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PET best for the environment: LCA

PET bottles are better for the environment than aluminium cans and glass bottles, a life-cycle assessment (LCA) released by the National Association for PET Container Resources (NAPCOR) has claimed.

The LCA, conducted by Franklin Associates and verified through an extensive peer review, compared beverage PET, glass and aluminium carbonated soft drink (CSD) and still water beverage container systems. The results concluded that PET bottles create less solid waste, use less water during production and generate fewer emissions.

According to the results, if US consumers selected PET bottles instead of glass bottles for their soda beverages over the course of one year, it would amount to the same reduction in greenhouse gas emissions as recycling instead of landfilling nearly 53,000 garbage trucks of waste.

Similarly, if US residents chose PET bottles instead of aluminium cans for their soda beverages over the course of one year, resulting impacts would be the same as conserving 4.4 billion litres of water, removing 688,000 petrol-powered cars off the road annually, and diverting 138 million bags filled with trash for recycling versus landfill.

The LCA compared the most commonly used beverage containers for CSDs and still water and found that a 16.9oz (500ml) PET bottle compared with a standard-size 12oz (355ml) aluminium can creates 80 per cent less solid waste, uses 53 per cent less water during production, has a 74 per cent lower global warming potential, and generates 68-83 per cent fewer emissions.

“The LCA scientifically and credibly demonstrates how plastics packaging provides significant environmental benefits that will help the world meet its vital net-zero carbon targets,” said Laura Stewart, executive director of NAPCOR. “A PET bottle is 100 per cent recyclable and can be made with 100 per cent recycled content. The LCA’s results should be empowering for businesses and consumers because we can confirm once again that choosing PET containers is the best option for the planet.”

The cradle-to-grave LCA found that glass tends to have the highest environmental impacts, followed by aluminium and then PET bottles.

“We are sensitive to the additional issue of waste management that comes with any discussion of packaging,” added Stewart. “By conducting the LCA, we hope to better inform consumers, brands and legislators about their packaging options and the impact on the environment. At NAPCOR, we are committed to working closely with our partners, customers and community members to increase the rates of plastics recycling. The full benefits of choosing PET come about when we recycle it.”

Golden Triangle breaks ground on $8.5bn plant

Golden Triangle Polymers Company, a joint venture company formed by Chevron Phillips Chemical (CPChem) and QatarEnergy, has broken ground on a $8.5 billion integrated polymers and recycling facility in Golden Triangle. The joint venture company formed by CPChem and QatarEnergy will have two 1m/t HDPE units and target 25 per cent lower greenhouse gas emissions than similar facilities in the US and Europe.

Once operational, the plant will produce Marlex PE, which is used in the production of packaging, pipes and recreational products. The US Gulf Coast relies on ethane fractionated from gas shales deposits, which makes it cost-competitive with regions like Asia. According to a press release late last year, the project is also targeting 25 per cent lower greenhouse gas emissions than similar facilities in the US and Europe.

To the point...

Krones has scooped two prizes in the Excellent Product Design Industry category of the 2023 German Design Award, with both accolades conferred on both the new generation of the Contiform stretch blow moulding machine and the Mobile Production Robotics systems.

Packaging converter TricorBraun has signed an exclusive agreement with Biodrinks, whereby the former will offer biodegradable bottles specifically designed for the nutraceutical industry to companies in the US and Canada.

The ALPLA Group, through its division ALPLApharma, and Spanish packaging company Inden Pharma are strengthening their footprint in the pharmaceutical market by establishing a joint venture (JV). ALPLApharma is bringing production sites in Greece and Poland into the JV, complemented by Inden Pharma’s two facilities in Spain and an additional one the companies are jointly building in Markdorf, Germany, which is scheduled to open in June.

Printing firm MPS Systems BV has acquired a ‘significant’ shareholding in MPS Systems (UK) in order to streamline parts and technical service support for customers. MPS UK will now integrate its operations with those of its parent company.
To the point...

- A patented masterbatch technology for cavitating PE film has received pre-qualification from How2Recycle as ‘store drop-off’ recyclable in the US and widely recyclable in Canada at kerbside. How2Recycle – known for its standardised labelling system – has pre-qualified Void Technologies’ VO+ PE masterbatch technology in the form of a VO+ LLDPE example film submitted for evaluation.
- UK-based flexible packaging converter Parkside has reported strong year-on-year growth despite a challenging 12 months for the industry. On the back of recent investments, the company is on track to achieve its five-year objectives after reporting year-on-year growth of 28.1 per cent.
- The global clamshell packaging market is expected to reach a size of $13.9 billion by 2032, as demand from the food industry for transparent packaging gains traction. According to a study by Research and Markets, changes in consumer lifestyle and eating habits – especially in the urban population – will impact market growth positively over the coming years as convenience becomes key.
- Plastics resource efficiency and recycling charity Recoup has introduced a lifecycle assessment service and a state-of-the-art laboratory to complement its RecyClass certification service and facilities.

Neste and Illig to demo sustainable packaging

Neste and Illig have entered into a strategic partnership to advance the production of more sustainable thermoformed plastics packaging through the use of demonstration case studies. Such case studies will aim to verify the ‘drop-in’ nature of renewable and recycled materials for demanding applications, by recreating value chains on a small scale for demonstration purposes.

The partnership combines Neste’s renewable and (chemically) recycled materials for polymer production (branded as RE) with Illig’s thermomforming machinery. Inviting additional partners for individual cases, the examples are intended to demonstrate that plastics made from more sustainable raw materials can be further processed within the existing infrastructure similarly to those produced purely from fossil-based sources, resulting in products of equal quality and with properties meeting regulatory requirements.

The pair has already worked with LyondellBasell and Fernholz on a feasibility study, turning renewable Neste RE feedstock into PP with measurable carbon-14 (C14) bio-based content.

The study showed that further processing steps along the value chain – including cracking, polymerisation, sheet extrusion and thermoforming – could be performed without any deviations from processing fossil raw materials.

As part of the new cooperation agreement, Illig and Neste now intend to conduct similar demonstration case studies to promote the usage of renewable feedstock like Neste RE, especially in demanding applications such as packaging suited for food-contact, or technical applications such as consumer electronics.

Such studies could explore the manufacturing of packaging with varying measurable C14 bio-based content, but also include packaging produced with recycled raw materials, leveraging Neste’s capabilities in chemical recycling to create circular plastics value chains. To recreate entire value chains, additional partners will be invited to join individual cases.

“Renewable and recycled raw materials for polymers such as Neste RE are already being used today to reduce the sector’s reliance on fossil resources,” said Jeroen Verhoeven, vice-president for value chain development at Neste’s Renewable Polymers and Chemicals business unit. “It’s now a question of scaling up their share to make a bigger positive sustainability impact.”

“Together with Illig, we can verify the drop-in nature of our solutions and the shift to more sustainable raw materials in the production processes in very practical demonstration cases, which can serve as blueprints for large-scale and real value chains. Our goal is to demonstrate what’s possible already today to promote these solutions in the industry. By demonstrating the feasibility of renewable and recycled materials along value chains in demonstration cases, we can foster their acceptance on a larger scale.”

Sven Engelmann, Illig’s technology centre and packaging development director, called the partnership a major driver in achieving the company’s renewable and circular goals.

Huhtamaki buys Australian group

Huhtamaki has acquired full ownership of Huhtamaki Tailored Packaging (HTP), the Australian foodservice packaging distribution and wholesale group. HTP employs more than 130 people and is one of the largest importers and distributors of foodservice packaging in Australia. Customers include metropolitan and regional packaging wholesalers, food wholesalers, club and hospitality suppliers, and national quick-service restaurant businesses.

Huhtamaki acquired a majority stake in the business in 2018 and owned approximately 76 per cent of the company prior to this latest transaction. The debt-free purchase price for the additional shares is approximately €19 million ($20.3m).

The business has been reported as part of Huhtamaki’s Foodservice Europe-Asia-Oceania business segment since the beginning of operations in 2018.
Sainsbury’s beefs up reduction targets

Supermarket chain Sainsbury’s has become the first UK retailer to vacuum pack all beef mince, in a move that the company claims will save 450 tonnes of plastics each year.

The new packaging replaces the traditional plastics trays, resulting in a minimum 55 per cent reduction in plastics per product. The mince is vacuum-packed for freshness by removing all oxygen.

The retailer recently removed plastics lids from its own-brand yoghurt, crème fraîche, sour cream and custard pots in another move to reduce plastics consumption. It also made its own-brand coffee pod range fully recyclable.

“We’re constantly looking for new ways to innovate to meet our customers’ expectations. We strive to be bold in the changes we are making, which is why we’re pleased to be the first UK retailer to vacuum pack all our beef mince range without impacting the quantity or quality of product that we offer. We’re proud to be the first UK retailer to vacuum pack all our beef mince, in a move that the company claims will save 450 tonnes of plastics each year.”

Another UK supermarket chain, Waitrose, rolled out flow-wrap packs for its minced meat in 2010, claiming that it would save 90 tonnes of plastics waste a year.

Plan for Better plastics reduction targets,” said Claire Hughes, director of product and innovation. “We strive to be bold in the changes we are making, which is why we’re pleased to be the first UK retailer to vacuum pack all our beef mince range without impacting the quantity or quality of product that we offer. We’re proud to be the first UK retailer to vacuum pack all our beef mince, in a move that the company claims will save 450 tonnes of plastics each year.”

To the point...

• Constantia Flexibles has signed an agreement to acquire the Polish company Drukpol Flexo, which mainly serves domestic food and home/personal care markets for local and international customers. Drukpol Flexo’s two sites close to Warsaw complement Constantia’s existing facilities in Rogowice (Constantia Teich, Poland) and Jejkowice (Constantia ColorCap).

• Albéa Cosmetics & Fragrance has become the 48th participant in the NextLoopp project, which has a mission to create food-grade PPpristine and ‘HRT-grade’ PP from post-consumer packaging waste.

• Recycling firm TerraCycle has linked up with Evreka, a company that specialises in waste management tracking, to implement technology that uses real-time, optimised data to revolutionise the collection operations for all TerraCycle waste streams. Evreka software is now deployed at TerraCycle’s materials recovery facility in Canada.

• Continued investments led to a 17 per cent growth in EU plastics recycling capacity in 2021, according to data from Plastics Recyclers Europe (PRE). An estimated €1.75 billion ($1.84bn) of investment highlights the commitment of recyclers to drive the transition towards a circular plastics future, said PRE president Ton Emans.
The majority of European consumers like hard cheese to be sold in transparent packaging, according to research by converter Amcor.

