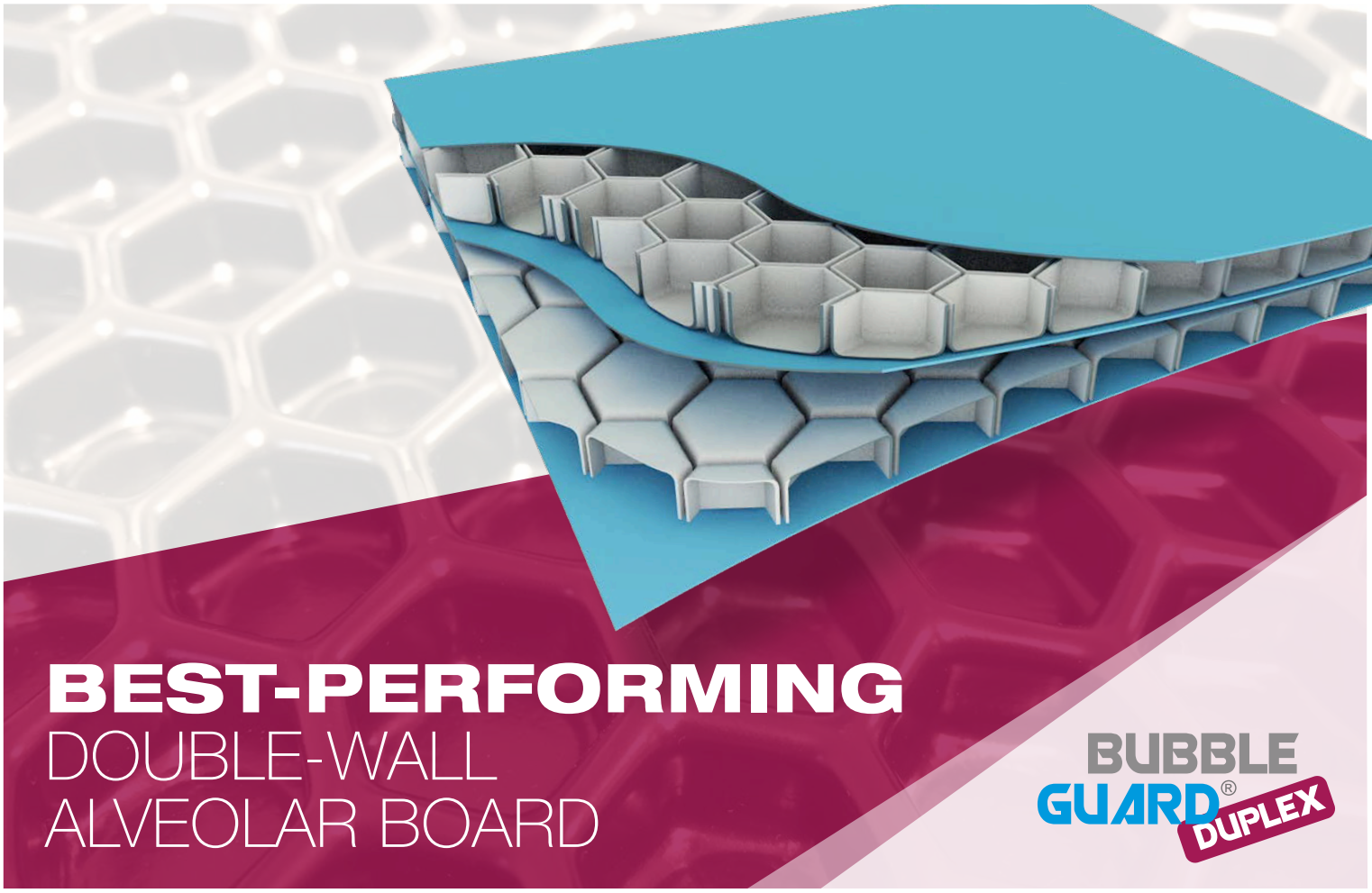
Germany's Reifenhäuser has acquired Plamex Maschinenbau – a supplier of blown film lines and extrusion components.

Reifenhäuser says the acquisition expands its product range to include new technologies for flexible film production – as Plamex's core competences are blown film lines for water-cooled and biaxially oriented films for the medical and food packaging industry.

"The extremely efficient water cooling keeps the polymer in amorphous state and produces a glossy and transparent film with remarkable puncture resistance and very good barrier properties," said Bernd Reifenhäuser, CEO of Reifenhäuser Group. "In our discussions with customers we can now provide even more differentiated advice and deliver the optimum solution for a particular application."

Plamex will continue operations under the name Reifenhäuser Blown Film Plamex. Manfred Kurscheid, a managing director of the new division, added: "Water cooled blown film extrusion lines for medical applications, such as infusion bags, and biaxially oriented multi-layer films, have not been in the scope of the Reifenhäuser group before. Now we can offer water-quench, double- and multi-bubble technologies."

› **www.reifenhauser.com**



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Join the party at the Rock and Roll Hall of Fame in Cleveland

Cleveland's iconic Rock and Roll Hall of Fame will be the venue for a major networking party for the plastics industry on the evening of May 8, 2019. The event will be open to visitors and exhibitors from the plastics extrusion, recycling and compounding tradeshows, which are being held at the nearby Huntington Convention Center on May 8-9.

Admission to the Plastics Recycling World Expo, Plastics Extrusion World Expo and the Compounding World Expo plus their associated conferences is free-of-charge if you **register in advance**. Advance tickets for the networking party cost just $20 (less than a standard ticket), and they include exclusive access to all of the Rock and Roll Hall of Fame exhibits, plus a drink and some nibbles – **details here**. The party will run from 7:00PM to 11:00PM.

"This fantastic venue will provide a great place for attendees to relax and network after a busy first day at the exhibitions, which will feature more than 230 exhibitors and over 120 speakers across five free-to-attend conference theatres," said Rita Andrews, head of exhibitions at AMI, the organiser of the events.

Located on the shore of Lake Erie in downtown Cleveland, the Rock and Roll Hall of Fame is a short walk from the Huntington Convention Center and neighbouring hotels. Housed in an eye-catching structure designed by I. M. Pei, it boasts an extensive collection of popular music artefacts spread over six floors. Multi-media exhibits map out the history of rock music and the people who created it.

The breadth and depth of the display is hugely impressive, covering everything from the birth of rock and roll through to current pop stars and everything in between. Fans of rock, pop, blues, country, folk, gospel, soul, funk, R&B, heavy metal, punk, new wave or hip hop will all find plenty to enjoy among the thousands of objects on display.

For example, the attractions include Jimi Hendrix's Stratocaster guitar, David Bowie's iconic outfits, Keith Moon's platform shoes, John Lennon's Sgt Pepper suit, Run DMC's Adidas sneakers, and the awning from legendary New York venue CBGB.

The Hall of Fame also features exhibits on cities that have had a major impact on the development of rock and roll, including Memphis, Detroit, London, Liverpool, San Francisco, Los Angeles, New York, and Seattle. There are also displays focusing on the influential local music scenes in Cleveland, Akron and beyond.

For those who have been lucky enough to visit the attraction before, there is always something new to see including recent acquisitions and constantly evolving temporary exhibits. This year there are displays honouring the 2019 inductees to the Hall of Fame, which are The Cure, Def Leppard, Janet Jackson, Stevie Nicks, Radiohead, Roxy Music and The Zombies. Another new addition will be an interactive display featuring rock-themed pinball machines to play on.

The party is being sponsored by Technical Process & Engineering (TPEI) and Entek, and is supported by AMI's magazines – *Plastics Recycling World*, *Compounding World*, *Film and Sheet Extrusion* and *Pipe and Profile Extrusion*.

For more information on the Rock and Roll Hall of Fame party and to register for the three industry tradeshows and their five focused conference theatres for free, please visit: **www.plasticsrecyclingworldexpo.com/na/**

North America ends 2018 with rise in sales of machinery

Deliveries of primary plastics machinery in North America increased in the final quarter of 2018 – but full-year figures appear no higher than they were in 2017.

Preliminary figures from the Plastics Industry Association's Committee on Equipment Statistics (CES) reveal Q4 increases in both extrusion and injection moulding equipment: total deliveries for the quarter reached nearly US$377 million – an 8% rise compared to the preceding quarter.

Compared to the equivalent quarter in 2017, single-screw extruders were up by nearly 34% and twin-screw extruders by 52%. For comparison, injection moulding machinery fell by nearly 5%.

Fourth-quarter figures also increased compared to the preceding third quarter of 2017.

"We projected higher shipments for the fourth quarter and that's exactly what transpired," said Perc Pineda, chief economist of the association. "The increase is not due to inflationary pressures of the economy, but purely an increase in the quantity of shipments: the unit shipments of single-screw and twin-screw extruders shipments increased 5.6% and 16.1%, respectively."

Overall, quantities of primary plastics machinery increased by 3.8% compared to the third quarter, he said.

However, while CES did not release full-year sales, previous quarterly results show a total of around US$1.392bn for 2018 – a shade ahead of estimated 2017 figures of US$1.385bn (a growth below 1%).

CES also conducts a quarterly survey of machinery suppliers regarding market conditions and expectation. For the coming quarter,

Pineda: "We projected higher shipments for the fourth quarter and that's exactly what transpired"

75% of respondents expect conditions to improve or hold steady; over the next 12 months, 67% expect the market to be steady-to-better.

There was also consensus that Latin America and Mexico are growing export markets for machinery, while the ongoing US trade tensions with China and uneven economic performance in most of Europe caused a dimmer market outlook in the fourth quarter in both export markets.

"Exporting is a key activity of US plastics machinery makers," said Pineda. "Based on October and November 2018 data, we expect plastics machinery exports on pace to fall short of US$400 million."

■ The US plastics industry saw a rise in both shipments and employee numbers in 2017, said the association in its 2018 Size & Impact Report. It showed that the industry employed 989,000 people in the year (an increase of 2.4% on the previous year) and generated more than US$432 billion in shipments – a 7% growth.

› **www.plasticsindustry.org**

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Taking control of the film production process

*Technologies on show at the forthcoming ICE Europe – including web guidance, quality control and thickness monitoring – can help film extruders improve product quality. **Lou Reade** reports*

The process of converting plastic granules into film is fraught with danger – meaning that a range of technologies are needed to ensure that the product is of the correct size, that printing has been performed correctly, and that there are no surface defects.

The **ICE Europe** show – held in Munich, Germany in March 2019 – will showcase many new technologies that can help film extruders and converters to ensure maximum product quality. For instance, **BST Eltromat** will show a range of innovations in control technology and web guiding.

For example, its FVG POS 100 sensor positioner will be shown in combination with the CLS PRO 600 line and contrast sensor, which can be motor-driven to the desired positions in this configuration. Positioning data is entered via the EKR 500 digital Unit Touch controller or fed into the application via an external bus connection. The bus connection reduces the setup times of the web guiding system by up to 40% with increased operational reliability.

As well as showing how the CLS PRO 600 can control and automatically position webs on the basis of objects, lines and contrasts, the demo unit illustrates the ease of use of the EKR 500 digital unit touch, says the company.

BST will also show its modular, flexibly configurable standard web guiding system CompactGuide for narrow web applications. The WideArray sensors from its subsidiary AccuWeb, and the high-resolution CCD CAM 100 line scan camera complete the presentation. ›

Main image: Visitors to ICE will see many different technologies to control film extrusion and conversion

Right: In web guiding, BST Eltromat will show its FVG POS 100 sensor positioner with the CLS PRO 600 line and contrast sensor

BST will also demonstrate the flexible uses of its PC16S-wave TS transmission sensor – which operates with non-ionising electromagnetic waves (no permit needed), and was first presented as a concept sensor at ICE Europe 2017.