Amcor surveyed 3,176 hard cheese shoppers across the UK, France, Germany, Italy, the Netherlands and Sweden to understand how packaging influences purchasing decisions and what their preferences are for hard cheese packaging.

The survey revealed that 89 per cent of consumers across Europe considered transparent packaging to be important when buying hard cheese. Consumers want to assess the product’s appearance, size and freshness before making any purchasing decisions.

The research also found that consumers of hard cheese paid special attention to the sealing of the packaging when picking products from the shelf, with 70 per cent ranking seal integrity as the most important packaging requirement. In addition, 53 per cent recognised ‘reclosability’ as a key factor — influencing a willingness to repurchase. Resealable packaging was most popular among consumers in France, with 76 per cent highlighting it as important.

“Transparent and resealable packaging that showcases the quality of hard cheese products and keeps products fresh are key packaging attributes for hard cheese consumers,” explained Yi Jiang, marketing director for dairy at Amcor EMEA.

“Our research also shows that consumers’ experience with using resealing features is not always positive, which can cause frustration, and indicates room for brands to improve their consumers’ packaging experience.”

According to Amcor’s research, 80 per cent of European consumers said they recycle their hard cheese packaging in compliance with local instructions, with Italy and Germany being particularly high. The research also uncovered that 22 per cent of respondents chose ‘recyclable packaging’ as the most meaningful sustainability claim, while 16 per cent chose ‘less packaging’ as appealing.

The study also found some common reasons given among respondents who said they do not recycle. For example, 37 per cent of respondents stated that they don’t know how to recycle, while 28 per cent said there is no local recycling stream in their area. Moreover, a quarter of respondents thought it was too much trouble to separate and clean materials for recycling.

“Hard cheese brands should take note of this research because it identifies the need to design packaging that is easier to recycle with simple and clear recycling instructions on the pack,” added Jiang.

The European hard cheese market has been growing steadily in recent years, propelled by increasing consumption for both at-home cooking and snacking. Meanwhile, demand is increasing for cheese packaging to be recycle-ready, driven by consumers and by the European Commission’s Packaging and Packaging Waste Regulation proposals, as well as by retailers’ and cheese producers’ sustainability agendas.
Sumitomo (SHI) Demag to double production capacity in China

Sumitomo (SHI) Demag has broken ground on an extension to its China facility, doubling its production capacity in the country.

The new 4,000 sq m production hall at the Ningbo factory, south of Shanghai, will cater to rising demand in Asia for injection moulding machines with clamp forces of up to 1,500 tonnes. The site currently manufactures machines with clamp forces in the small-to-medium range.

The new hall is set to open in autumn 2023, coinciding with the company’s 25th year of machine production in China.

Attendled by the mayor and city councillors from the Beilun district, Sumitomo (SHI) Demag chief executive Pietro Scattarreggia marked the ground-breaking ceremony by claiming that the bigger facility will set the path for future growth, along with the creation of 50 new jobs.

The Asian market in general, and particularly automotive and electromobility in China, is booming, he noted.

“Having experienced the strongest performance in the company’s history in 2021 and a subsequent economic slowdown last year as a result of coronavirus policy restrictions, the future outlook remains very positive,” Scattarreggia said.

“The expansion of the Ningbo production hall gives Sumitomo (SHI) Demag more space to manufacture more machines, but also expand production to include the company’s larger tonnage Systec Servo machines.

To support the manufacturing of these larger and heavier machines, stronger cranes are being installed in the Ningbo production hall.

“Until now, our production has been limited to machines with clamp forces up to 1,000t,” Scattarreggia explained. “Given the demand for larger precision components, being able to extend our product portfolio up to 1,500t means we can drastically reduce delivery times for customers in China and the rest of Asia.”

An installation of a new 7,000 sqm solar panel system last September means the Ningbo facility can operate largely independently of the local energy supply, Sumitomo (SHI) Demag said.

In recent years, many production sites in China have felt the impact of power rationing. With a solar source, the Ningbo facility will no longer be affected by future rations, said Scattarreggia.

“This is of great significance for production stability,” he added.

Closed Loop revamps reduction playbook

Closed Loop Partners’ Center for the Circular Economy and its Consortium to Reinvent the Retail Bag has released a new playbook to provide near-term single-use bag reductions that can be implemented by any retailer, from small local stores to large national brands.

The resource highlights effective solutions to reduce the number of bags needed by retailers and encourages the use of reusable bags customers already have at home. Key insights from the playbook are based on research, interviews, surveys and learnings from 17 leading retailers across four key categories: communications, employee training, bag and fixture design, and customer incentives.

The playbook offers 25 strategies across these four categories that cater to retailers at different stages of their journey. These strategies include detailed guidance on how best to prompt customers to bring their own bags, where to place reusable bags, items retailers can skip bagging, which customer incentives can be deployed and other strategies.

Even a 1 per cent bag reduction has a significant impact on the global waste footprint, claimed Closed Loop Partners. In the US, where the company is based, that is equivalent to one billion fewer bags used and discarded.

“Our new playbook walks retailers through strategies they can implement today to get teams and customers on board with reducing single-use bags in stores and encourage shoppers to reuse their own bags,” said Kate Daly, managing director of the Center for the Circular Economy at Closed Loop Partners. “This tool is for retailers that are looking for quick wins and those seeking innovative, new approaches. We hope these insights serve as an inspiration to retailers looking to reduce their plastics footprint and deploy bag reduction solutions.”

The Consortium to Reinvent the Retail Bag was launched in 2020 and has grown from five retail partners to 15, while deploying more than 6,000 iterative tests, surveys and pilots across markets to help accelerate learnings and the development of sustainable bag solutions.

This year, the consortium will go back into market on a larger scale, testing different complementary strategies to reduce single-use bags in two cities in Arizona and Colorado.

Meanwhile, in New Jersey, where there is legislation banning single-use bags in certain stores, the consortium will test a ‘returnable bag service’ model in which customers are ‘borrowing’ a bag on-site, reusing it before eventually returning it at the same or different retailer’s store to be washed, redistributed and reused by additional customers.

The new 4,000 sq m production hall at the Ningbo factory is scheduled to open this autumn.

To the point...

- The Foodservice Packaging Association has asked the UK’s Department for Environment, Food & Rural Affairs to issue guidance about what will be covered by the upcoming single-use plastics ban, so that its members can plan accordingly. According to a survey, FPA members are confused about what will be banned and what will be allowed, which is creating uncertainty regarding the financial implications.

- Dutch firm Avantium is partnering with US company Origin Materials to accelerate the mass production of the key elements of biopolymers for use in plastics. The partnership unites Avantium’s YXY technology, which converts plant-based sugars into furandicarboxylic acid, with Origin’s technology platform that changes carbon from sustainable wood residues into useful building-block chemicals.

- Greiner Packaging UK & Ireland has won the Innovation in Sustainability category at the Business Eye Sustainability Awards, for its K3 r100 self-separating packaging. Traditionally, cardboard/plastics combinations have been heavily dependent on consumer cooperation, but the two materials in the K3 r100 separate on their own prior to recycling.

- PureCycle Technologies and Shell Global, who have agreed to source and divert up to 10 million pounds (4,535 tonnes) of PP waste from landfills and waterways. The two companies will work together to target post-use PP and packaging materials that are not typically recycled.

- Global bioplastics production is set to triple in the next five years and reach 6.3 million tonnes, compared with 2.2 million in 2022, according to European Bioplastics.
Origami Bottle flattens waste

A sustainability-focused start-up company has launched a foldable water bottle that it says provides a reusable and recyclable alternative to single-use water bottles. DiFold’s Origami Bottle uses a bio-based thermoplastics copolyester supplied by DSM Engineering Materials. Arnitel Eco is partially derived from renewable rapeseed oil and delivers a carbon footprint reduction of up to 50 per cent compared with traditional copolymers, according to a lifecycle assessment conducted from the growing of the feedstock crops to the finished product that leaves the factory.

Inspired by the Japanese art of paper folding, the Origami Bottle can fold down to less than 10 per cent of its original volume.

According to DiFold co-founders Radina Popova and Petar Zaharinov, circularity and durability were the key factors to consider when choosing a material for their product.

“We wanted a bio-based material that could be recycled, as well as having the specific mechanical properties required by the folding design,” they said. “We are happy to say that Arnitel Eco offers the perfect balance of elasticity, plasticity, and circularity.”

Arnitel Eco’s recyclability is important in helping DiFold meet its goal of creating a closed-loop recycling system for its products.

Pim Janssen, marketing manager for food contact, water contact, and appliance markets at DSM Engineering Materials, said: “We are pleased that our services and materials could help DiFold in its mission to minimise the impact of packaging on the environment – a topic that is also close to our hearts. By helping to de-fossilise the value chain, Arnitel Eco contributes to creating a circular economy for materials.”
Danone to add PET bottle line in US

Danone North America is to invest up to $65 million over the next two years to create a new PET bottle production line in Jacksonville, Florida. The investment will support Danone North America’s long-term growth strategy and will deliver benefits across the US business, enabling flexibility in bottle design, accelerating the company’s sustainability goals, and driving cost efficiencies, the company said. It will boost brands including International Delight, Silk and STōK, it added.

“We are delighted to announce this investment in our North American business, which will allow us to capitalise on consumer demand in key beverage categories including coffee creamers, plant-based creamers, and ready-to-drink coffee, while also supporting our long-term growth agenda,” said Shane Grant, group deputy chief executive for the Americas. “This investment will help us keep our products on our customers’ shelves and give more American consumers the Danone products they love.”

The expansion will also create up to 40 new full-time jobs.

Keurig Dr Pepper in double-digit growth

Keurig Dr Pepper (KDP) has posted an 11.1 per cent increase in net sales for the year to $14.06 billion, on the back of strong sales growth in its packaged beverages and beverage-concentrates business units. Net sales of $3.6bn in the fourth quarter represented a 12.4 per cent increase on the previous year.

“We accelerated our revenue growth for the fifth consecutive year,” commented chief executive Bob Gamgort. “Continued brand strength across our portfolio enabled market share gains in an environment marked by significant pricing. As we look to 2023, we expect mid-single-digit revenue growth, as the rate of pricing moderates, and enhanced gross margins, as the relationship between inflation and pricing improves.”

In 2022, we made multiple strategic investments in new platforms and categories through innovation, partnerships and equity investments that support our vision of a ‘modern beverage company’ and provide fuel for future growth.