With its non-contact absorption measurement method in transmission, the sensor measures the weight per unit area of polymer-based mono foils with high precision and speed. Typical applications include measurements on flat materials as well as the control of calenders and flat-film extrusion lines. At this year's show, the company uses a technical study to show the additional opportunities that result from the enhancement of this sensor type. The new PC16S-wave RS reflection sensor can be used to measure coatings on metallic films, for example for food packaging. As in the case of the PC16S-wave TS, the measurement is based on the absorption of reflected non-ionising electromagnetic radiation.

Web guide

Italy-based **Re** will also show a wide selection of web guiding systems, actuators and sensors for web alignment – as well as load cells and tension controllers. In web guidance, the company will exhibit its recently developed WG 705, a compact system that allows the operator to obtain a tailor-made device. It can be designed with different dimensions and equipped with various sensors, splice table and other options depending on specific needs.

The company has also developed the SU 11 ultrasonic sensor, which guarantees a measuring range of 6mm (with 0.02mm of resolution). It is provided with an integrated keyboard and can be provided in standard version – for use with Re web guiding systems – or in the US 11 MLO version, for use with a common PLC.

Fluorescent control

Researchers at the **Fraunhofer Institute for Applied Polymer Research** (IAP) in Germany have developed a way of measuring the layer thickness of packaging films using fluorescent inks.

During production, in-line process control can boost quality assurance and ensure that expensive materials are used efficiently. Intelligent monitoring can optimise the manufacturing process so that the minimum amount of a functional component (such as an oxygen barrier layer, or laminating adhesive) is used – leading to considerable material and cost savings.

Fluorescent dyes can be used as additives in the functional layer in order to measure the distribution of the layer thicknesses, by measuring the fluorescent light. The dye is added to the coating material in such small quantities that it is not visible – and material properties are not affected.

"By combining novel packaging materials with effective process control, we aim to make future food packaging safer and cheaper," said the researchers.

Augmented reality

NDC Technologies will use an augmented reality system to help ICE visitors navigate, explore and interact with a virtual, life-size gauging and control system as it measures a moving converted web product.

The company will also display its latest range of gauging systems that help converters to optimise product quality, increase productivity and reduce production costs.

"I believe our augmented reality exhibit will be a real first at this year's ICE Europe," said Jay Luis, global marketing communications manager at NDC Technologies.

"We'll be displaying a virtual demonstration of a complete measurement and control system for converting applications. It will look as though the entire measurement system and moving web product are actually on the booth floor."

Using tablets as the window into this virtual environment, users will get a close-up look at NDC's near-infrared IG710e reflectance gauge that measures moisture, coat weight, coating/laminate thickness on a wide range of substrates. The virtual IG710e will be running on NDC's virtual MiniTrak S-Frame single-sided scanner, moving back-and-forth across the web to make measurements on a virtual label stock.

Viewers will be able to see critical process data on the company's virtual ProNet TDI process controller.

NDC offers a range of web gauging and control

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Right: Fraunhofer researchers are using fluorescent dyes to determine the distribution of the layer thicknesses in packaging film

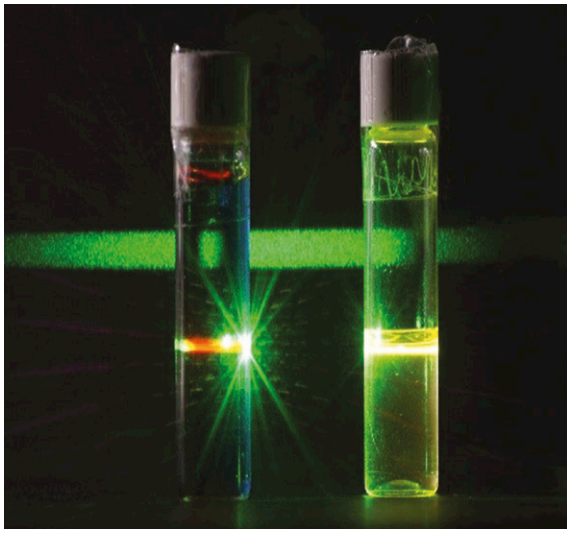
technologies that perform in-process measurements of coat weight, coating thickness, lamination and moisture of converted products.

Each system can be optimised to suit the product and the operational needs of the customer, says the company. Gauging technologies include near-infrared, beta, gamma, X-ray and optical technologies.

In addition to the virtual exhibition, NDC will display a number of its near-infrared gauges, including: SR710S, which measures thin coatings on substrates including metallised plastics; and ConvertIR, which offers fast, fixed-point, on-line measurement of coat weight on films.

NDC will also show its latest Beta LaserMike LaserSpeed Pro encoder, which measures the length and speed of any moving surface with better than ±0.03% accuracy – and without contacting the product.

It uses laser technology to measure both web and packaging products. Applications include: measuring product length and speed at the slitter/rewinder; regulating coating and laminating applications; controlling critical length cutting operations, adjusting roll speeds in flying-splice processes; and monitoring web tension.



Bright idea

Unilux, which develops stroboscopes for inspection and quality control, will present two new technical innovations at ICE Europe.

The first, LED 27, can be integrated seamlessly into OEM machines, and gives very bright coverage in a compact strobe. It runs on 24VDC machine power, which eliminates a separate 110/220V AC supply. The device also features the Smart Assist

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Above: The DST-1 object-recognition sensor from Fife uses multiple cameras to guide a wide range of materials

graphical user interface, which simplifies both operation and system configuration.

The second, called Cross Light Inspection, gives good light contrast to allow better detection of defects on product surfaces. Until recently, says Unilux, factories have had to choose between bright field or dark field illumination. Now, with the latest developments in LED technology, flash timing can be controlled – allowing simultaneous use of bright and dark field illumination. This makes surface imperfections much more visible.

Major recognition

Maxcess will launch and demonstrate the new DST-1 object-recognition sensor from Fife at ICE Europe. Using multiple cameras for object-based recognition, the DST-1 can guide a wide range of materials from mesh to wire gauge and frayed materials that infrared, ultrasonic, line guide and other optical sensors have traditionally failed, says the company.

"The DST-1 uses state-of-the-art technology to guide the most challenging materials that other sensors simply can't recognise," said Shomari Head, global product manager for Fife Guiding. "We have put it through its paces in our lab and been able to successfully guide materials we never dreamed possible."

CLICK ON THE LINKS FOR MORE INFORMATION:

- **www.ice-x.com**
- **www.bst.group**
- **www.re-spa.com**
- **www.iap.fraunhofer.de/en**
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Bringing the global plastics industry together

PLASTICS EXTRUSION WORLD EXPO

MAY 8 - 9, 2019
HUNTINGTON CONVENTION CENTER, CLEVELAND, OHIO, USA
Focused conference programs on film, sheet, pipe, profile and tubing extrusion

FILM AND SHEET EXTRUSION: THEATER 1 - DAY 1

9:30 - 10:00 **KEYNOTE: Exploring opportunities in high barrier packaging**
Charmaine Russell, Business Manager - Conferences, AMI

10:15 - 11:00 **INDUSTRY DEBATE:**
The future for plastics packaging
Salvatore Pellingra, Vice President Global Application and Innovation Development, PROAMPAC • Rodney Weaver, Market Development Manager, SEALED AIR • Steve Sargeant, General Manager of Technology, FLEX FILMS

11:10 - 11:30 **Coextrusion technology: A critical tool for product development**
Olivier Catherine, Technical Director, CLOEREN

11:40 - 12:00 **Adding value in extrusion - continuous production of thermoplastic honeycomb panels**
Tomasz Czarneck, Chief Operating Offi cer, ECONCORE

12:10 - 12:30 **Title to be confirmed**
Peter Greenlimb, Owner, CHEMAGINEERING

1:15 - 2:00 **INDUSTRY DEBATE:**
The future for agricultural films
Ralf Dujardin, Vice President Marketing & Innovation, IMAFLEX • Roger Tambay, Director, FILMORGANIC • Ramon Parellada, Director, GRUPO POLYTEC

2:10 - 2:30 **Global megatrends affecting flexible packaging and how to adapt**
Steve DeSpain, Vice President, REIFENHAUSER

2:40 - 3:00 **Contaminant migration considerations for recycled PET in food contact applications**
Sushant Jain, Senior Scientist - Applications & Technology, PROCESSING TECHNOLOGIES INTERNATIONAL (PTI)

3:15 - 4:00 **TRAINING SEMINAR:**
Food contact material compliance
Kevin C. Kenny, Chief Operating Officer, DECERNIS

4:10 - 4:30 **Cost justification of a blown film extrusion line retrofit**
Carl Gillig, President, SYNCRO

FILM AND SHEET EXTRUSION: THEATER 1 - DAY 2

9:30 - 10:00 **KEYNOTE: Analysing global trends in film**
Andrew Reynolds, Director, ADVANCE BIDCO (owner of AMI)

10:15 - 11:00 **INDUSTRY DEBATE:**
Women in plastics: empowering industry change
Lauren Hickey, Director of Marketing and Product Management, AMERICHEM • Meli Laurance, Regional Commercial Industry Manager Plastics, BASF COLORS AND EFFECTS • Candace Sanders, Assistant Plant Manager, GENOVA PRODUCTS • Molly Bridger, Group Director of Marketing, SIMONA AMERICA GROUP • Jennifer Profitt, Plant Manager, ASSOCIATED MATERIALS

11:10 - 11:30 **Adiabatic fluid coolers: replacing traditional cooling towers**
Tom Stone, Aquatech USA - National Sales Manager, UNIVERSAL DYNAMICS

11:40 - 12:00 **Machinery solutions for sustainability in flexible packaging films**
Maurilio Millefanti, Technical Sales Manager, MACCHI

1:15 - 2:00 **INDUSTRY DEBATE:**
The future for stretch & shrink films
Sunil Daga, President, WRAPTITE • Luke Venechuk, Senior Packaging Engineer, HIGHLIGHT INDUSTRIES • John Cook, Technical Director, ATLANTIC PACKAGING • Ludovic Capt, Director Innovation, Business Development BALCAN PLASTICS

2:10 - 2:30 **Instrumenting your extruder for the industrial internet of things, IIoT, with a focus on predictive and preventative maintenance**
John Christiano, Vice President - Technology, DAVIS STANDARD

2:40 - 3:00 **Title to be confirmed**
Miriam Olivi, International Sales Director, FRIGOSYSTEM

3:15 - 4:00 **Finally, the truth: Learn the facts about plastics & the environment**
Chris DeArmitt, President, PHANTOM PLASTICS

4:10 - 4:30 **Exploring blown film technology for packaging applications and agricultural industries**
Carlo Pattini, Product Manager Blown Film Lines, LUIGI BANDERA

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Speakers over the two days include representatives from:

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WRAP TITE "Your Source For Packaging, Shipping & Safety Supplies"
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Information correct at time of publishing. Speaker line up and titles subject to change .