KDP in-market performance in the liquid refreshment beverages category remained strong for the year, with retail dollar consumption advancing 11 per cent and KDP growing market share, largely reflecting strength in premium unflavoured waters, seltzers, coconut waters, apple juice, tea and fruit drinks, and solid performance in carbonated soft drinks.

In coffee, retail dollar consumption of single-serve pods manufactured by KDP increased 4.9 per cent (in channels tracked by data insights firm Circana), led by higher pricing. The KDP-manufactured share remained strong, at 82.4 per cent for the year.

In packaged beverages, net sales for the year increased 12.3 per cent to $6.61bn, driven by higher net price realisation of 12.1 per cent and increased volume/mix of 0.3 per cent – the latter reflecting continued strength of the portfolio and strong in-market execution.

Refillable and lighter packaging in an instant

Nestlé has introduced a refill pouch for its Nescafé Gold Blend and Nescafé Original instant coffee that can be recycled in stores and helps save money while reducing packaging.

The 150g pouch is 97 per cent lighter than the 200g glass coffee jar and has on average 60 per cent less plastics than the jar’s lid, Nestlé said. It is reusable to help preserve freshness and once the refill is empty, consumers can recycle the pack in more than 5,000 stores across the UK and through kerbside collection in Ireland.

Sophie Demoulin, marketing director for Nescafé Soluble Coffee, said: “We know that Nescafé lovers are getting more concerned about the sustainability credentials of the products they consume. We are therefore really proud to launch this new coffee pack that offers our fans the same great coffee and the iconic rich aroma that they love in less packaging while offering better value for money.”

The launch is part of Nestlé’s ongoing packaging sustainability commitments for Nescafe, including reducing its use of virgin plastics by one-third by 2025.

Mars Wrigley China lifts the lid on rPET

Mars Wrigley China has launched its first rPET packaging in the form of a canister lid for domestic chocolate brand Cui Xiang Mi (CXM).

The 216g canister lid is made from 100 per cent rPET, resulting in ‘no change’ in the final product compared with its predecessor.

Mars Wrigley China estimates the new CXM rPET canister lid will save the use of 36 tonnes of virgin plastics annually. It anticipates the rPET lid will be adopted by more of its brands over the course of this year, including Snickers and M&M’s.

A 2022 report on Chinese consumers’ recognition of rPET, issued by the China Food Information Center, found that 82 per cent of respondents accepted the replacement of traditional plastics with rPET.

While Mars Wrigley China suggested the launch demonstrated a ‘new chapter’ in its use of recycled content, it acknowledged that the high-value application of recycled materials remained a challenge for the industry due to an immature industry value chain and high costs.

According to data published by the Plastic Recycling Branch of the China Synthetic Resin Association, China, which is a major PET producer and supplier to the world, recycled 5.68 million tonnes of PET scrap in 2020.

However, the association said most of this was downgraded to rPET fibres used in textiles, which would normally be land-filled or incinerated at the end of their lifecycle.

In 2022, Mars Wrigley China, together with other companies and national associations, kicked off the country’s first industry-wide pilot to build a full-chain and closed-loop recycling system in China for flexible packs.

The aim of the Flexible Plastics Reborn programme is to collect 50,000t of flexible packaging waste by the end of 2025. Mars Wrigley China expects the programme will be able to increase recyclability for flexible packs, while providing more resources and saving energy.

The company claims to have taken a series of actions since 2019 to reimagine and redesign its packaging, making sure it is reusable, recyclable or compostable through innovation and advocacy.

It said the light-weighting of packaging for Dove and Extra has resulted in the saving of more than 1,000 tonnes of plastic since 2019, equivalent to 60 million plastic packages.
Western sanctions have led to a shortage of plastics film in some segments of Russia’s packaging industry. One of those segments is meat processing, which has traditionally been heavily dependent on the supply of plastics coverings and casings (artificial casings are typically made from plastics or fibrous-based cellulose).

As Russian media recently reported, most of these casings came from outside the country, primarily from EU states, and were supplied to Russia from seven large foreign factories, with Finnish company ViskoTeepak and Germany’s Walsroder Casings two of the leading suppliers. It is claimed that around 90 per cent of Russian cervelat (cooked sausage) and raw smoked sausages had been packed in films manufactured outside the domestic market.

However, most of the supplies have been suspended, with Visrex, produced by Romanian firm Pioneer Rtor, thought to be the only existing supply from Europe. The transition to imports from China has not only sent delivery times soaring to ten months, but it has also reportedly hiked the prices of local film manufacturers by up to 70 per cent.

Some major Russian converters have denied these figures, however, with Atlantis-Pak claiming that – despite the view of the Russian National Union of Meat Processors – there is no shortage of sausage casings on the domestic market. The company also denied reports that domestic manufacturers produce lower-quality casings.

Atlantis-Pak general director Igor Pereplyotchikov insists that the current situation in the market remains stable. “The deficit situation was typical for the spring of last year, when there were sharp changes in the market – but, today, the domestic market is oversaturated,” he says.

“As a result of the removal of import duties, according to the results of 2022, imports of casings to the Russian market even exceeded the figures for 2021. Domestic producers increased production.”

According to Pereplyotchikov, meat processors and distributors have created significant stocks of casings, including imported products. He also points to his company’s AyTsel Premium polymeric film as a suitable alternative casing material to fibrous cellulose, although its use requires some adjustments to existing production equipment.

“An advantage of polymeric permeable casings over fibrous ones is an improved oxygen barrier, which better preserves the aromas and increases the shelf-life,” he adds. “These films are also not subject to microbiological deterioration.”

Atlantis-Pak believes that domestic production is currently able to cover 100 per cent of Russia’s requirements for plastics packaging used for meat processing products.

However, domestic prices for packaging are falling due to the saturation of the market with cheap imports, while raw materials, including those produced in Russia, are at historically high prices. At the same time, in the case of polyamide – one of the main components for the production of plastics casings – import duty remains at 6.5 per cent.
An in-depth examination of the raw materials, processes and equipment used in the production of flexible packaging. Written by a team of packaging specialists, the publication looks at innovations and new opportunities, together with the application of science to address environmental challenges.

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**Polyethylene**

The industry has still not managed to pull itself from its vale of tears, with production, demand and consumption all weak. Like producers, converters are sensing little spring joy, and the eagerly awaited stock-building activities are simply not happening. Buyers are ordering only what they absolutely need – due not least to the fact that the overall price level has risen, with the ethylene reference up €85 ($90) a tonne in February, triggered by the previous massive increase in the cost of naphtha.

Things look particularly bleak in the beverage industry, but it does at least appear a little rosier in the food packaging segment.

The cost of ethylene feedstock rose by €30/t ($32) in March, which presumably also slightly boosted polymer prices. Nevertheless, there is still a lack of incoming orders, which is why overall demand is unlikely to return to its normal level just yet.

Generally speaking, it can be said that the lead-time for incoming orders for converters has declined significantly. For many, this is making planning for the coming months much more difficult.

**Polypropylene**

The downward trend in PP prices that persisted for nine months, except for a slight rise in November 2022, has been halted – at least for the moment.

In February 2023, the polymer began to turn upwards again on the back of an €80/t ($85) increase in the price of propylene feedstock. Initially, producers insisted on passing through the cost increase in full, but over the course of the month most of the hikes began to shrink and, in the end, many products cost only €50/t ($53) more than in January.

Demand remained weak as many buyers worked off inventories and only ordered enough to complete current projects. As Middle East imports lengthened availability of PP, cuts in producer output had little impact.

In March, PP prices should have experienced slight increases, in particular because the monthly propylene reference increased €30/t ($32).

**PVC**

After PVC prices had known only one direction since April 2022, the downward trend ended in February. Prices for PVC and compounds turned upwards, albeit only marginally.

Producers attempted to price the pro-rata costs for ethylene (up by €85/$90) into their offers but were met with only limited success. Restrained demand coupled with a more than adequate supply kept prices in check. This is because sufficient material is still available to readily fulfill contracts despite the continuing curtailment of European production.

Europe’s key export market of Turkey can also only accept limited deliveries at present following the devastating earthquake. Only minor price movements were expected for March.

Overall, demand across all PVC materials is still below the normal seasonal level.

**Styrenics**

February was quite unspectacular and almost silent. After the modest €10/t ($11) increase in the styrene reference, no price spikes were expected either way. By consequence, a cost pass-through or rollover was at the centre of polystyrene (PS) and expanded PS price discussions at the beginning of February. As the month progressed, however, weak demand increasingly put pressure on prices, adding a sprinkle of slight discounts.

The tone for March was set early as the costs for styrene production are getting out of hand. One producer voiced a desire for increasing PS prices even before the March styrene contract was published. However, the extent to which this goal could be achieved remained to be seen after the quite significant €113/t ($119) drop of the March styrene monomer reference.

**PET**

European PET producers’ hopes for price stabilisation evaporated rapidly at the start of February. After a long delay, the December reference for paraxylene was a pronounced triple-digit drop, which immediately prompted corresponding demands for reductions on the part of customers.

At the same time, aggressive import offerings forced their way on to the market. This flash in the pan was short-lived, however, and reductions were kept to a bare minimum over the course of the month, due in part to the earthquake in Turkey, which triggered an abrupt increase in demand for bottles.

The bubbling volatility in the international markets drove European converters back to the reliably filled troughs of European suppliers. They frequently opted to be ‘on the safe side’ when it came to meeting demand for the approaching spring season. Prices were set to stabilise in March. Offers for European and imported goods moved closer together again and all sides were awaiting the start of the season in an optimistic mood. Suppliers were working on the basis of at least a rollover and perhaps a slight firming.

**Standard recylcate**

Standard recycle prices continued to decline in February. Even though demand picked up slightly as some processors restocked, it remained generally weak. Meanwhile, recycling lines were put back into operation to broaden supply, especially for rPE and rPP, which increased price pressure.

Prices for most recyclates will probably continue to trend downwards even though the ongoing slide is likely to level off somewhat as processors increase stocks. For some rLDPE and recycled high-impact PS grades, largely stable prices were already emerging for March.

Looking at Germany, local recyclers appear to be benefitting from the energy cost cap. Players from neighboring countries with more widely fluctuating energy costs are increasingly considering it a competitive disadvantage that they are less able to calculate future prices for customers than their German competitors.

The market in Spain has also become a special case. After the country introduced a tax on virgin plastics, recylcate recorded significantly lower discounts in February, or prices were even unchanged. It remains to be seen whether Spain’s special position will solidify in the months to come.