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PIPE AND PROFILE EXTRUSION: THEATER 2 - DAY 1

9:30 - 10:00 **KEYNOTE: Update on US vinyl industry**
Richard Krock, Vice President Regulatory and Technical Affairs, THE VINYL INSTITUTE

10:15 - 11:00 **INDUSTRY DEBATE: The future for plastic profiles**
Paul Adams, Director of Materials R&D, DECEUNINCK • George Walrath, Senior Scientist, CERTAINTEED • Keith Scutter, Owner, RESOURCE PLASTICS

11:10 - 11:30 **Intelligent industrial automation: Using your process data to solve quality, downtime, and production problems**
Willem Sundblad, Founder & CEO, ODEN TECHNOLOGIES

11:40 - 12:00 **Solutions in dark color outdoor architectural applications**
Kristin Meyers, Sr. Industry Manager - Extrusion, POLYONE

1:15 - 2:00 **INDUSTRY DEBATE: The future for medical tubing**
William Coulson, Vice President, ELDON JAMES • Pradnya Parulekar, Global Business Development, RAUMEDIC • Steve Maxson, Vice President of Sales - Vascular Technologies, SPECTRUM PLASTICS GROUP

2:10 - 2:30 **Understanding C-PVC processing**
Gianmarco Palladino, Sales and Technical Manager in Plastic Extrusion Process, BAUSANO

3:15 - 4:00 **TRAINING SEMINAR: Modernizing product stewardship for extruded, compounded, or recycled plastics**
Bernie Henn, Supplier Development Manager, VERISK 3E

4:10 - 4:30 **Exploring planetary roller extruders and their application areas in PVC direct extrusion**
Michael Batton, Overseas Sales Director, ENTEX

PIPE AND PROFILE EXTRUSION: THEATER 2 - DAY 2

9:30 - 10:00 **KEYNOTE: Technologies expanding the use of plastics in pipe systems**
Sarah Patterson, Technical Director, PLASTICS PIPE INSTITUTE

10:15 - 11:00 **INDUSTRY DEBATE: The future for plastic pipes**
David Fink, Senior Vice President, WL PLASTICS • • Tony Radoszewski, President, PLASTICS PIPE INSTITUTE • Arturo Valencia, Director of Research & Development/Engineering, DURA-LINE

11:10 - 11:30 **A guide to extruder upgrades: best practices and methods for achieving a successful upgrade**
Dan Barlow, President, INTEGRATED CONTROL TECH

1:15 - 2:00 **INDUSTRY DEBATE: The future for wood-plastic composites**
Paul Schmitt, Founder, ENVIROLASTECH • Matt Breyer, President, NORTH AMERICAN DECKING ASSOCIATION

2:10 - 2:30 **How transparent C-PVC fittings can clear up installation issues before they occur**
Senior Representative, SEKISUI

2:40 - 3:00 **High performance glass flake additives: no more performance trade-offs between strength and dimensional stability**
Liz Gershon, N.A. Business Manager, DREYTEK

4:10 - 4:30 **Optimizing mixing technology for high quality formulations in extrusion**
Jeremy O'Brien, Sales Manager, GREINER EXTRUSION US

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Speakers over the two days include representatives from:

WL PLASTICS The Ideal Piping Solution · deceuninck · CertainTeed SAINT-GOBAIN · Eldon James · RAUMEDIC Lifeline to Health · ENVIROLASTECH

Information correct at time of publishing. Speaker line up and titles subject to change .

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HUNTINGTON CONVENTION CENTER, CLEVELAND, OHIO, USA
Focused conference programs on film, sheet, pipe, profile and tubing extrusion

TYPES OF PRESENTATIONS

Business Debates

Business debates will run for 45 minutes and feature influential industry leaders discussing strategic issues facing the global extrusion market. They will be focused on specific sectors of the industry including: plastics packaging; profiles; agricultural films; medical tubing; stretch and shrink films; wood-plastic composites; and plastic pipes.

Training Seminars

Practical training seminars will be delivered by experts on topics including food contact legislation and regulatory compliance.

Industry Presentations

There will also be more than 20 presentations covering the latest technology developments and industry trends. Topics being covered include market outlooks; barrier packaging; co-extrusion technologies; flexible packaging; control and instrumentation; advances in blown film extrusion; retrofit economics; PVC trends; opportunities for plastics pipes; internet of things; mixing technologies; direct extrusion; and many more.

LOCATION AND VENUE

The Plastics Extrusion World Expo, will be held at the Huntington Convention Center in Cleveland, Ohio, USA. This state-of-the-art exhibition facility is located right in the heart of Cleveland's revitalized downtown boasting plentiful parking, free public transport and surrounded by an excellent selection of hotels.

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The party ticket is $20 per person and will give you full access to this iconic venue with drinks and nibbles. Doors open at 7pm.

Click here to find out more

*Tickets are available to registered attendees of the exhibitions only.

Feeling the heat: latest in thermoforming technology

Thermoforming often stands in the shade of other plastic processing techniques, but radical designs – processed on effective machinery – can create innovative and competitive end products. Lou Reade reports

Main image: Despite its apparent simplicity, thermoforming is a complex process with many variables

Thermoforming is often seen as a poor relation to other plastics processing techniques like injection moulding and extrusion, due mainly to the fact that it processes a small percentage of their volume of material.

However, there are also a number of 'gaps' in thermoforming knowledge that need to be filled if it is to be used as effectively as rival techniques. For instance, the quality standards applied to thermoforming are far less rigorous than those used in these other production techniques, according to Amit Dharia, managing director of US-based **Transmit Technology Group** (TTG).

At the SPE's Thermoforming conference in Texas last year, he said that these other processes shape plastics in the melt state – while thermoforming works in the solid state. This means that factors such as melt flow rate – which are critical measures in injection moulding and extrusion – do not apply to thermoforming.

"Thermoforming seems simple but it is not," he said. "There are few knowns – and too many unknowns."

Among the 'knowns' are sheet thickness, material type and mechanical properties. However, these are outweighed by unknowns – including material composition, extrusion history, melt strength and elasticity, sag rate, % crystallinity, plus many more that can affect the quality of the final product.

For instance, he said that the most important aspect in thermoforming is sheet or film quality – yet a manufacturer generally has no way of knowing the full details.

"There could be significant differences within a lot and between lots, depending on changes in the extrusion process or grade," he said. "Each minute change will manifest itself during thermoforming." ›

Above: Profile Plastics won a top award from SPE, for its heavy-gauge thermoformed enclosure for a medical cart

He added that the process of heating the sheet is also a complex one – with uniform temperature distribution being very difficult to achieve. Again, he said there are many 'unknowns' to the heating process, including which 'forming temperature range' to use, how long a sheet will take to heat, and the sag rate during heating.

During processing, he said, there are many other factors to take into account – and these include the effect of fillers and colours on heating rate, any interactions between plug assists and the heated sheet (such as friction) and the effect of crystallinity.

While a number of tests exist to assess factors such as quality and material properties, these are not always consistent, or may require special equipment, he said.

TTG has developed a testing system called Technoform, which he says is 'direct testing equipment' and can carry out a variety of required tests quickly and at relatively low cost.

Dharia said that Technoform mimics actual thermoforming conditions, is performed on single- or multi-layer sheet or film and provides multiple indicators in a single test – such as material mix-ups, heating rates and the effect of cooling rates at the same time.

"Thermoforming is a complex process with many unknowns," he said. "Understanding and empirically measuring the effects of significant process and material variables can reduce expensive trial and error."

Heavy stuff

A heavy-gauge thermoformed enclosure for a medical cart – which is used in various surgical procedures – was the overall winner at the 2018 parts competition run by US-based **SPE**.

The primary cart unit, produced by **Profile Plastics**, consists of seven pressure-formed enclosure parts, while the secondary cart unit consists of three pressure-formed enclosure parts, both using PC-ABS due to stringent standards. Customer parameters required zero or minimum mechanical attachment features, which presented many unique forming challenges.

Many of the attachment features were moulded-in to meet the customer's requirements. Bonded-in fastening features on the non-cosmetic side of the part were also required to be eliminated – or kept to a minimum.

The final design incorporated numerous movements on each tool to provide fastening features and cosmetic finished seams. Complex core pulls were used on the upper cover to incorporate slots for a work surface table. The secondary cart's large front cover presented many challenges, with four-way undercuts due to the extreme draw depth. The final design on this part allowed the elimination of additional side panels and reduced overall tooling cost.

Other designs recognised by SPE included: a nametag tray, from Placon, which was made from Ecostar recycled PET; an egg carton from Global Plastics, made from recycled PET; a vacuum-formed 'driver console' for boats, from Fiber Pad; and a twin-sheet heat transfer panel, produced by Therma-Hexx.

Smaller volumes

GN Thermoforming Equipment of Canada has developed a new thermoformer aimed at low- to medium-volume production runs for packaging in the food, medical, and industrial markets.

Its first GN580 – a smaller version of its GN800 – is now being assembled, and has already been sold to a European packaging manufacturer.

"The GN580 offers many of the same features as our GN800 but is well suited for smaller production runs, particularly for the medical and industrial markets," said Jerome Romkey, general manager of GN Thermoforming Equipment.

GN determined that there was strong demand from its customer base for a machine with similar capabilities to the GN800 but within a mid-size production capability range. It says the new machine has advanced technology and is flexible and user friendly.

The GN580 adapts many features of the GN800 and handles all thermoformable grades of PET, OPS, HIPS, PLA, PP, and PVC. The GN800, which

Right: GN received a number of orders for its GN800 thermoformer in the second half of last year

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Vienna / 2019

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Above: Kiefel's SpeedPacker is a buffering and unloading station that is fully integrated into steel rule cutting machines, including those from other manufacturers

was shown at NPE 2018 in the USA, offers many standard features including in-mould-cut capability, auto-grease, heavy-duty bearings in the toggle system, and high-efficiency Solar heaters. In the second half of last year the company received a number of orders from US and Canadian processors for the GN800.

GN is planning to show the GN580 thermoformer at this year's K2019 exhibition in Germany.

Multi station model

The Dispocon RETF-7655-TS from **Rajoo** of India is a multi-station thermoforming machine that is designed to make products such as disposable containers and punnets.

The fully automated machine – which uses sheets of PS/PP/PET – minimises human intervention, especially for the labour-intensive stacking and packing processes. Features of the system include: a forming area of 760 x 550mm; sheet thickness range of 0.2 to 1.8mm; maximum draw depth of 150mm; and a maximum mechanical speed of 60 cycles/min.

Fast work

Kiefel has developed the SpeedPacker, a product packing module that can be used with its KMD Speedformer machines to boost productivity.

SpeedPacker is a buffering and unloading station that is fully integrated into steel rule cutting machines – and is compatible with those from other manufacturers. Buffering is key to reducing personnel requirements and achieving cost savings, says the company.

Kiefel says the SpeedPacker is ergonomically optimised to ensure safe operation: for instance, the level of the unloading belt can easily be adjusted to the suit the height of the operator.

"We are always thinking about enabling our customers to optimally achieve efficient production," said Erwin Wabnig, head of Kiefel's packaging division. "The forming and cutting stations of our high-speed pressure forming systems are already very efficient. Reliable stacking with buffering and rapid unloading permit fast packing or filling of formed parts, further increasing productivity."

At the same time, the company has developed a high-speed cup forming machine that incorporates a number of innovative features to make it suitable for both mass production and niche products.

Its Thermorunner KTR 5.1 combines superior forming quality with high production speeds, it says – to make products including yoghurt cups, drinking cups, coffee capsules and plant pots.

A new cooling system ensures correct temperatures in the tool. The fully automatic tool temperature regulation results in a 30% longer tool life compared to the predecessor model, says the company – as well as steady product quality with about 10% increased output.

An improved forming air system allows faster filling and venting of all cavities, to make the forming process both faster and more precise. The film transport system is also optimised with sophisticated film spreading and a feed table to protect the material surface.

There are also innovative developments on the software side in terms of process monitoring, intuitive forming process settings, smart start up and smooth transfer from forming to stacking.

A standard feature of the KTR 5.1 Speed is the optimal film heating. The pre- and main heating are equipped with efficient black HTS ceramic radiators, and film temperature is displayed and tracked by an infrared pyrometer. A servomotor-driven pre-stretching unit ensures uniform material distribution all the way to the cup bottom.

Right: Kiefel's KTR 5.1 is a high-speed cup forming machine suitable for both mass production and niche products

Honeycomb benefits

EconCore says that sleeve packs made using its honeycomb technology have set a new performance standard for the packaging industry.

Recent compression tests analysed the maximum compressive loading capacity of reusable sleeve packs made using

Thin Wall Packaging

Chicago / 2019

June 18-19, 2019, The Westin Chicago North Shore Wheeling, Illinois, USA

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Identifying opportunities and maximizing returns in light-weight plastic tubs, pots and trays

Thin Wall Packaging looks at the applications, technology and materials for cups, tubs, trays and containers, primarily for food applications. It will explore plastic material science for protection and preservation of foodstuffs in multiple market channels, together with the latest market trends and sustainability initiatives.

The field is rich with technology developments, which will be presented by expert speakers during conference. The latest innovations will also be accessible through a large exhibition area, providing a unique opportunity to network with all levels of the supply chain.

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honeycomb core materials and various other core structures (generally referred to as cup-shaped core structures). All packaging products tested had a panel weight of 3000 g/m^2, equivalent dimensions in height, width and depth, and were preconditioned for 24 hours.

Results showed that the sleeve packs made with EconCore's technology had a 23 to 87% higher compression loading capacity. EconCore says the honeycomb core better supports the skin of the sleeve pack under load, and in out-of-plane compression strength the honeycomb core resists skin wrinkling.

Econcore says that honeycomb core-based packaging materials enable producers to make higher strength products, while allowing reduced weight per piece.

"This leads to dramatic bottom-line benefits through reduced material and energy costs – and potentially at higher output speeds during production," said Tomasz Czarnecki, COO of EconCore.

Compact range

Ulma Packaging has expanded its range of compact thermoformers with the launch of the TFS 200 MSV, which is designed to provide manufacturers with the capability to produce three pack styles – MAP, Skin and Vacuum – using a single machine.

Perfect for use with 422mm wide film, which is widely available, the TFS 200 MSV avoids the need for manufacturers to purchase new packaging materials, while also being configurable with a range of formats to suit individual or bulk packs.

The machine is suited to a diverse range of food produce industries, including fish, cheese and meat. Its vacuum options provide increased cycle rates of up to 10 cycles per minute, depending on the pack style, product and format, said the company.

The machine is compatible with both recyclable film and paper board, making it ideal for food processors that are looking for more sustainable packaging methods.

"Having the ability to pack goods using one machine that can deliver three different packaging formats means food processors and manufacturers benefit straight away," said Alastair Cook, thermoformer product manager at Ulma Packaging UK. "The compact design makes it the ideal choice for small businesses where space is at a premium, while the straightforward tooling changes mean

Specialty Packaging Films Asia

2019

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Above: Coexpan has expanded production of thermoformed packaging in both Chile and France

that it's suited to those looking to increase production to meet growing customer orders."

Digital heating

At the recent Thin Wall Packaging conference in Cologne, Germany – organised by **AMI** – Sascha Bach, managing director of **Watttron**, told delegates how digital heating can improve the quality of thermoformed parts, while also saving material.

The company, formed in 2016, has developed a thin ceramic planar heater called Cera2heat – which it says offers very precise temperature control and fast heating. Individual designs are possible, allowing customised temperature distribution.

Each surface heater consists of an 8 x 8 array of independent heat circuits (or 'heat pixels'). The very thin heat layer (around 10 microns) ensures low thermal interia, while the ceramic substrate offers high temperature resistance. Many of the heaters can be assembled in a modular fashion to cover a large area.

In addition to its Cera2heat system, the company also offers simulation services to help thermoformers improve their products.

"More complex shapes require a simulation approach for temperature field optimisation," said Bach.

Bach pointed to a number of case studies – including a thermoformed tub and yoghurt cup, which were both redesigned to ensure that less material was needed. For the tub, the initial material thickness was reduced from 350 to 200 microns, while the thickness at the weakest point of the final product increased from 25 to 46 microns. For the yoghurt cup, initial material thickness was reduced by 64% (to 360 microns), while the thickness at the weakest point of the final product increased threefold to 95 microns.

Overall, a material thickness reduction of around 30% is possible, due to improved wall thickness distribution, as well as a similar reduction in energy use due to lower thermal mass. The process also eliminates the need for plug assists for pre-stretching.

AMI's next Thin Wall Packaging conference takes place in Chicago, USA in June. For more details, contact Agata Swietek (**agata.swietek@ami.international**) on +44 (0)117 314 8111.

The next European version of the event is in Dusseldorf on 2-4 December 2019. For more details, contact Maud Holbrook (**maud.holbrook@ami.international**) on +44 (0) 117 314 8111.

Chilean expansion

Spanish rigid packaging specialist **Coexpan** has expanded its presence in Latin America by acquiring extra thermoforming capacity in Chile.

Through its existing Chilean subsidiary, it has acquired the thermoforming unit of BO Packaging Chile – which will continue its current flexible packaging and other operations in Brazil and Peru. The takeover means that Coexpan now has PS, PP, PET and PLA thermoforming and extrusion capacities at three production plants in Latin America – in Chile, Brazil and Mexico.

"This acquisition forms part of our global thermoforming strategic plan and it will enable us to reinforce our presence in a strategic area and broaden our portfolio of rigid packaging products in other countries in the short term," said Dinis Mota, CEO of Coexpan.

Separate to this, the company has expanded its Coexpan FSP plant in Roye, France with a new extrusion line. The new machine manufactures PS, PP and PLA sheets for range of medium- and high-barrier packaging solutions. The project includes extending production and storage facilities, doubling the surface area of the plant, with a new 3,700 sq m production area, four new silos, a new 2,700 sq m warehouse and a new office area.

The expansion will increase the plant's production capacity by an extra 7,000 tonnes/year.

CLICK ON THE LINKS FOR MORE INFORMATION:

- **www.transmit-technology.com**
- **https://thermoformingdivision.com (SPE)**
- **www.thermoform.com (Profile Plastics)**
- **www.gncanada.com**
- **www.rajoo.com**
- **www.kiefel.com**
- **www.econcore.com**
- **www.ulmapackaging.com**
- **www.ami.international**
- **www.watttron.de**
- **www.coexpan.com**

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Film and Sheet Extrusion magazine will be hosting a focused conference theatre at the free-to-attend Plastics Extrusion Wold Expo in Cleveland, Ohio, in May. We preview the programme

Film and Sheet Extrusion conference details confirmed

Main image: Conference theatres proved very popular at AMI's first free-to-attend Expos, which took place in Essen, Germany last year

The conference programme for the *Film and Sheet Extrusion* theatre at the Plastics Extrusion World Expo has just been published. It is free to attend the conference sessions and the tradeshow, which take place on 8-9 May 2019 at the Huntington Convention Center in downtown Cleveland, Ohio. Register for your free ticket **here**.

The Plastics Extrusion World Expo is taking place alongside the Compounding World Expo and the Plastics Recycling World Expo – your free ticket covers all three events. More than 230 companies have already booked booths at the focused tradeshows. There will be five free-to-attend conference theatres, including the one hosted by *Film and Sheet Extrusion* magazine, and they will feature a total of 120+ speakers, 15 business debates, and nine training seminars.

The keynote address on the first day in the *Film and Sheet Extrusion* theatre will be given by Charmaine Russell, business manager - conferences at **AMI**. She will be examining opportunities in the burgeoning area of high-barrier packaging. The opening keynote presentation on the second day of the event will explore and analyse global trends in film, and will be delivered by Andrew Reynolds, director at **Advance Bidco** (the owner of AMI).

There will be four industry debates across the two days covering the future for plastics packaging, agricultural films, stretch and shrink films, and women in plastics. These will be hosted by Charmaine Russell and Andrew Reynolds. The panellists include influential representatives from companies such as **Sealed Air, ProAmpac, Flex Films, Grupo Polytec, Imaflex, Simona, Wraptite, BASF, Atlantic Packaging** and **Americhem**. For more information about the debates and the line-up of speakers, see **this article** in last month's magazine.

A special training seminar on the afternoon of 8 May will focus on food contact material compliance. It will be delivered by Kevin Kenny, chief operating officer at **Decernis**.

On 9 May, Chris DeArmitt, president at **Phantom Plastics** will give a fascinating look at the facts and fallacies surrounding the ongoing debate around plastics and their impact on the environment.

A series of technical presentations throughout

the two-day programme will provide useful ideas for optimising extrusion lines and operations. For example, John Christiano, vice president – technology at **Davis Standard** will take a practical look at how the industrial internet of things is being utilised to make extrusion equipment which can improve predictive and preventative maintenance and position you to take advantage of a digital future.

Taking a look at the flexible packaging market, vice president at **Reifenhäuser**, Steve DeSpain, will explore global mega trends which are influencing consumer purchasing decisions and how machinery manufacturers and processors can work together to capitalise on these opportunities. Maurilio Millefanti, technical sales manager at **Macchi** will look at flexible packaging from the sustainability perspective, and this theme will be echoed by Sushant Jain, senior scientist application and technology at **Processing Technologies International (PTi)** who will share contaminant migration considerations for recycled PET in food contact applications. Packaging and converting will also be covered by Carlo Pattini, product manager at **Luigi Bandera** in his talk exploring the latest developments in blown film technology.

Blown film will also be the focus of **Syncro's** presentation, where Carl Gillig, President at the machinery and controls company will talk about the cost justification of a blown film extrusion line retrofit.

How to add value and efficiency are key considerations for processors. In his presentation, Tomasz Czarnecki, chief operating officer at **EconCore** will discuss how to value in extrusion through the continuous process of production of lightweight thermoplastic honeycomb sandwich panels.

Also looking at improving production efficiencies is Tom Stone, National Sales Manager at **Universal Dynamics**. His technical presentation will focus on how to replace traditional cooling towers with adiabatic fluid coolers.

Another of the technical presentations at the event Olivier Catherine, Technical Director at extrusion die specialist **Cloeren** will give a view on innovative coextrusion methods being implemented to develop new products, or to improve manufacturing productivity in the flat film and sheet industry.

The full conference programme including timings can be downloaded **here**. It covers both the Film and Sheet Extrusion theatre and Pipe and Profile Extrusion theatre.

The free ticket for the Plastics Extrusion World Expo also provides free admission to the **Plastics Recycling World Expo**. This has a packed conference programme with speakers from HP, Lavergne Groupe, Ravago, Terracycle, Winpak, Phoenix Technologies, Bühler, Association of Plastics Recyclers, Amcor, Erema, Cumberland/ACS, Starlinger, American Cutting Edge, Britas, Vecoplan, BYK and many more. Download the full Plastics Recycling World Expo programme **here**.

There will also be two free conference theatres in the adjacent **Compounding World Expo**. These will feature speakers from companies such as A. Schulman, Westlake Compounds, Mexichem Specialty Compounds, Aurora Plastics, Champlain Cable, Southwire, General Cable, TPC Wire & Cable, Farrel, Coperion, Entek, RTP, Techmer PM, Americhem, Clariant, Primex Plastics, Chroma, CPM Extrusion, KraussMaffei, Milliken, Wacker, Buss, Konica Minolta, Case Western Reserve University, SI Group and many more. Download the full Compounding World Expo programme **here**.