**PRICE CHECK**

A monthly review of European polymer prices, provided by PIEWeb (www.pieweb.com), which produces Polyglobe

**STANDARD THERMOPLASTICS**

- Downward trend in quotations for several grades halted for the moment
- Curbed production meets weak demand
- Hopes pinned on seasonal upturn

**STANDARD RECYCLATE**

- Broad price declines
- Weak demand combines with supply growth
- Pressure was set to ease in March
- German recyclers benefit from energy cost cap
There’s plenty more fish in the sea

S

ever years ago, a report was launched at the World Economic Forum that included a claim so incendiary that it subsequently became a hackneyed talking point across various media. The report stated there would be more waste plastics in the sea than fish by 2050, unless the industry cleans up its act.

Just as the Blue Planet II documentary was fronted by everybody’s favourite grandfather figure, Sir David Attenborough, and therefore must be completely true, this report came from a record-breaking sailor, Dame Ellen MacArthur. Surely, she knows the oceans better than most of us. The report was published by her foundation with analytical support from McKinsey & Company.

Interestingly, the McKinsey Center for Business and Environment was also involved in a report published a year earlier called ‘Stemming the Tide: Land-based strategies for a plastic-free ocean’. Published with the Ocean Conservancy, and with advice provided by the Ellen MacArthur Foundation, the report was an influential environmental examination of the impact of and solutions to ocean plastics pollution. It was retracted earlier this year because of what one of the published organisations claimed was its ‘unfair and misleading waste colonialism narrative’.

But back to the fish. A research article published last month called for ‘urgent solutions’ to ‘a growing plastic smog’, claiming that there are now an estimated 170 trillion plastics particles afloat in the world’s oceans.

What I find most interesting in this research, edited by Judi Hewitt of the University of Auckland, New Zealand, is the confidence of these projections for plastics particle count and mass, despite a distinct lack of sampling. The majority of samples were collected in the North Pacific and North Atlantic Oceans, so the results are biased towards the trends in those ocean basins.

In fact, the number of sampling stations was just 19 in 2019, compared with 806 in 2011. In 2018, the number of sampling stations was zero. Can we therefore trust the conclusions?

The researchers also admit to limitations in their estimates of particle counts and mass, because the former can vary considerably when considering size, and the latter only used a simple conversion of count to mass and so cannot be trusted for accuracy.

Despite this, the claim that plastics particles in the oceans have increased from 16 trillion in 2005 to 171 trillion in 2019 is another incendiary headline, likely to be accompanied in the mainstream media by a photo of a marine animal with a bag around its neck. It’s worth noting here that a major global media company published a correction on its website in January, admitting that a photo it used of a hawksbill turtle swimming underwater while entangled in a plastics bag was, in fact, Photoshopped.

Meanwhile, a recent paper published in Science estimated 6,000 tonnes of microplastics were entering the world’s oceans annually, dramatically lower than the Ellen MacArthur Foundation estimate of 8 million tonnes a year. Weiss et al showed that by reformulating how mass fluxes are calculated from observations of particle numbers, those mass fluxes were being overestimated by two to three orders of magnitude. You’d be hard pushed to find any media outlet that covered that news though. Funny that!

Polymer science expert Chris DeArmitt argues that none of the points forming the foundation for the remarkable claim from the Ellen MacArthur Foundation stand up to scrutiny.

Firstly, the estimates that there are more than 150m/t of plastics in the ocean are pure guesswork, based on taking the amount of plastics material within a 30-mile radius of the shoreline and assuming that a certain percentage of it will end up in the ocean.

The claim that there are more than 8m/t of plastics entering the ocean each year is also fundamentally wrong, he says. He points to the aforementioned peer-reviewed study, which scaled the estimated figure down to 6,000t/yr. Still room for improvement, yes, but it hardly constitutes a global emergency.

Another claim by the Ellen MacArthur report was that plastics entering the ocean would increase exponentially as the amount of plastics produced increased over time. Again, this is not based on evidence. It depends on how well or how badly we manage the waste we create.

There was also an assumption that plastics would remain forever and accumulate in the oceans, but – as DeArmitt points out – the global market for additives to prevent plastics from degrading is in the billions of dollars per year. No one would be spending billions of dollars on stabilisers for plastics if they were inherently stable.

Finally, the report claimed that the amount of fish in the oceans is 800-900m/t. This ‘guess’ was based on satellite data showing phytoplankton. In fact, the source of that statistic has since stated that the actual amount of fish is likely to be at least ten times higher than the previous estimate.

Unfortunately, whereas shocking reports like Ellen MacArthur’s get so much coverage that they become de facto ‘facts’, studies that reveal them to be fabricated simply drift out to sea without a cursory mention by those who were only too happy to repeat the ‘more plastics than fish’ myth.

In fact, I am pretty sure that if you visit the websites of various non-governmental organisations (NGOs), you’d still find this statement about fish and plastics sat next to a ‘donate’ button, calling on the public to save the planet.

We are at a turning point for plastics when it comes to the environment, sustainability, net zero and circularity. We are at a turning point for plastics when it comes to the environment, sustainability, net zero and circularity.

Savvy plastics firms are pushing the boat out when it comes to design-for-recycling, sustainability, net zero and circularity. Unlike some of the NGO reports we’ve seen doing the rounds, these companies are making waves based on hard-work, not guesswork.
OEMs and brand owners are striving to reverse workforce shortages. Jorge Izquierdo explains how automation can lessen the strain

Consumer packaged goods (CPG) companies and OEMs continue to struggle to hire and retain workers with the skillsets needed to maintain production. Personnel, such as skilled machine operators, technicians, and those familiar with complex equipment or digital automation technologies, remain in high demand.

Not only is it difficult to run production lines with skeleton crews, it also requires considerable time, effort, and expense to interview, hire, and train a replacement for an employee who opts to leave. In fact, replacing an entry-level employee typically costs 50 per cent of their annual salary, according to US employment agency Apollo Technical.

As a result, CPG firms and OEMs are considering how technology and automation can relieve staffing shortages and are looking at outreach and training options to recruit and retain employees.

Technology, such as automation, easy-to-use and intuitive controls, and remote diagnostics, can help address hiring challenges and improve retention. Technology can make operators more self-sufficient and broaden the work area each operator oversees, thereby reducing the number of team members needed and, in turn, cutting costs, lowering recruitment needs, and accommodating lower-skilled workers.

Automating manual operations can improve retention by minimising repetitive, physically demanding tasks, improving safety, and making the workday more fulfilling. Automation makes actionable information more accessible to operators and mechanics, boosts accuracy and line speed, and enhances the training experience via newer procedures and guidance tools such as augmented reality, offering the potential for a higher level of engagement and shorter learning curve for new hires or personnel accepting new responsibilities.

To retain personnel, employers need to identify training gaps, continually invest in employees, and clearly communicate the opportunities available to learn new skills, change roles, and grow professionally within the organisation. It’s particularly important to discuss what paths to take to advance or move from one role to another, according to the ‘Global Talent Trends 2022’ report published by management consultancy Mercer.

The report notes that employees feel a higher level of engagement when their needs are met. They especially appreciate educational opportunities that help them stay up to date in their field, that are personalised for their interests and career goals, and that help them advance or change roles internally and move closer to achieving career goals.

This can be done via a combination of training and mentoring. Noting that the best employees want to grow, learn, or advance, the US-based Work Institute recommends establishing clear benchmarks with your staff that indicate their expected advancements based on performance accomplishments. For those that don’t want to advance, but still want to learn new skills, the Work Institute suggests making an effort to find what they enjoy and offer learning opportunities that will challenge them. This will motivate employees to perform, but more importantly, it will encourage them to stay.

The need to promote from within and improve training and career development, including a better understanding of how to assist employees to transition to new roles and opportunities for labour conversion, are top priorities cited by CPG companies.

With the increasing use of automation, mechatronics, robotics, and artificial intelligence, providing the technical training needed to support these advanced technologies is one way to build a skilled and loyal workforce and provide the growth opportunities employees crave.

Training and productivity aids, new user interface technologies, and a range of automation tools, including robots, collaborative robots, sensors, and software, will be on display at Pack Expo Las Vegas (11-13 September 2023).
In the time that Srinivasan Prabhushankar spent talking to delegates at the February Petcore Europe AGM in Brussels, Belgium, his company’s plants had recycled 1.5 million bottles.

The chief executive of recycling at Indorama Ventures (IVL) in the US was busy outlining the sustainability mission of the Thailand-headquartered petro-chemical giant, which has designs on recycling 50 billion PET bottles per year by 2025. Today, with its current facilities, the company recycles 30bn bottles a year but there are projects lined up to make the 2025 target achievable.

“A million seconds is just 12 days, but a billion seconds is 31 years!” he explained to delegates. “We talk a lot about millions and billions and trillions, but we sometimes do not get a perspective of what that really means. This gives you an idea.”

Several new assets – in the likes of the US, Brazil, France, Poland, the Czech Republic, Thailand, the Philippines, and Indonesia – have been added between 2019 and 2022 to make this target possible. It represents a considerable investment for a company that already provides the PET resin for one in every five PET bottles manufactured.

“I worked for a polyester company in India during the 1980s and we started recycling PET bottles that came from the US. We recycled them into fibre,” he said. “Now, 30 years later, we’re doing the same thing but in a completely different way.”

IVL’s 2025 global commitment includes investments of $1.5bn and the incorporation of 750,000 tonnes of post-consumer PET material as feedstock into the company’s rPET production per year. This additional capacity will come through merger-and-acquisition activity, organic growth and partnerships.

Indeed, the group’s chief executive Alok Lohia more recently told Reuters that the company is hunting for acquisitions especially in Europe and Africa, as part of its strategy to speed up growth. He added that the company is seeking assets in Africa involved in making material used in plastics bottles and polyester.

“We have presence in some African countries, but are exploring the continent for recycling facilities. However, nothing is final at the moment,” admitted Prabhushankar.

The company is no stranger to big acquisitions, having made 50 of them over the past two decades, amounting to a total enterprise value of $10.9bn. The largest of these was its purchase of Huntsman Corporation’s chemical intermediates and surfactants manufacturing facilities in 2019 for $2.08bn.

Prabhushankar referred to “running several hares at once” to satisfy the fundamental objectives of the PET industry. What he means is that mechanical recycling, emissions reductions and chemical recycling will all be necessary to achieve sustainability targets. We should perhaps in this instance ignore the Chinese proverb that warns if you chase two hares, you will not catch either!