The three Expos will feature more than 230 exhibitors from around the world including a wide range of suppliers of extruders, auxiliary equipment, raw materials, additives, and related products and services.

They will include Davis-Standard, Reifenhäuser, Alpha Marathon, Addex, Cloeren, Colines, Omipa, Macchi, Luigi Bandera, Gneuss, KraussMaffei, Labtech Engineering, Dr Collin, CW Brabender Instruments, Netzsch Instruments, Konica Minolta, NFM, Coperion, Nordson, Maag, PSI Polymer Systems, Parkinson Technologies, Advanced Blending Solutions, Maguire, Syncro, Plastics Systems, Azo, Zeppelin, Apex Engineering, Erema, Cumberland, Starlinger, Vecoplan, Pallmann, Herbold USA, Clariant, PolyOne, Brenntag, Modern Dispersions, Heritage Plastics, Chemours, Cabot, Omya, Struktol, Ferro, Lubrizol, Wacker, Orion, Superior Graphite, Unipetrol, Aditya Birla, BYK and many more.

The limited number of remaining booths are being filled on a daily basis. To find out more about exhibiting at any of the expos, visit **https://www.ami.international/exhibitions**.

Rita Andrews, head of exhibitions at AMI said: "The Cleveland exhibitions will provide visitors with a great opportunity to learn about the latest products, find new suppliers, and negotiate deals. In addition, the conference sessions will provide the perfect place to discover innovative technologies and industry best practices".

To book your free ticket, which is valid for both days of the event, visit: **ami.ltd/Register-AMI-Expos**







Speakers at the event include (from top): Kevin Kenny of Decernis; Steve DeSpain of Reifenhäuser; Maurilio Millefanti of Macchi; Sushant Jain of Processing Technologies International; Carlo Pattini of Luigi Bandera; Tom Stone of Universal Dynamics; and Olivier Catherine of Cloeren

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Additive approach to films

*Additives hold the key to improving the performance of films for many applications. **Peter Mapleston** looks at some of the latest additive and masterbatch introductions*

Today's film products are highly engineered structures designed to meet exacting standards. Additives are critical in achieving the levels of performance required for effective production, processing and in-service performance and the latest introductions address a wide range of issues, ranging from slip and static management, through to fogging and optics and even anti-counterfeiting. This article explores some of the latest developments.

Dow Performance Silicones, now a business unit of DowDuPont's Specialty Products division, recently introduced Dow Corning MB25-235 Masterbatch, a new silicone-based technology that it says significantly reduces the coefficient of friction (CoF) of low density polyethylene (LDPE) packaging and agricultural films. The supplier says the new masterbatch addresses the traditional drawbacks of organic additives, "delivering stable, long-lasting slip performance and avoiding migration to the film surface." It is approved for food contact in the European Union, US, and China and is well suited for use on high-speed form-fill-seal (FFS) equipment.

The new masterbatch is the latest in a growing range of silicone-based masterbatches for flexible packaging and complements the Dow Corning HMB-6301 Masterbatch for reducing CoF in bi-axially oriented polypropylene (BOPP) film, which was introduced in 2017.

According to Christophe Paulo, Industrial and Consumer strategic marketer, EMEA, Dow Performance Silicones, the Dow Corning MB25-235 Masterbatch "far surpasses traditional organic additives by delivering a consistently low, stable CoF that is unaffected by time duration or temperature." He says it maintains critical mechanical properties such as tensile and tear strength. Zero migration between film layers or between the film and package contents helps to prevent impact on downstream operations, such as printing and

Main image: The agricultural sector is seeking performance films developed to offer extended lifetimes and improved yield

Right: Dow Performance Silicones' MB25-235 masterbatch is claimed to improve slip characteristics at low addition rates

metallization and potential contamination of food or other contents. The new product is also claimed to be cost-effective, since it only needs to be incorporated into the outer layer of multi-layer films. In addition it helps reduce haze.

Agricultural films

The MB25-235 Masterbatch is also well suited for use in agricultural mulch film, greenhouse film and silage film. Céline Chevallier, Product Development Engineer for **Multibase**, another part of DowDuPont Specialty Products, discussed this application at the Agricultural Film 2018 Conference, organised last September in Madrid by *Compounding World* publisher AMI. She presented test data on the dynamic and static CoF and mechanical performance of three-layer blown film, the outer layer of which was treated with the new grade (together with a talc antiblock commonly used with slip additives).

Chevallier said that optimum results are obtained at an addition rate of between 2 and 4% by weight in the skin layer. Comparisons with organic slip agents depend on whether film/film or film/metal CoF is measured. Tensile properties (strain and elongation at break, tear strength) are unaffected by the additive.

Also working on alternatives to conventional organic additives is **Ampacet**, which has developed a new antiblock masterbatch for use in production of BOPP films. Seablock 4S is said to provide the antiblocking and permanent slip properties of organic antiblock solutions while avoiding scuffing of the particles and preserving the low slip properties, whatever the converting steps and speed.

When converting BOPP films at high speed, some extraction of organic antiblock particles from

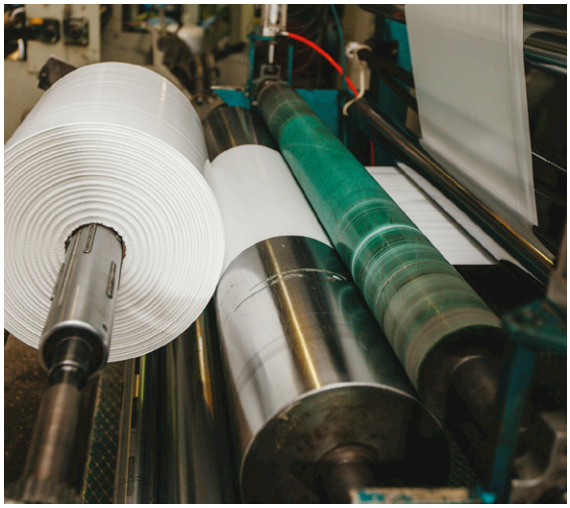


PHOTO: DOWDUPONT

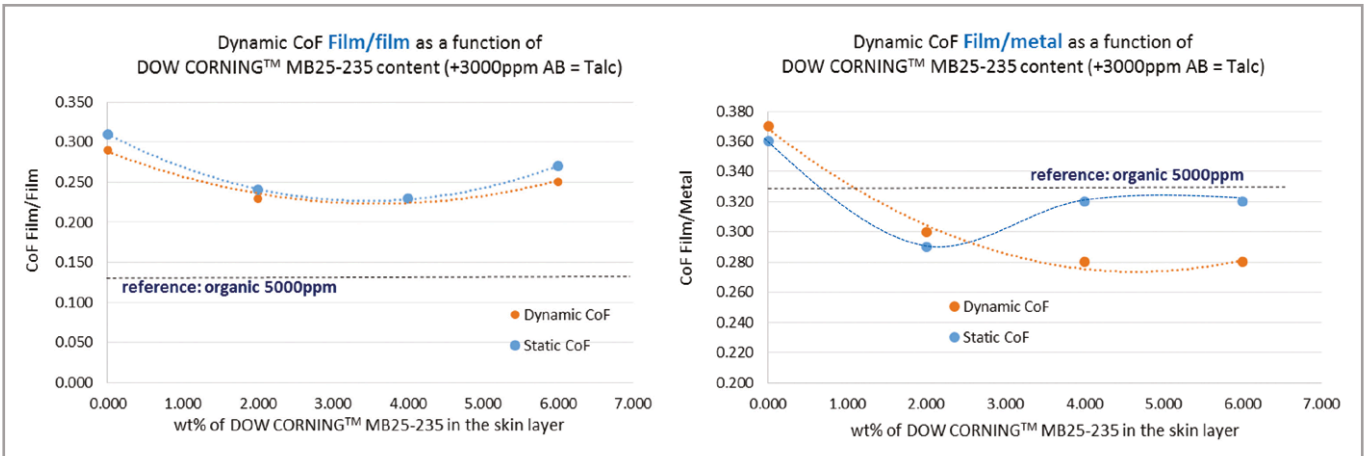
the film is a common problem. This scuffing can lead to accumulation of dust on the film surface and unpredictable variations of slip properties during converting. Ampacet says Seablock 4S allows BOPP film producers to manufacture high-quality films with permanent and predictable slip performances for smooth and consistent film converting.

"Thanks to superior particle anchorage, Seablock 4S reduces scuffing and leads to a low level of dust accumulation during high speed film converting," the company says, adding that the additive shows a good heat stability with "unmatched" low die and extruder fouling. Optical properties of the films are also said to be very good.

Anti-stat development

Ampacet has also been adding to its range of additives to reduce the build-up of static electricity in films. Permstat 232 is specifically designed to reduce problems in printing, converting and labelling operations for bi-oriented films.

"The labelling industry has been searching for permanent antistatic features for decades to



The effect of addition of Dow Performance Silicones' MB25-235 masterbatch on coefficient of friction (CoF) when used in the skin layer of a three-layer LLDPE/LDPE blown film. Film/film CoF (left chart) is higher than the reference but film/metal CoF (right chart) is lower

Source: DowDupont

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PHOTO: SHUTTERSTOCK

Above: Antistatic additives can improve processing, printing and performance of films

replace conventional migrating antistatic solutions, which lead to unpredictable performance, being strongly dependent on storing time and conditions," the company says. "Permstat 232 provides immediate and consistent antistatic performances, independent from storing conditions (for example time, temperature and relative humidity). Permstat 232 offers outstanding optical properties allowing its use in clear no-label-look applications." The additive is approved for food-contact applications in Europe.

Croda International is working in the antistat area too. Just over a year ago, it acquired IonPhasE, a supplier of advanced anti-static additives headquartered in Tampere, Finland. These additives help to prevent damage to electrical components, increase the safety of chemical and food packaging and improve the long-term appearance of consumer appliances. The products encompass electrostatic discharge protection (ESD) and inherently dissipative polymers (IDPs), which work to release static electricity in a controlled way.

Maarten Heybroek, President Performance Technologies at Croda, said at the time that IonPhasE's products were a natural extension to its existing product portfolio. He said bringing together the expertise of both firms' research and development teams, Croda would be able to offer a broader and more diverse range of products to its customers through its dedicated global marketing and sales force.

IonPhasE additives are based on a co-continuous ion conductive polymer phase. Ions acting as charge carriers within the additive dissipate the static by making the charges mobile. Croda says the fSTAT products are suitable for polyolefin multi-layer and stretch films for applications where static control is vital, such as electronics manufacturing and packaging, chemical packaging and protective sheets. IonPhasE PE0108M FCC is also available where certain food contact approvals are needed.

Benefits in film extrusion include immediate and permanent anti-static effect, humidity independence, highly consistent homogeneous performance and heat stability. Echoing Dow, Croda says they are particularly effective in multi-layer film applications where static control is required only on one side of the film. This allows for a reduced addition level.

Targeting counterfeits

Israeli materials firm **Kafrit Group** is also looking to benefit from recent M&A activity. It acquired **Polyfil Corp**, a maker of masterbatch concentrates based in Rockaway in New Jersey in the US last November. Kafrit (which already owns Germany-headquartered Constab Polyolefin Additives) says, with the acquisition of Polyfil, the firm "is significantly expanding its footprint as a global leader in the masterbatch arena."