IVL already has several partnerships underway with chemical recycling companies, including Loop Industries in Canada, Ionica Technologies in the Netherlands, and Carbios in France, with plans to jointly produce rPET for use in food and beverage packaging.

“Our partnership with Carbios is based on enzymatic recycling,” said Prabhushankar. “We don’t do any basic research and are not trying to develop any technology alone. But we are ready to commercialise technologies with partners. It’s an innovation tunnel, where you might evaluate five technologies to proceed with one project. All three of our chemical recycling partnerships are based on different technologies.”

In addition to its purpose to reimagine chemistry to create a better world, IVL also has a firm eye on its emissions, with Prabhushankar confirming that the company is to spend $640m by 2030 to lower them.

“Renewable energy will be 25 per cent of our energy consumption – we are already extensively doing this in Spain and Lithuania – while we will phase out coal in our Asian units, use green hydrogen, and progress with carbon capture utilisation and storage,” he explained.

As countries around the world strive towards net zero by 2050 – or, in some cases 2060 – IVL believes that rPET is an ideal solution to help them attain these targets.

And, of course, it isn’t just sovereign states that have carbon reduction targets. PepsiCo has a target to reduce its carbon footprint by 40 per cent by 2030, and the Coca-Cola Company has set a 30 per cent target by the same year, while Nestlé is aiming for net zero by 2050.

Alongside this, PepsiCo has set itself a target of 25 per cent recycled content across its plastics
Every year, used PET bottles in the country will recycle about 2bn additional. Called PETValue Philippines, the plant is opened in partnership with Coca-Cola Beverages Philippines. Called PETValue Philippines, the plant will recycle about 2bn additional used PET bottles in the country every year. “PET bottle collection rates of 90 per cent will eventually be reached,” said Prabhushankar. “Design requirements, collection targets and fiscal measures will all help make that possible.”

IVL is well-placed to capitalise on these opportunities, having identified recycling as the major beneficiary of its capital in 2020. According to its 2020 annual report, the resin giant is expected to more than triple its global rPET production capacity in the next few years. The company is clearly well-advanced along this trajectory when it comes to rPET, as it ramps up PET recycling capacity from 207,000t/yr in 2019 to the targeted 750,000t/yr by 2025.

The biggest potential bottleneck to achieving these targets is feedstock, claimed Prabhushankar. “That is to say feedstock quantity, but also sometimes quality,” he explained. “The yield from the US kerbside programme can be in the low 50 per cent area. In Europe, it’s a lot higher. What does that do to us? It needs more investment in optical sorting but it also requires you to have over-capacity as you have by-products within your system.”

IVL has its own sustainable brand called Deja, which includes the Deja Carbon Neutral PET pellet. This, says the company, has been certified as carbon neutral and helps companies lower their Scope 3 greenhouse gas emissions. It is available in 100 per cent virgin pellets or a blend of virgin and post-consumer recycled (PCR) PET, where the PCR content is fed back into the virgin PET polymerisation process to reportedly create a single pellet solution with the same properties as virgin.

**Educate the masses**

While IVL has been busy getting its own house in order, the company has not neglected its responsibilities to wider society, and it has been working on getting other people’s houses in order, too. “Our aim by 2030 is to reach a million young people with our global recycling education programme.” explained Prabhushankar. “The goal is to give them the understanding of how to deal with waste.”

Launched in 2018 in partnership with the Yunus Foundation, the programme goes to schools, colleges and universities, and offers educational content at six levels. “In Thailand, we have already educated 30,000-35,000 children,” he added. “We have created content in English, Thai, Spanish and Portuguese, and will launch it in other languages. We’ve also started introducing this in the US and have three school systems using it, which represents about 35 schools, or 10,000 children. Competitions include getting children to collect the most waste, with the winners raising money for their schools to buy resources.”

In the US, IVL works with another non-governmental organisation – Keep America Beautiful – and also has some partnerships with sports stadiums and teams. “We provide the waste collection system and recycle it at our facility,” said Prabhushankar. “And we sponsor some events, where we will put signs up during the game about recycling.”

He said the response from the education system has been generally encouraging, but was quick to point out that the programme is not only about plastics – it’s about handling waste in general. “Kids who go through the programme love it,” he said. “When we show them what happens to the packaging, they are surprised. We even bring kids to our facilities to show them how it is recycled.”

Waste collection is a shared experience that starts with the young, it seems.

By Steven Pacitti
Robotic line has cosmetic appeal

Shemesh Automation has developed a complete robotics-enhanced packaging line for cosmetics.

Suitable for products of all shapes and sizes, the TKS-C60 line has been built to handle the entire packaging process, including feeding, filling, capping, labelling, case packing, and palletising.

According to its maker, the TKS-C60 is a seamless, uninterrupted bottling line for a range of products from creams and foundations to fragrances and nail polish. It runs at 60 bottles per minute.

The line includes three ABB Delta robots – one on the product unscrambling station, one for multi-capping, and one for case packing – as well as an integrated vision system. Two lanes allow different products to be packed on the same line. A linear rather than rotary feed means there are fewer parts, enabling faster and easier changeovers and cleaning. Shemesh said the line can identify cap types of any dimension, including screw caps, snap-on caps, and pump/spray caps. For shaped products, it can also include puck loaders and unloaders to further increase flexibility.

The line’s Etna automatic bottle unscrambler uses an ABB/Fanuc spider robot to provide precise bottle orientation, covering what Shemesh described as virtually all bottle types common to the cosmetic sector. According to the company, the robotic elements ensure no change parts are required (except in some cases for the robot grippers) when unscrambling multiple bottle shapes.

Robots ensure the bottles for filling and caps are facing the correct way – saving on labour, Shemesh claimed. After capping, the line provides a front and back or full-wrap customisable labelling function.

The Stratum liquid filler is capable of filling a wide range of viscosities (from 1 to 500,000 centipoise) to within +/- 0.25 per cent of filling volume. Shemesh said this makes it the perfect filler for cosmetics manufacturers with a diverse product range.

The Attilus continuous motion cosmetics capping machine includes a robotic sorter and an advanced vision system to enable what the company said are higher speeds, enhanced accuracy and unprecedented flexibility in automatic screw, pump and spray cap sorting.

More information from Shemesh Automation, 85 Great Portland Street, First Floor, London, W1W 7L, UK. Tel: 44 758 428 1707. Email: support@shemeshautomation.com. Web: shemeshautomation.com

Illig boosts range with shorter-run option

Illig Maschinenbau has unveiled a new sheet-processing thermoforming machine suitable for shorter runs.

Launched at the company’s Technology Day in March, the UAF comes with adjustable clamping frames, automatic sheet loading, and an energy-efficient design. Longer cycle times can be achieved through the use of integrated preheating.

The model has a variable forming area ranging from 60cm x 50cm up to 300cm x 200cm. The servo-motor-controlled machine is designed for precise thermoforming of sheet material and can be automated with a loading unit.

The UAF follows the arrival last year of the RDF 85, a flexible thermoformer that includes high-speed stack handling. “The UAF is the next logical step in our product strategy,” said Jürgen Lochner, chief technology and security officer at Illig. “The flexible and modular design of our machines is central to our consistent expansion strategy of the Illig product portfolio.”

Visitors to the Illig Technology Day, held at the company’s headquarters in Heilbronn, Germany, were given an opportunity to see the UAF in operation and witness its tool changeover. They were also shown applications with different sheets and materials presented together alongside Illig’s tool suppliers.

“Visitors were able to discuss related topics with our technology experts, service technicians, and tool suppliers,” added Lochner.

More information from Illig Maschinenbau, Robert-Bosch-Straße 10, 74081 Heilbronn, Germany. Tel: 49 7131 505 0 Email: info@illig-group.com. Web: illig.de/en

Cross-seal inspection for flow packers

An inline system that inspects cross seals on flow packers has been introduced by Dutch firm Qipack.

QipScan measures the distance between the two sealing bars during the entire sealing cycle, a technique that Qipack claimed is relatively cheap due to the lack of an expensive infrared camera. The sealing process starts with two hot seal bars that move towards each other and enclose the film. In doing so, they build up pressure and transfer heat to a tube of plastics film, which then melts and is cut with a knife, after which the tooling opens again.

This entire process can be graphically recorded in a curve using distance sensors. That curve is continuously compared against a predetermined reference curve. In case of significant deviations, the system sounds an alarm and the packaging is ejected. According to Qipack, such a deviation can be caused by too high or low a sealing temperature or because there is product between the layers of film.

Paired with the QipCam longitudinal seam inspection device, QipScan forms part of a new system collectively known as QipFlow.

One of the first users of QipFlow is a large crisp manufacturer in the Netherlands, which has set up two new form-fill-seal lines that incorporate four QipFlow systems. Previously, crisp bags were placed in the boxes by hand, with a visual check by the packers. This control has been replaced by Qipack’s inspection systems, which now check whether the cross seals and longitudinal seam are properly sealed.

“Fouling between the sealing jaws can be seen as of 10 microns,” said Qipack co-owner Alexander van Puijenbroek. “As a result, the crisp manufacturer is now able to remove poorly sealed packaging that would otherwise have ended up in stores.”

More information from Qipack, Vughtweg 7, 5211 CJ, Den Bosch, the Netherlands. Tel: 31 6 25 00 61 13. Email: info@qipack.com. Web: qipack.com
Mono-PE pouch is a multi-material match

Five companies have collaborated to develop a fully recyclable mono-material PE pouch with ‘similar properties’ to hard-to-recycle multi-material laminated alternatives. The new pouch makes use of the latest in polymers, inks, functional coatings, adhesives and conversion technology from ExxonMobil, Henkel, Kraus Folie, Siegwerk and Windmüller & Hölscher.

The PE pouch offers a high oxygen barrier, outstanding package integrity and excellent shelf-appeal, the companies claimed. It produces an ‘almost colourless’ recylcate after the removal of printing ink and the oxygen-barrier coating layer, they added.

To produce colourless recylcate, Siegwerk’s delamination/deinking technology was applied in one step on a Windmüller & Hölscher Miraflex, a flexo printing press with a downstream unit.

Depending on the requirements, either solvent- or water-based primer from Siegwerk’s Cirkit ClearPrime product range can be used. According to the ink maker, applying industrial hot-washing conditions enables delamination and deinking of the pouch, giving an almost colourless recylcate.

Oxygen barrier properties are achieved through the use of Locite Liofol BC 1582 RE, a recently introduced one-component barrier coating from Henkel, and Cirkit OxyBar BC 1582 from Siegwerk. The coating can be applied on both flexo and gravure presses at industrial machine speeds on various substrates, giving what the companies said is excellent transparency. Its compatibility with recycling has been confirmed by Cyclos HTP and it also has Critical Guidance Recognition by American Plastic Recyclers.

To improve recyclability, the partners used Henkel’s new solvent-free, two-component polyurethane laminating adhesive, Locite Liofol LA 7102 RE/6902 RE. The system has been designed for mono-material structures and is certified by RecyClass.

Packaging integrity is achieved using ExxonMobil’s latest generation of performance PE, such as Exceed S and Exceed XP, in combination with Exact materials in the sealant layer. The machine-direction orientation (MDO)-PE films have been developed by ExxonMobil and Kraus Folie, employing ExxonMobil HDPE and Enable performance PE, and produced on Kraus Folie’s Varex extrusion line with inline MDO unit.

More information from Siegwerk Druckfarben, Alfred-Keller-Straße 55, 53721, Siegburg, Nordrhein-Westfalen, Germany. Tel: 49 0 2241 304 0. Web: siegwerk.com

Berry adds Sustane to stretch hood film

Berry Global’s flexible films division is launching a next-generation version of its stretch hood film with a minimum 30 per cent recycled plastics content.

Typically, the demanding requirements of stretch hood film make the inclusion of any level of recycled material in its manufacture extremely challenging, particularly in terms of impeding the overall stretch capability.

Berry said it has been able to incorporate its Sustane polymers into stretch hood film while maintaining reliable seal integrity and high tear resistance. This ensures effective product protection throughout the supply chain.

The new Stretch Hood Sustane film is particularly suitable for low to medium stretch applications in markets such as beverages, building and glass. It can also be used on existing stretch machinery.

“Stretch Hood Sustane provides the perfect opportunity for customers to access a pallet stretch hooding solution where previously only prime polymer versions were available,” said Daniel Stauer, commercial director for Berry Packaging Solutions Industrial.

More information from Berry Global, P.O. Box 959, Evansville, Indiana 47706-0959, USA. Tel: 1 812 424 2904. Web: berryglobal.com

Recyclable resin offers lustre of glass

Beauty brand Lumene has launched its latest skin care innovation in packaging made with a recyclable resin from Eastman.

For its new Nordic Hydra Birch Dew Jelly, Lumene has chosen Eastman Cristal One E Renew, a recyclable PET-compatible copolyester resin with ‘molecularly recycled’ content that is specifically designed for extrusion blow moulding (EBM).

Cristal One E is Eastman’s latest addition to its Cristal One portfolio. According to the company, it offers brands the brilliance and lustre of glass with rigid, thick-wall construction for EBM that is not typically achievable with conventional recycled resins.

Lumene worked with luxury packaging manufacturer Rebhan to bring the Cristal One E Renew packaging to market. Lumene and Rebhan selected Cristal One E Renew to maximise the sustainability profile of the Nordic Hydra Birch Dew Jelly bottles, which feature a vibrant blue gradient decoration.

The result, said Eastman, is a luxurious, thick-walled EBM bottle with both 50 per cent certified recycled content and easy recyclability.

More information from Eastman Chemical Company, 100 Eastman Road, Kingsport, Tennessee 37660, USA. Tel: 1 800 327 8626. Web: eastman.com

Tamper protection tap is a market first

Smurfit Kappa says its new Vitop Uno tap is the first of its kind in the bag-in-box market to have integrated tamper protection.

The new tap design is compliant with the forthcoming EU Single-Use Plastics Directive on tethered caps as it does not require the consumer to remove the tamper protection, Smurfit Kappa said.

Instead, it is deactivated when the product is first used and remains an integral part of the tap without affecting the subsequent use of the bag-in-box product, the company explained.

After use, the consumer can separate the box from the bag with the tap and send them for recycling in accordance with their country’s recycling regulations.

Tests on the Vitop Uno have shown that the convenience of the new tap remains the same and that the environmental aspect of the packaging has a positive effect on consumer purchase intentions, Smurfit Kappa said.

More information from Smurfit Kappa, Quai de l’Ile Belon, 51200 Epernay, France. Tel: 33 3 26 55 70 10. Web: smurfitkappa.com

Be seen in Eco-plastics in Packaging next month

To ensure the best coverage of new products and services for the global plastics packaging industry email your details to Noli Dinkovski noli@sayers-publishing.com
Heart of the matter

In late 2021, the European Commission (EC) published a communication proposing that at least 20 per cent of the carbon used in chemical and plastics products should come from sustainable non-fossil sources by the end of the decade. To put it into context, 18 months on, renewable polymers only make up around 1 per cent of global polymer production.

Still, those businesses at the coalface back the proposal. “Neste fully supports the EC’s direction and considers it important that this target includes all sustainable circular raw materials – bio-based, mechanically and chemically recycled, as well as carbon dioxide capture-based materials,” says a spokesman for the polymer producer.

“Neste is ready to enable the transformation by providing such sustainable non-virgin-fossil alternatives to the chemical and plastics industry already today.”

Whether bio-based or recyclable, the development of circular polymers is a crucial component in meeting targets such as those set by the EC. While the chemical industry often stands accused of being slow to develop innovative, more environmentally-responsible feedstock and polymers for packaging materials, a look at the latest developments in these fields paints a different picture.

For its part, Neste says it is working with several converters and brand owners to bring bio-based materials into polymer applications. The company’s Neste RE feedstock comprises 100 per cent renewable and chemically recycled material.

“When made from 100 per cent renewable materials, Neste RE provides a greenhouse gas reduction of over 85 per cent over its lifecycle – if replacing fossil feedstock,” explains the spokesman. “As a drop-in solution, Neste RE can be used with existing production infrastructure and lead to the manufacturing of plastics with the same properties and of the same quality as conventional fossil feedstock.”

Collaboration with industry partners is ongoing, with Neste recently announcing a cooperation with Illig to advance the production of more sustainable thermoformed plastics packaging through the use of demonstration case studies (see News, p3). The company claims to continue to work towards increasing the availability of renewable and recycled raw materials while also developing technologies to diversify its current raw material portfolio.

While acknowledging that a lot of work remains to be done to make the switch from fossil-based materials, Neste believes there’s plenty to be positive about. “The solutions and technologies are there, and they are available at scale,” says the spokesman.

Another chemical company making headway on circularity through collaboration is SABIC. One of its more recent innovations is a new fully recyclable stand-up pouch made using its own BOPE material and Covestro’s heat-resistant coating resin technology.

The transparent coating, tested with the help of Dutch-based Verpakkingsindustrie Veenendaal and Volpak, is said to enable a broader sealing temperature window when processed on form-fill-seal lines, as it prevents the film from shrinking and sticking to heat seal bars.

It has also recently worked with Bonduelle on food-contact film for a premium range of fresh-cut salads. The BOPP film – made from the chemical recycling of post-consumer plastics – and manufactured by Vibac, contains 30 per cent recycled content via mass balance certification. The bags are fully recyclable in polyolefin waste streams.

Adding recycled content doesn’t have to result in a loss of aesthetic appeal either, if the use of SABIC’s Qrystal copolymer in Melitta single-portion tea capsules is anything to go by. The PP used for the tea capsules is produced from feedstock recycling of used plastics waste.

“Society is currently facing some of its biggest challenges and we must work together to solve them,” says a spokeswoman for SABIC. “We have been working with our downstream and upstream partners to reinvent and pioneer our way towards a circular economy for the good of people and the planet. For this circular process to work, consumers, retailers, recyclers and manufacturers must all come together to enable valuable materials to be collected and processed to make new products.”

A similar ethos is promoted by Dow, which is focused on sourcing alternative feedstocks in three main areas. The first is post-consumer recycled resins generated through mechanical recycling that are suitable for demanding non-food applications. As an example, the company is helping Valoregen build the largest single hybrid recycling site in France, which will be owned and operated by the recycling company.

Secondly, Dow says it is committed to developing polymers containing recycled content that are suitable for sensitive and regulated applications such as food-contact packaging. These polymers are generated through chemical recycling using a certified mass balance allocation. Dow cites its work with Mura to scale up the latter’s HydroPRS, a chemical recycling process that uses supercritical steam to convert plastics back into the chemicals and oils from which they were made.

The third main area for Dow is the production of bio-based polymers produced from certified bio-feedstocks. Here, the company uses second- and third-generation waste from alternative industries, so as not to compete
Feedstocks of the future

From chicken feathers to shrimp shells, attempts to make plastics from ever more weird and wonderful renewable feedstocks have gained traction in recent years. But which source materials are likely to make serious market inroads in the near future?

Having worked with biopolymers for more than 20 years, the Aimplas Plastics Technology Centre in Spain is as well-placed as any to answer that question. “We are focused on two research areas,” says Aimplas packaging researcher Lorena Rodriguez. “In natural resources, we are working on starch, cellulose, chitin and chitosan, gelatine, zein, animal fats, soybean oils and furan resins.”

In the field of renewable sources synthesised by biotechnology, Rodriguez says Aimplas is obtaining monomers and polymerisation from the likes of PET, PE furanoate, polylactic acid, polylactide succinate (PBS), and PBS-co-butylene adipate.

“The feedstock of the future will be mainly waste from the agri-food industry, which is aiming to achieve zero waste,” she explains. “So, what is not used as a resource in the agri-food industry itself is valued in the form of new raw material for the bioplastics industry.”

Neste, meanwhile, claims to have focused on waste and residue raw materials for over a decade, adding that they account for over 90 per cent of the company’s total renewable raw material input globally. In the mid- to longer term, it expects to introduce novel vegetable oils derived from advanced, more sustainable agricultural concepts to its raw material portfolio. The company says all of its refineries producing renewables are technically capable of running on 100 per cent waste and residue raw materials.

“Future raw materials we are looking into include algae oil, lignocellulosics [plant biomass], and municipal solid waste,” adds a Neste spokesman.

Such confidence about the general direction of the market is mirrored by other resin producers. And, for Dow, collective success can only be achieved through collaboration. “For more than ten years, we have worked directly with converters, brand owners, retailers, machinery OEMs, legislators, regulators, academia and research institutes to accelerate sustainable innovation throughout the value chain,” says Minelli.

“We are extremely optimistic, as the entire value chain and ecosystem is moving fast.”

More information from:

Aimplas Plastics Technology Centre aimplas.net
Dow dow.com
Neste neste.com
SABIC sabic.com
TotalEnergies totalenergies.com

Above and right: Recyclable mono-material pouches made from polymers supplied by the likes of Dow and SABIC have been a key driver of plastics circularity with food supply. Examples are its Affinity RE and Engage REN resins, which Dow says are being used ever more widely.