Polyfil describes itself as the largest independent US manufacturer focusing solely on the development and production of performance enhancing additive concentrates for polyolefins. Its product line includes antistats, and also antifogs, chemical foaming agents, UV stabilisers, purge compounds, processing aids, antioxidants, mineral filled concen-

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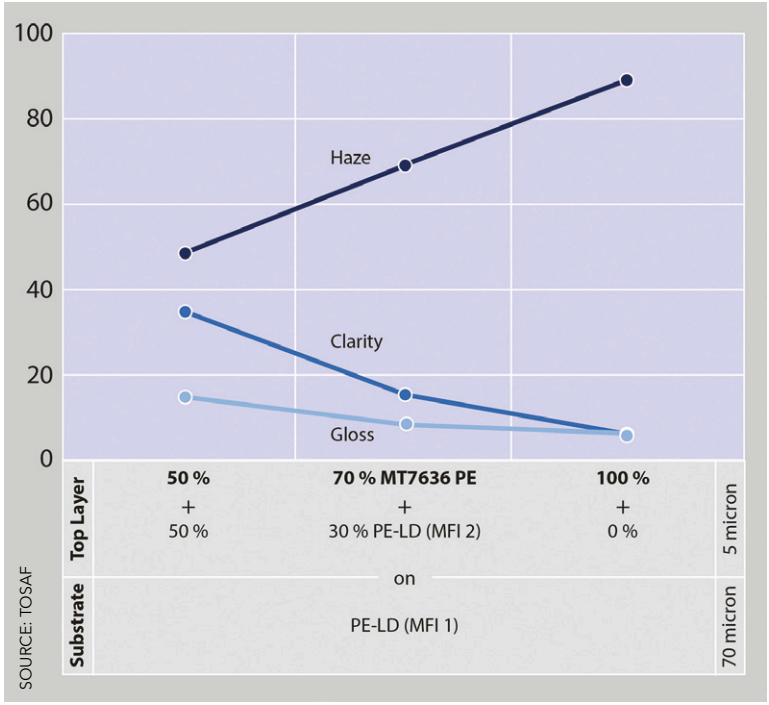

Above: Addition of Tosaf's new MT7636PE to an ultra-thin PE top layer significantly changes the visual appearance of a PE-LD film in terms of haze, clarity and gloss

trates and multifunctional additive concentrates.

At the beginning of this year, Kafrit announced that Polyfil would begin offering its Tracer anti-counterfeit technology in the US for use in plastics packaging and other parts. Kafrit sees big potential in this application – it forecasts that by 2020, $284bn dollars will be spent by government and corporations to combat counterfeiting. Nadav Goldstein, Vice President of Business Development and Innovation for the Kafrit Group, says he expects Tracer technology to play an important role in preventing the sale of imitated consumer goods.

Tracer technology involves the use of chemical-based codes or markers and a user-friendly reader. The chemical-based codes are compounded into masterbatches/concentrates and added to a resin during fabrication. They can be used at low concentrations without affecting product properties.

"The technology offers thousands of codes that can be used in the patented system increasing the security of the marked package or part," Kafrit says. "In addition, Tracer has the unique ability to provide data embedded or linked to the code like month of production, production location, intended market or country of origin."

Handheld readers are personalised so that only clients can authenticate their company's products, making it impossible for counterfeiters to imitate, the company claims. A Blockchain system enables secure tracking and tracing throughout the supply chain.

Tracer technology, which requires no changes in the production process, is compatible with all plastic production methods and compatible with various additives and all polymers. It is also compliant with industry regulations for food contact, REACH and others.

Matt enhancements

A novel product from **Tosaf** is MT7636PE, a matt additive to create thin (2 to 5 micron) skin layers on oriented and non-oriented polyolefin films, combining high haze (approximately 80%) with extremely low gloss (<10). Specific areas with matt effect can be made transparent by applying a lacquer coating or by gluing a clear label on top of the matt layer.

Based on an undisclosed polymer mixture which does not contain fillers, MT7636PE is said to provide advantages that include full control of haze/gloss properties on demand; a cost-saving matt effect without the need for an additional converting process; excellent rheology for easy processing; and low die build-up. It is suitable for PE and PP films.

Tosaf says that converters using MT7636PE "can easily achieve a luxurious look thanks to a uniformly continuous light transmission with a perfectly consistent transparency level over the entire surface." It says the new additive also provides a perfect substrate to be printed with a clear lacquer, providing areas with complete transparency. Thanks to its high surface roughness, MT7636PE supports good adhesion of such lacquers and other inks to the film. Typical applications of MT7636PE include food packaging, mainly dry food such as pasta and bread, as well as pet food.

Outdoor innovations

New additive introductions for agricultural films include Ampacet's Proflow 1000400-E, a masterbatch designed to assist in the processing of blown films intended for outdoor use. It outperforms the most well-known competitive process aids and

PHOTO: AMPACET

Right: Ampacet's Proflow 1000400-E masterbatch is a performance processing aid for blown films intended for outdoor use, such as silage wrap

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High barrier flexible films for food packaging
The global market 2018

From AMI CONSULTING

This specialist market report will provide you with insightful and actionable information on the trends and material choices for high barrier films.

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Plus an extended section on sustainability and recycling and the implications for high barrier films.

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Film layer thicknesses (microns)	Dart impact strength (g)	Avg. MD tear resistance (g)	Avg. TD tear resistance (g)	OTR @23°C, 0%RH (cµm3/m2/24h)
8/4/8	55-60	412.5	625	66
22/6/22	230	1215.7	1870	48
20/10/20	90-95	895.7	526.7	23
50/50/50	100	443.3	1345.7	64
70/10/70	800	>3200	>3200	25

Mechanical properties and oxygen transmission rates of films produced with Tosaf's BR7503PE/BR7562PE. The masterbatch was added to the core layer at 70%, except for the fourth film, where it was added at 50% owing to the high core layer thickness
Source: Tosaf

market references in blown films, according to the company.

Some outdoor applications, such as greenhouse and low tunnel film, silage stretch wrapping film and industrial packaging, require the combined use of processing aids and hindered amine light stabilisers (HALS) to allow the use of high-performance resins while extending the service life of the film. However, the HALS may affect the efficiency of the processing aids. Ampacet designed Proflow 1000400-E for optimised performance in the presence of UV light stabilisers. "It demonstrates minimised interactions with various UV HALS stabilisers, with excellent results in preventing die build-up and shark skin effects," says the company.

Last year, **PolyOne** said it had been collaborating with agricultural films manufacturers to help growers reduce food waste by incorporating OnCap anti-fog additives into their films. "Agricultural films manufactured with OnCap anti-fog additive solutions help reduce the possibility of condensed water falling on growing fruits and vegetables," says Christoph Palm, Vice President and General Manager, Color and Additives EMEA & India for the company. "The same attributes that reduce fog from forming on the films used to pack fresh foods for display in stores also create tremendous value for farmers growing fresh produce by reducing the possibility of condensed water contacting the produce."

OnCap anti-fog concentrates are said to be easy to handle and can be added at a film extrusion machine with no extra equipment required.

Below: Improved anti-fog, UV barrier and extended lifetimes are some of the benefits available to agricultural film producers

PHOTO: SHUTTERSTOCK

Improving barriers

Staying with agricultural film, BR7503PE and BR7562PE are new PE-based masterbatches from Tosaf that provide a high barrier to oxygen and fumigants. They enable production of barrier silage and mulch films using a three-layer extrusion line. BR7503PE is intended for blown film where bubble stability is crucial, while BR7562PE is for cast film or where sealing is needed.

Agricultural barrier films most frequently use EVOH in the barrier layer and, because it is incompatible with polyethylene, a tie layer is required. The accepted method for producing these films involves a five-layer extruder. "Film producers that do not have suitable extruders find themselves out of the barrier film market," says Agriculture Product Manager Dr Meirav Fleischer. The new masterbatches are in advanced approval stages with customers.

Tosaf has also launched a UV masterbatch, UV8915PE, with high chemical resistance. This is in response to demand for agrifilms with longer lifetimes, even when used with high concentrations of pesticides. It enables the production of greenhouse film with a three-year useful life and capable of withstanding up to 5,000 ppm of sulphur, which is commonly used for greenhouse fumigation. Greenhouse film typically withstands a maximum of 3,000 ppm over the same period.

CLICK ON THE LINKS FOR MORE INFORMATION:

- **https://consumer.dow.com**
- **http://www.dupont.com/industrial/multibase.html**
- **www.ampacet.com**
- **www.crodapolymeradditives.com**
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Speakers at the Polymer Foam conference in Pittsburgh in June will cover advances in processing, technologies and applications

Expanding opportunity for polymer foams

The use of foam technology is increasing rapidly across all fields of plastics processing. Applications have been expanding across many markets, including construction, infrastructure, packaging, transportation and energy generation.

The 7th edition of AMI's Polymer Foam US conference explores advances in a wide range of polymer foam materials, processes and applications. Presentation topics cover foam technology and applications in thermoplastics and elastomers, future trends in applications and markets, innovation in the foam industry, optimisation of foam processing, interplay between chemical and physical blowing agents, regulatory status and new developments in additives and sustainable solutions.

This two-day event takes place on 18-19 June 2019 in Pittsburgh, PA, US, and brings together expert industry speakers from the entire supply chain to evaluate and discuss the trends, challenges and opportunities facing the polymer foam industry across multiple end-use applications.

In this article we preview the event, with a closer look at the line-up of expert speakers.

Speakers in the opening session of Polymer Foam 2019 explore future trends in a variety of markets and applications. **Klaus Brenner,** Head of Global Engineering and Design at **Greiner Aerospace** in Austria, gives the audience an overview of design and production trends and innovation in aircraft interiors and seating. Increased use of polymer foams in structural sandwich core materials is discussed by **Russell Elkin**, Product Development Manager USA at **3A Composites**, who highlights future trends in applications for these materials and discusses future market potential. This is followed by **Steven Sopher**, Technical Director at **JSP** in the US, talking about particle foam properties for the growing sporting goods and impact protection markets.

After the networking break, the session continues with a paper from **Rob Dernovsek,** Manufacturing Area Manager at **Polycon Industries** – a division of Magna Exteriors – in Canada, who will discuss the company's work with foams. Next, **Rohit Ghosh**, Head of Marketing at **BASF Corp** in the US, shares with the audience how BASF is encouraging innovative practices that are tailored towards their customers' needs and how the foam industry can adapt some simple steps to drive innovation. The final talk in this session is given by **Andrew B Cole**, Executive Director at the **Canadian Urethane Foam Contractors Association (CUFCA),** who

reviews the success of the field quality assurance program in the Canadian spray foam industry.

Blowing agents

The second session explores the changing regulatory landscape for blowing agents and also highlights some technical advances. **Margaret Sheppard**, Lead Environmental Protection Specialist at the **Environmental Protection Agency** in the US, updates the audience about regulatory changes in blowing agents and shares an overview of classification of new blowing agents. International regulations regarding employees coming into contact with the powdered ADCA blowing agent and performance of the masterbatch ADCA blowing agent as an alternative are subjects discussed by **Benjamin J Reisman**, Head of Materials Development at **Palziv** in Israel. **Peter Schroeck**, President & CEO at **Reedy Chemical Foam** in the US, explores chemical blowing agents for thermoplastic elastomers in the final part of this session.

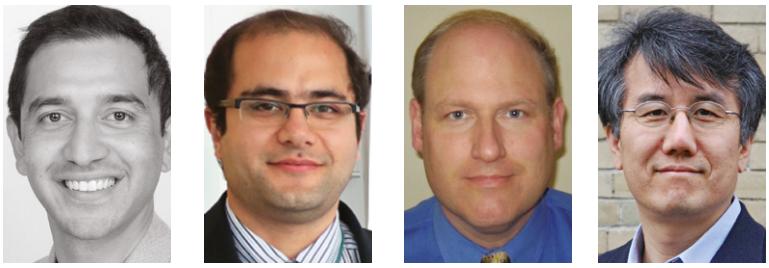
Fire resistance

Shari Kram, Senior Research Scientist at **Dow** in the US, shares her experience in the transition to a polymeric flame retardant for PS foam across China, Europe and the US. Developments in fire performance in PU and PET foams are highlighted by **Margaret Baumann**, Business Manager, Americas at **FRX Polymers** in the US.

To round off the first day's proceedings, a networking drinks reception is being held in the exhibition room, where delegates and speakers can network with industry peers.

Sustainable foam

Day two of Polymer Foam 2019 is opened by **Mario Grenier,** VP & General Manager at **Dyne-A-Pak** in Canada, who delivers an overview of developments in recycling and sustainability of polymer foams including trends in bio-based materials and packaging. The session continues with a panel discussion focussing on sustainability in the foam industry. Led by **Steven Sopher**, Technical Director at **JSP** in the US, the discussion will explore tangible sustainable solutions and focus on how the industry can apply sustainable practices moving forward. Panellists include **Prof Chul B Park**, Professor at the **University of Toronto** in Canada, and **Denisa George**, Marketing Manager Polyolefin Foams, at **Borealis** in the UK. More panellists will be confirmed closer to the event.



Speakers at Polymer Foam in Pittsburg in June include (from left to right) Rohit Ghosh from BASF, Alireza Tabatabei from Woodbridge Foam Corp, Steve Sopher from JSP, Professor Chul Park from the University of Toronto

Improving processing

The final session of the conference is opened by **Prof Chul B Park** and **Dr Vahid Shaayegan**, Research Director and Postdoctoral Fellow, both from the **University of Toronto** in Canada, who look at foaming mechanisms of pure and reinforced polypropylene in foam injection moulding. Low density polypropylene extrusion foaming with decreased cell size in the presence of crystals and additives is the presentation subject from **Dr Alireza Tabatabaei**, Senior Development Engineer at **Woodbridge Foam Corporation** in Canada. Next, **Dr Denis Rodrigue**, Professor at the **Department of Chemical Engineering, Laval University** in Canada, discusses piezoelectric properties of polyethylene foams with a focus on optimisation of the processing and post-processing conditions.

Closing the conference is **Samuel Dix,** R&D Director at **Trexel** in the US, who compares foaming level, structure and operating cost of two different foaming techniques in injection moulding.

Polymer Foam US conference

The 7th edition of AMI's Polymer Foam US conference will take place on 18-19 June 2019 in Pittsburgh, PA. The event provides an international forum for all companies involved in the manufacture, supply and use of polymer foam, from end users and manufacturers to converters and suppliers.

In addition to the formal conference sessions, the event provides extensive networking opportunities throughout the informal breaks, including access to the table top exhibition area and complementary cocktail reception at the end of the first day. To find out more about attending the conference, taking a table-top exhibition space, or becoming a conference sponsor, visit the **conference website** or contact Conference Coordinator Christa Beveridge Tel: +1 610 478 0800, **christa.beveridge@ami.international**.

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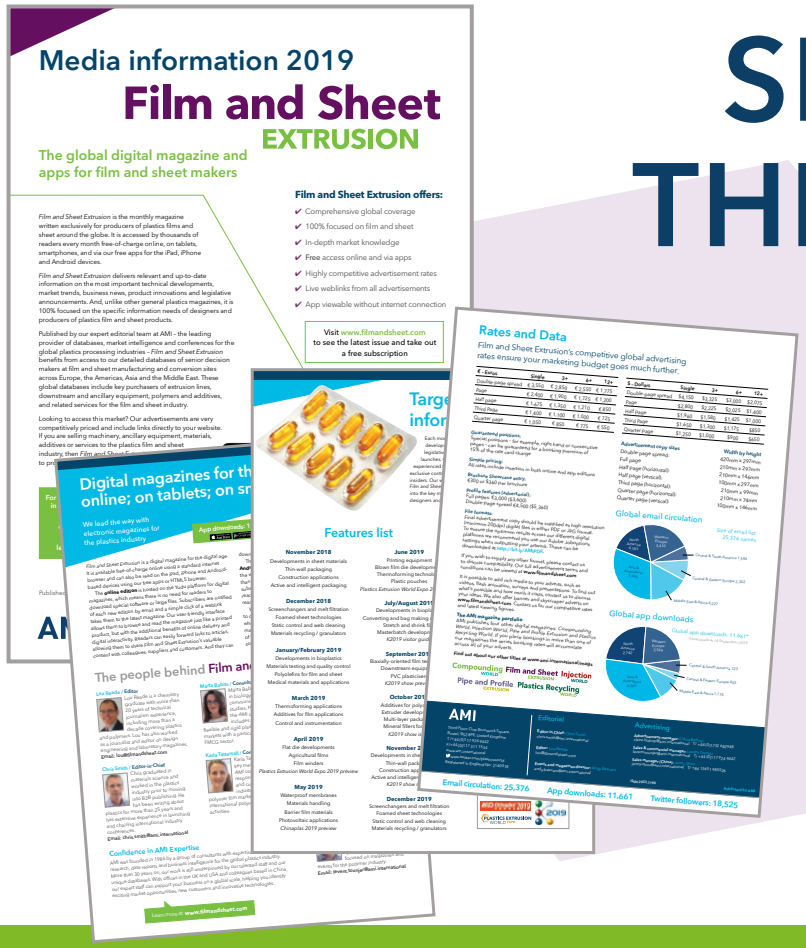

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SHRINK FILM

Pallet wrap saves materials and energy

RKW of Germany has developed a stretchable shrink film, which it says offers energy and material savings.

RKW says the film reduces energy consumption because it shrinks faster than conventional films, while cutting material requirements by more than 10%.

Shrink films are used to secure pallets during transport. They are usually cut to larger dimensions than the product to be packaged, and then shrink to contain them after heating and cooling. RKW says that it tried to turn this traditional process upside down.

"Our goal was to develop a sustainable shrink film that is smaller than the pallet dimensions – but can be stretched and pulled over the palletised goods," said Dimitri Rudsinski, head of sales for industrial packaging at RKW Nordhorn.

The film shrinks up to 75% faster than conventional films, says RKW, which reduces energy consumption and costs. More efficient shrinking processes also shorten cycle times and maximise output, it added – saying that the film is ideal for odd-shaped products.

› **www.rkw-group.com**

PVC

Expansion for PVC facility

US-based PVC compounder Aurora Plastics has expanded its 60,000 sq ft manufacturing facility in Pasadena, Texas.

The renovated plant includes new blending, control and automation equipment, as well as a new lab and product testing capabilities.

The plant will initially produce the company's rigid PVC product line, AuroraTec, and is evaluating further expansion to include its flexible PVC compounds and thermoplastic elastomers (TPEs).

Aurora acquired the facility from JPI South in May 2018, and has spent time upgrading the space, equipment and available technology.

› **www.auroraplastics.com**

POLYPROPYLENE

High MFI grade for big bags

Braskem says that its DP213A polypropylene (PP) resin – part of its Maxio line – is aimed at the production of large bags (for applications such as packaging and transporting grains, fertilisers, ores and chemicals).

DP213A has a low melt flow index and contains an anti-UV additive.

It has high mechanical properties – which is required when making raffia tape – and ensures increased productivity at the extrusion stage.

"We have identified fierce competition in the raffia sector, which has led companies to compete on the basis of price," said Carolina Bulhões, leader of application engineering at Braskem. "This resin will help them reduce operating costs and the prices of their big bags."

Propex, a company that makes laminated fabrics and big bags, has reported a 20% increase in its production capacity after switching to the new material, by running its extrusion machines faster but without consuming more energy.

› **www.braskem.com.br**

AGRICULTURE

Multi-skin sheets promote growth

At the recent IPM Essen horticultural trade fair, Evonik showcased its Plexiglas Resist multi-skin sheets.

These have a hail-resistant finish, and combine two properties important for plant production: high weathering resistance and light transmission.

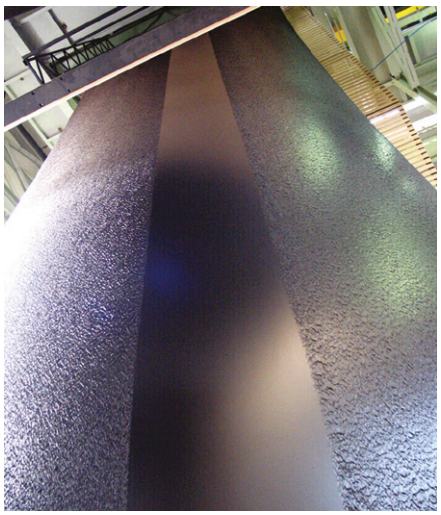
"With a high chamber spacing of 64mm, this multi-skin sheeting is almost as transparent as glass but dimensionally stable and tough," said Bernd Petri, head of the roofing business within acrylic products. "The good light diffusion and high light transmission provide optimal growth conditions for plants."

High transparency is also offered by its Alltop multi-skin sheeting – which has a No Drop coating that prevents the formation of droplets and allows water to flow away rapidly. The sheets also have a 30-year non-yellowing guarantee.

› **www.evonik.com**

SPARE PARTS

Luigi Bandera sells geomembrane extrusion lines to new US customer



Luigi Bandera of Italy has supplied a US-based customer with an extrusion system to make geomembranes.

The customer will use the equipment to make smooth and texturised geomembrane for water resources management industries.

The package includes two twin lines of the Geo FutureFilm series to produce geomembranes up to 8m wide, mainly for applications in the oil industry and in environmental conservation.

The customer chose Bandera for two main reasons: innovation, and after-sale technical service. Bandera says that, in the first case, it continues to invest in new technologies. In the second, it says that efficient technical service gives the customer reassurance.

As well as supplying the lines, Bandera also ran a series of training course for staff involved in their start-up, management and maintenance. In late 2018, two technical delegates from the company attended a week-long training course at Bandera headquarters.

› **www.luigibandera.com**

BLOWN FILM

POD line sold to Georgia

Italy-based Macchi recently won a new contract to a five-layer blown film line to a customer in Georgia – its first sale in the country.

The plant, an 1,800mm wide POD line, was supplied to a primary plastics transformer working in the beverage sector. It was recently tested and will allow the production of up to 500 kg/h of collation shrink/stretch hood film.

Macchi says the plant will reduce energy consumption through water cooling of the extruders, allowing the manufacturer to control life cycle management costs.

› **www.macchi.it**

STATIC CONTROL

Blowers solve static issues on BOPP film extrusion line

UK-based Innovia Films has solved static issues on its BOPP film lines using ionising blowers from Meech.

Innovia has installed 20 Meech 935 long range blowers in its Wigton factory, to remove static from the BOPP film as it winds on slitter-rewinder systems. The rolls of BOPP film are processed on the re-wind of 3m-wide machines, but during the winding process into a full reel, static can be generated on the film's surface.