“When it comes to bio-based polymers, our main target is to expand our global offering through additional asset certifications, local sourcing, and volume scale-up to make more of these feedstocks available and help the value chain to reach decarbonisation targets,” says Giorgia Minelli, group marketing director for packaging and speciality plastics at Dow.

“In doing so, we use the ISCC Plus certification scheme, which is built on the mass balance model. We believe this is the most credible way forward.”

While it has been promoting bio-based PE since 2018, Dow acknowledges that customer acceptance of the additional cost is the main hurdle to it being adopted widely. “The value proposition needs to resonate across the whole value chain to find a consensus on an economically viable business model,” explains Minelli. “It simply takes time.”

Of course, the viability of any such business model can be vastly improved through the scaling up of production. In 2016, TotalEnergies formed a joint venture with lactic acid producer Corbion to develop, produce and market polylactic acid (PLA), which can be manufactured from sugarcane or starch.

Following the success of its first PLA plant in Thailand, which started up in 2018, the joint venture is building Europe’s first PLA plant in Grandpuits, France. Due to begin operations in 2024, the site – with a 100,000-tonne production capacity per year – will make TotalEnergies’ joint venture with Corbion the world’s biggest producer of PLA.

When asked about the pace of change to renewable feedstock, TotalEnergies suggests that the economic crisis has possibly slowed down certain sustainable projects, but adds that it is definitely not a hard stop or a delay.

“We remain committed to having circular stock comprise 30 per cent of our sales by 2030, and our RE:clic product range supports our customers in achieving their sustainability goals,” says a company spokeswoman.

“In addition to processing feedstock of natural origins, we are also producing a full range of certified renewable polymers from bio-circular origins, such as used cooking oil and animal fat.”

In line with market trends, TotalEnergies believes the packaging market will continue to look for innovative circular solutions. “Besides a strong focus on end-of-life and recyclability, future circular packaging will be strongly driven by a commitment to its carbon footprint and to its compatibility with food-contact applications,” says the spokeswoman. “Along with recycled solutions, bio-based polymers will definitely have a strong role to play.”
In early January, a trio of environmental campaign groups sprang an unwelcome New Year surprise on Danone’s French headquarters when they filed a lawsuit against the multinational over what they called its ‘plastic megapollution’.

In fact, it did not come as a complete surprise to the food company. Back in September 2022, the same three groups, ClientEarth, Zero Waste France and Surfrider Foundation Europe (which campaigns for clean oceans) sent legal warnings, not just to Danone, but also to the French businesses of Nestlé and McDonald’s. The non-governmental organisations (NGOs) claimed that none of these companies were doing enough with respect to their ‘plastic footprint’ under France’s Corporate Duty of Vigilance Law, introduced in 2017 (see box).

According to ClientEarth, Danone responded to the September shot across its bows, but the response was inadequate.

All of a sudden, businesses that thought they were doing enough about their plastics packaging by signing voluntary undertakings to reduce, for example, virgin polymer consumption by upping their use of post-consumer recyclate, and perhaps sponsoring ocean clean-up initiatives, found the threat of high-profile legal action hanging over their heads. But is it something they are going to have to get used to?

Rosa Pritchard, plastics lawyer at ClientEarth, tells Eco-plastics in Packaging that the environmental, health and human rights implications of plastics packaging make it clear that these materials should be covered by any plan under the French Corporate Duty of Vigilance Law. “But in Danone’s vigilance plan, the word ‘plastic’ isn’t even mentioned,” she says.

The environmental law charity lists the various categories of harm it claims that plastics cause, including carbon, chemical and human rights impacts. Of these areas, she argues: “Reducing reliance on single-use plastics altogether, or ‘deplastification’, is the only policy that can mitigate them.”

ClientEarth quotes the figure of 9 per cent for the proportion of all plastics ever produced that have been recycled, adding that in most countries, recycling rates remain ‘woefully low’. “So, focusing efforts on improving recyclability and adding recycled content alone is simply not going to be enough,” Pritchard argues.

The NGO is already looking beyond the outcome of the case. “We’re asking for Danone to publish a new vigilance plan integrating a deplastification trajectory within the next six months after the court ruling,” she says. “If it doesn’t, we’re asking that they be fined €100,000 [$106,000] per day of delay. This is an amount that we find appropriate, given the company’s turnover.”

For its part, Danone denies any suggestion that it has failed to fulfil its obligations under the Corporate Duty of Vigilance Law. “We are very surprised by this accusation, which we strongly refute,” the company said in a January statement. “Danone has long been recognised as a pioneer in environmental risk management, and we remain fully committed and determined to act responsibly.”

As Danone is accused of failing to meet its environmental obligations regarding plastics under French law, will we have to get used to the threat of legal cases of this sort – as well as to the word ‘deplastification’? Paul Gander reports
ClientEarth’s plastics lawyer Rose Pritchard is calling for more publicity and puts more pressure on the case do in fact win it, this creates even publicity. “But, of course, if those bring the case, probably in part at least about generating publicity. “A robust treaty on plastics could also have this impact.”

As ClientEarth’s Pritchard notes, the hope is that the treaty will be finalised by the end of 2024. Like others, she draws a tentative parallel with international climate accords. “The Paris Agreement, for instance, has provided an essential tool for seeking to hold each actor – state and corporate – accountable for their contribution to climate change,” she points out. “A robust treaty on plastics could also have this impact.”

Meanwhile, the quite specific legal action being brought against Danone is playing out against the backdrop of preparations for the UN-backed, legally-binding international treaty on plastics. The importance of this agreement seems to be something that all parties can agree on. Danone makes the point that all parties have to be involved in addressing these challenges. “Putting an end to plastics pollution cannot come from one single company, and requires the mobilisation of all players – public and industrial – while respecting the imperatives of food safety,” its statement said. “This is why we support the adoption, under the aegis of the UN, of a legally-binding international treaty.”

As ClientEarth’s Pritchard notes, the hope is that the treaty will be finalised by the end of 2024. Like others, she draws a tentative parallel with international climate accords. “The Paris Agreement, for instance, has provided an essential tool for seeking to hold each actor – state and corporate – accountable for their contribution to climate change,” she points out. “A robust treaty on plastics could also have this impact.”

The team from Adelphi will be observing developments carefully at the second session of the Intergovernmental Negotiating Committee on the plastics treaty in Paris at the end of May.

Naturally, no one is counting chickens while the eggs still remain hypothetical. “Any treaty would set the direction and place obligations on signatory states to come up with national regulation,” says Schulte, adding that the precise shape of that regulation could vary.

In fact, at this stage, there are no guarantees even about the scope of the treaty itself. “Some countries have suggested that we need a treaty, but that it should focus on end-of-life and waste management,” she acknowledges.

Whatever the final verdict on the Danone lawsuit, it is unlikely to be the last legal case brought against producers and users of plastics packaging in Europe and possibly further afield – and it could be a sign of things to come.
Decarbonisation, as defined by the Oxford English Dictionary, is the 'reduction or elimination of carbon dioxide emissions from a process such as manufacturing or the production of energy'.

And for Angela Thijsse, who works for Dutch converter Pont Packaging – which specialises in glass and plastics packaging made from PE, PP and bio-based materials – the drive towards decarbonisation is a fundamental aspect of her everyday life. “Decarbonisation is a topic that touches many elements of my role as sustainability manager at Pont, as well as influencing my own lifestyle,” she explains. “However, the term ‘decarbonisation’ is usually more closely connected to recyclability when it comes to the influence of the packaging industry, with the main negative contributor being carbon black pigment.”

The traditional way of manufacturing black packaging is to use cheap and effective carbon black pigment, as it offers the required depth of colour. While it has been used in ready meal trays and packaging for beverages for many years, it has been widely acknowledged for more than a decade that carbon black is not recyclable, with near infrared (NIR) optical sorting equipment, which renders the packaging unidentifiable, and therefore unrecyclable.

New carbon black pigment formulations exist claiming to solve the issue of detectability, but Thijsse is not convinced, suggesting that the packing machines at “practically all recycling centres” cannot detect it. “The infrared [IR] light used by the machines to tell the difference between each packaging material, and to sort them accordingly for recycling, just gets absorbed on the machines,” she explains. “This means any packaging that contains carbon black just gets sent to landfill or burned, rather than helping to contribute to the circular economy.”

US-based Chroma Color’s vice-president of technology Jim Walsh and technical advisor Hari Rajaraman agree that there has been little evidence of commercial units in use that sort carbon black pigments. Instead, they point to strong interest in products that are carbon black-free.

There is a significant technical and economic hurdle to sorting carbon black pigments, Rajaraman adds. “Thousands of these sorting sensors are installed at materials recycling facilities and are programmed to a specific wavelength where PE and PET absorb in the IR spectrum. Unfortunately, carbon black masks that wavelength, preventing the bottles from being properly sorted.”

Eco-plastics in Packaging reported as far back as 2013 on the emergence of detectable black colourants by the likes of Sharpak, Faerch Plast and Linpac, which as well as being recyclable, offered savings in carbon emissions. An easy swap technically, but the rub was the greater cost.

A decade later, has the cost barrier closed, and is there more than just the cost to consider? “The cost premium over traditional carbon black is about three or four times,” says Chroma Color’s Walsh.

Mark Ryan, market and product manager for the Shepherd Color Company, adds that while the cost per kilo is higher, the cost to the consumer is negligible when extended out to the individual food container.

The more expensive carbon blacks used for colouring are about as expensive as the cheapest colour pigments, comments Dirk Schöning, sales director for German firm AF-Color, which is a branch of Akro-Plastic. In fact, the difference goes a bit deeper than cost, according to Schöning.

“Carbon black-free variants in direct comparison with a carbon black-containing masterbatch still lose out in terms of colour depth and brilliance,” he admits. “There are carbon black-free masterbatches on the market that come very close to those containing carbon black, but they are so expensive that customers do not accept the price, especially for short-lived end products.”

For companies like AF-Color, the challenge has been finding a compromise between colour and price.

“We have adapted our product portfolio to enable an increasingly higher percentage of coloured packaging to be recycled,” explains Schöning. “Almost every colour can be formulated to be free of carbon black. Our AF-Carbon PE 950811 IR schwarz is the right choice when deep black colour and recyclability are needed.”

Pont Packaging has made a commitment that each new product it develops will no longer contain carbon black pigment, points out Angela Thijsse, who references the company’s four pillars of sustainability and states the connection between recyclability and decarbonisation.