"Polypropylene readily generates static throughout our process – elimination of this is essential," said Neville Cox, engineering maintenance manager at Innovia Films. "Without eliminating the static charge, the rolls of film can prove hazardous during later processing. What's more, the film may not lay smoothly onto the reel, resulting in ribbing and other effects on its surface."

The blowers ensure that the film lies smoothly on the reel, has a clear and untainted finish, and does not pose a hazard to operators. They are mounted on the floor facing up towards the nip of the reel, neutralising both sides of the film as it rewinds into a full reel. This prevents ribbing and other effects that hamper its ability to form a neat and uniform roll.

"Any solution must provide ionisation so it does not affect the moving turrets," said Cox.

› **www.meech.com**

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2019

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SCANFILL: GREENER PACKAGING

Based on a novel polymer/mineral mix, the Scanfill range of packaging resins can minimise environmental impact by reducing polymer consumption, non-renewable energy use and greenhouse gas emissions without sacrificing barrier performance. Find out more in this brochure.

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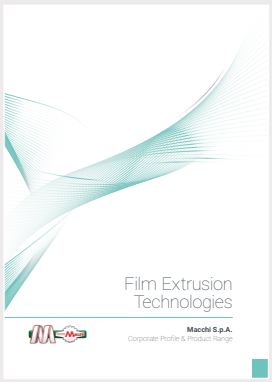
MACCHI: FILM EXTRUSION



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.

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COLINES: BARRIER FILMS

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

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W&H: VAREX II FILM SYSTEMS

Varex II is Windmöller & 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.

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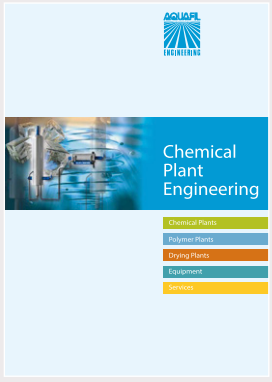
AQUAFIL: PLANT ENGINEERING



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.

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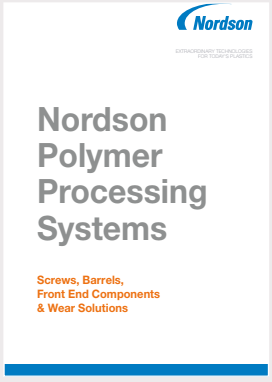
NORDSON: SCREWS & BARRELS



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

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

Learn more about AMI's upcoming conferences

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

SPECIALTY PACKAGING FILMS ASIA 2019

The key event covering markets and technology or flexible packaging in a fast-growing region, AMI's sixth Specialty Packaging Films Asia conference will take place on 19-20 March 2019 in Bangkok, Thailand.

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PLASTIC POUCHES 2019

AMI holds its fifth Plastic Pouches conference in Vienna in Austria on 2-3 April 2019. The event is the meeting place for all involved in design, specification and production of this innovative packaging format.

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PVC FORMULATION EUROPE

Taking place in Cologne in Germany on 1-3 April, PVC Formulation will discuss global market trends in the PVC industry and explore the latest developments in rigid and flexible PVC materials, plasticisers, additives and compounding.

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POLYMERS IN BUILDING INSULATION

The second edition of AMI's Polymers in Building Insulation will take place on 9-10 April 2019 in Dusseldorf, Germany. The event will focus on the key trends, challenges and opportunities in construction insulation materials.

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POLYMER SOURCING & DISTRIBUTION

The 14th edition of AMI's Polymer Sourcing & Distribution conference will be held on 13-15 May 2019 in Barcelona, Spain. The event attracts attendees from across the plastics supply chain, from polymer producers and traders to processors and brand owners.

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STRETCH & SHRINK FILM

AMI's Stretch & Shrink Film conference is taking place for the 16th year on 8-10 April, with Barcelona the host city for this must-attend event for converters, suppliers and end-users to network and catch up with the latest developments in technology, materials and market trends.

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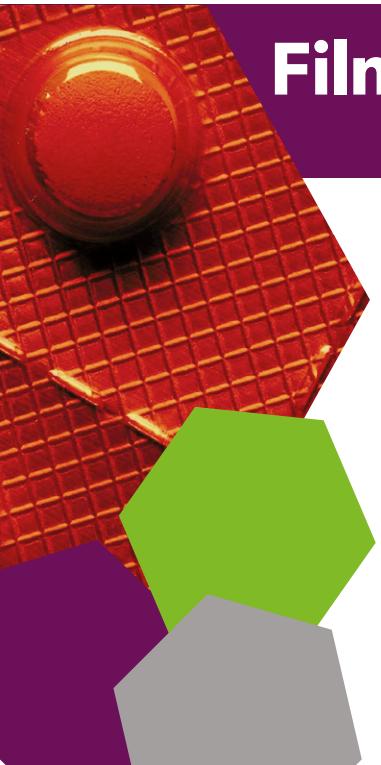
To see our full line-up of more than 50 plastics industry events over the next 12 months, please visit www.ami.international/events

Plastilene

Head office:	Bogota, Colombia
General Manager:	Rodrigo Restrepo
Founded:	1957
Ownership:	Private
Profile:	Plastilene was founded in 1957 and is active in flexible film for the food industry, industrial applications and agriculture. Under the Plastilene brand, there are actually eight separate companies, including Altalene, Khroma, Vinipack, Technofilms and Plastilene itself. These companies are spread out across three different countries in South America.
Product lines:	While Plastilene and its sister companies all concentrate in flexible packaging, there is some variety in what they produce. Khroma, for instance, concentrates on shrink sleeves and wrap around labels; Techno Films produces agricultural film, as well as packaging for food, commerce and retail; Vinipack concentrates on thermoforming, and extrusion of both PET and PVC; Reciclene makes compounds and additives and performs recycling; and Plastilene makes a broad range of food and agricultural films (while Plastilene Laminados is a specialist in barrier film). In addition, the company has also begun to produce foamed films, having licensed the appropriate technology from MuCell. It applies the technology to both polyolefin blown film and PET calendaring of co-extruded sheet, to make products ranging from bag liners and heat sealing films to milk pouches and rigid thermoforming sheet.
Factory locations:	The company has eight production facilities in South and Central America – including six in Colombia and one each in Ecuador and Guatemala. In addition, it has sales office dotted across the Americas.

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



Film and Sheet Extrusion FORTHCOMING FEATURES

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

April 2019
Flat die developments
Agricultural films
Film winders
Plastics Extrusion World Expo preview

March 2019
Waterproof membranes
Materials handling
Barrier film ■ Photovoltaics
Chinaplas 2019 preview

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

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

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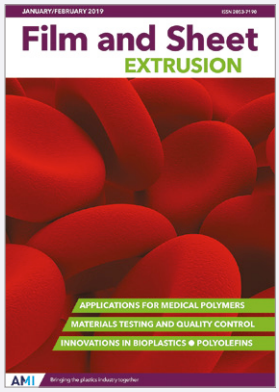

Film and Sheet
January/February 2019
The January/February 2019 edition of Film and Sheet Extrusion magazine looks at some of the latest innovations in medical plastics. Plus an update on bioplastics and the latest innovations in polymer analysis and polyolefin resins.

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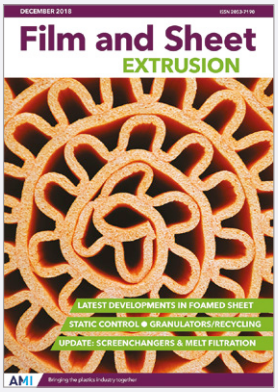

Film and Sheet
December 2018
The December edition of Film and Sheet Extrusion magazine reviews the latest developments in foamed sheet technology. It also details innovations in melt filtration, granulation and static management.

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Compounding World
March 2019
The March issue of Compounding World magazine has features on special effect pigments, reinforcement with natural fibres and twin-screw extruders. Plus a preview of the conference at Compounding World Expo in Cleveland, US

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Plastics Recycling World
January/February 2019
The January/February 2019 edition of Plastics Recycling World looks at barriers to recycling flexible packaging and how they can be overcome. Plus, this edition reviews IV enhancement options for PET and the latest pelletising developments.

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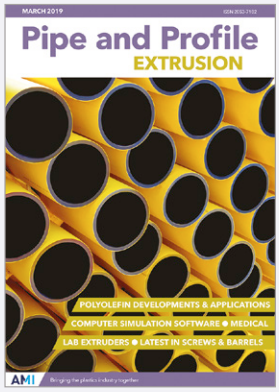

Pipe and Profile
March 2019
The March issue of Pipe and Profile Extrusion explores the growing use of PP in the pipe industry. It also takes a look at the latest developments in computer modelling, medical tubing technology, lab extruders and screw design.

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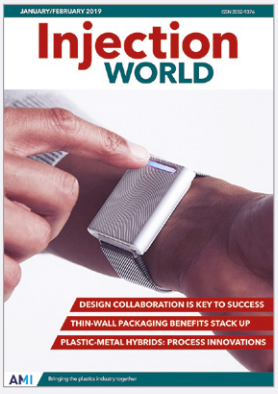

Injection World
January/February 2019
The January/February edition of Injection World magazine examines the role of designers and material producers in successful product developments. It also reviews innovations in polymer-metal hybrids and thin wall packaging.

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Pipe and Profile EXTRUSION
Injection WORLD
Plastics Recycling WORLD

GLOBAL EXHIBITION GUIDE

2019	**12-15 March**	Pro-Pack Africa, Johannesburg, South Africa	www.propakafrica.co.za
	12-16 March	Koplas, Seoul, South Korea	www.koplas.com
	19-21 March	EU Coatings Show, Nuremberg, Germany	www.european-coatings-show.com
	25-29 March	Plástico Brasil, São Paulo, Brazil	www.plasticobrasil.com.br
	8-12 April	Feiplastic, Sao Paulo, Brazil	www.feiplastic.com.br
	8-9 May	Compounding World Expo, Cleveland, USA	www.compoundingworldexpo.com
	8-9 May	Extrusion Expo, Cleveland, USA	www.extrusion-expo.com
	8-9 May	Plastics Recycling World Expo, Cleveland, US	www.plasticsrecyclingworldexpo.com
	21-24 May	Chinaplas, Guangzhou, China	www.chinaplasonline.com
	21-24 May	Moulding Expo, Stuttgart, Germany	www.moulding-expo.com
	18-21 September	T-Plas/Tiprex, Bangkok, Thailand	www.tplas.com
	16-23 October	K2019, Dusseldorf, Germany	www.k-online.com
	25-28 November	Plastivision Arabia, Sharjah	www.plastivision.ae
	27-29 November	Plastics & Rubber Vietnam	www.plasticsvietnam.com
2020	**16-20 January**	Plastivision India, Mumbai, India	www.plastivision.org
	21-23 January	Swiss Plastics, Lucerne, Switzerland	www.swissplastics-expo.ch
	7-13 May	Interpack, Dusseldorf, Germany	www.interpack.com

AMI CONFERENCES

14-15 March 2019	Speciality Packaging Films Asia, Bangkok, Thailand
2-3 April 2019	Plastic Pouches, Vienna, Austria
8-10 April 2019	Stretch & Shrink Film, Barcelona, Spain
25-26 June 2019	Multilayer Flexible Packaging, Chicago, USA
17-18 September 2019	Housewrap, Coral Springs, USA
12-14 November 2019	Polyolefin Additives, Vienna, Austria
18-20 November 2019	Agricultural Film, Barcelona, Spain
18-20 November 2019	Waterproof Membranes, Cologne, Germany
18-20 November 2019	Multilayer Flexible Packaging, Vienna, Austria

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