“As a service provider, we have to give our customers what they want, but we see it as part of our service that we can share what we know with our customers, and show them samples of carbon black-free packaging that meets their needs – and is a more positive contributor to the circular economy,” she says.

Shepherd Color has two main pigments for colouring plastics while maintaining IR sorting capability: Black 10F925 for colouring original packaging, and Black 10F950 for colouring already pigmented recycled material to a more neutral, darker tone. Both are US Food and Drug Administration-approved, explains Ryan. Chroma Color, meanwhile, offers carbon black-free recipes for various polymers, including PE, PP, PET and styrenics. These are based on IR-transparent pigments, IR-reflective pigments, and proprietary combinations of organic pigments.

“We are able to develop jet black colours with good opacity that can be sorted using NIR technology commonly used in recycling,” says Chroma Color’s Walsh. “We do have eyes for polar polymers like PET and styrenics.”

Commercial applications for these colours include HDPE bottles used for packaging detergents, nutritional supplements, moulded PE lids for thin-wall packaging, and PP caps and closures for deodorant sticks, water and beverage bottles. Chroma Color has also seen them applied to PET sheets that are thermoformed into mushroom tills (trays) and food trays, as well as high-impact polystyrene for flower pots and other nursery applications.

Back in 2017, Stuart Foster, the chief executive of resource charity Recoup, said that a carbon black alternative had been identified for use in crystallised PET ready meal trays and
was technically feasible. Asked why the sector had been so slow to respond to concerns about carbon black, Foster admitted that it was due to a failure of the entire supply chain – including converters, retailers and waste management companies – to work together.

“Investment is required at sorting facilities to reconfigure the optical sorting equipment to detect the ‘new’ black, which only makes commercial sense if operators know that the volume of detectable black is great enough,” he said at the time.

Although the colourant industry has moved with the times when it comes to carbon black, it is perhaps something of a conundrum when retailers have identified ‘black plastics’ as problematic materials. Are detectable and non-detectable black pigments being placed in the same bracket? Is this a black-and-white discussion, or is there a grey area?

In the same year that Waitrose vowed to rid its shelves of troublesome black plastics packaging, Unilever said it had cracked the problem of recycling black plastics bottles. The company launched its new black HDPE bottles in 2019 and said it had made the technology available to all, with it subsequently becoming “the industry norm” in many places.

With claims about sustainability and the circular economy, it appears then, that things are looking up for the new black.

“Almost every customer who has approached us with their colour request and has tested a carbon black-free masterbatch sample, is now using it,” explains AF-Color’s Dirk Schöning. “We already produce around 10 per cent of our masterbatches carbon black-free. The trend is upward!”

One manufacturer of plastics packaging for the food sector recently stated that black or coloured used to be 30 per cent of what it manufactured for its two major customers, but now it is less than 5 per cent.

“We are also aware of moves within horticulture, for example, to shift from black pots to grey,” says Paul East, head of packaging and design at Recoup.

The degree to which carbon black-free colours support decarbonisation is currently a subjective judgement. Schöning expects an influence on both his company’s and his customers’ carbon footprint but admits that there is not yet any clear picture of how much carbon dioxide equivalent will be saved by eliminating carbon black masterbatch formulations.

Chroma Color’s Hari Rajaraman says that carbon black-free pigments do support his company’s decarbonisation credentials, as long as the alternative black chemistry does not absorb in the IR wavelengths that coincide with PE and PET absorption.

Converter Pont Packaging, meanwhile, is working on various ways to reduce and mitigate its greenhouse gas emissions. The company created clear data packs for each of its products so its customers can see how the carbon black-free packaging compares with their existing packaging, with all migration tests completed and food-grade certification gained. Shepherd Color points to all of its inorganic pigments being carbon-free.

While a lot has been done to solve the detectability issue of dark colourants at the material end, sensor technology has also moved on considerably over recent years, to the point where black can be separated not only by colour but also by polymer.

Identifying markets for post-consumer black materials is another question altogether, as it cannot be used to produce white products and it isn’t always suitable for food-grade packaging. One view is that it could be used as feedstock for chemical recycling companies, creating a closed loop for black plastics.

We’ve come a long way when it comes to the material technology and the sorting/sensor equipment in the area of black plastics, but matching that back-office progress with front-end success will take time. Sorting plants capable of recovering all blacks out of the waste stream are coming, but further investments are required. Whether progress in terms of technology and investment can keep up with the amount of material going into the waste stream is another question entirely.

More information from:
AF-Color af-color.com
Chroma Color chromacolors.com
Pont Packaging ponteurope.com
The Shepherd Color Company shepherdcolor.com
Europe has made great strides in PET bottle recycling in recent years. Having brought in bottles from the US in the early 1990s in order to learn about depolymerisation, Europe today recycles billions of bottles a year.

These achievements are due in no small part to deposit return systems – in Germany, for example, there is a 97 per cent bottle-to-bottle rate. But they are also due to a longstanding effort by the industry to collaborate on design-for-recycling guidelines, said Petcore Europe’s Christian Crépet at his association’s annual conference earlier this year.

Crépet recently took on a new role as ambassador and honorary member of the Petcore Europe board of directors and has been helping the association – which is celebrating its 30th anniversary this year – adapt its working groups to suit EU regulatory priorities.

The overall collection rate for PET in the EU and UK is between 55 and 60 per cent, but it is obvious that the beverage industry is spearheading growth in demand for rPET content, up from an average 9 per cent now to a forecast 35 per cent by 2030. Food-grade rPET demand is also expected to demonstrate robust growth, according to Patrick Bouzekri, vice-president of consultancy firm SBA-CCI. “The demand for non-food-grade rPET for fibre, sheet and strapping will rise by about 10 per cent by 2030,” explained Bouzekri, who also expected chemical recycling for PET to triple in use from 160,000 tonnes today to 480,000t by 2030.

Mechanical PET recycling is expected to gain some capacity before remaining stable until 2030 at 986,000t/yr.

“Europe is far ahead in terms of rPET usage for packaging and in terms of technology and expertise,” he said. “But the EU needs to rationalise old and non-competitive PET assets and make sure the new capacities are competitive. This is a crucial point for the industry. “Beverage sector growth this year will be slow, caused by inflation and the economic impact of the Russia-Ukraine conflict, which is setting food and energy prices at an all-time high. EU-based PET producers struggle to compete on price with imports from Asia, so imports of PET – raw and flakes – will remain high across Europe this year.”

Raphael Jaumotte, technical manager for Petcore Europe, believes that the figures in the ‘PET Market in Europe, State of Play 2022’ report (delivered by Plastics Recyclers Europe in partnership with Petcore Europe, Natural Mineral Waters Europe and UNESDA Soft Drinks Europe) speak for themselves. “In 2020, an estimated 4.6m/t of PET packaging was available for collection in Europe,” he said. “The collection and sorting of this rigid PET packaging reached 49 per cent. For PET bottles, this figure reached 61 per cent.

“Seven EU countries that have implemented the deposit system have achieved recycling rates of 83 per cent. There is no doubt that deposit is the right system to rapidly increase the collection of bottles and to stop losing valuable material.”
The National Association for PET Container Resources, the North American equivalent of Petcore Europe, showcased the packaging industry’s efforts to reduce its ecological footprint by comparing a Coca-Cola 20oz (591ml) PET bottle from 2009 with one from 2022.

The more recent version of the bottle is 9 per cent lighter, emits 19 per cent fewer greenhouse gases during production, uses 25 per cent less energy to produce, and generates 31 per cent less solid waste.

In terms of carbon dioxide equivalent emissions, PET bottles remain the big winner across a range of sizes, half the level of aluminium and about a fifth that of glass.

“However, for us brand owners, rPET is becoming a sine qua non [a necessity], even at 2022 high prices and with limited availability,” explained Koen Stevens, associate director for procurement of plastics primary packaging at Coca-Cola Europacific Partners (CCEP).

“Our packaging ambition at CCEP is to stop using virgin PET in our one-way bottles,” explained Stevens. “To do this, we aim to use 100 per cent rPET by 2030. In 2022 we were above 50 per cent. To get to 100 per cent rPET, not just for our bottles but also at scale as an industry, we see the model of the future consisting of 70 per cent recycled material from high-quality mechanical recycling and 30 per cent enhanced [chemically] recycled material.

“To achieve this ambitious goal, we need all the stakeholders here and, of course, the progress of legislation to enable this huge transition.”

**Labels not left out**

PET label liners on the European market amounted to 19,000t per year. Finding a circular economic model for them is the...
objective of one of the working groups led by the Circular Economy for Labels coalition.

The sector has committed to reducing its waste by three-quarters by 2025. To achieve this, the identification of recyclers is underway, as is the establishment of a European network to share knowledge and conduct technical tests. Led by Avery Dennison, the pressure-sensitive label group is urging recyclers and the washing industry to start testing its prototype solutions.

With an average annual growth rate of 6.2 per cent, sleeve labels need to be compatible with the sorting and recyclability of PET bottles, added Sleever International’s Pierre-Yves Linot, who heads the floating shrink sleeve labels working group. The industry is participating with the tests currently in force but Linot insists on the importance of drafting guidelines to anticipate developments and guide brand owners.

The label working group is currently developing the first fully recyclable wraparound label in addition to inks that do not bleed into the recycling streams. PepsiCo, meanwhile, has put fully recyclable shrink sleeves on the market after several months of testing.

“We are challenging ourselves to think differently about carbon dioxide”
Craig Twyford, CCEP Ventures

Moving target

The PET sustainability agenda continues to move forwards at a fast pace as it transitions from recycling to circularity. For Petcore Europe’s Christian Crépet, the progress must continue with the creation of even more loops featuring mechanical recycling and the depolymerisation of PET.

Indeed, Crépet highlighted several recent European industrial capacity announcements. These include Eastman completing a public consultation in November 2022 for a 160,000 t/yr unit that will take hard-to-recycle polyester waste and sort, depolymerise and produce PET at a single location. Meanwhile, Loop Industries is reviewing locations for a 70,000 t/yr depolymerisation unit for low-value waste PET and polyester fibre, including bottles and packaging.

Carbios completed a permit deposit in December 2022 for an upcoming 50,000 t/yr enzymatic (depolymerisation) PET bio-recycling plant, and Axens is moving ahead with a 40,000 t/yr site for its Rewind PET process, which involves a glycolysis-based PET depolymerisation combined with purification steps to remove all organic and inorganic compounds present in waste PET. This includes colourants and pigments. The end-product is a purified bis(2-hydroxyethyl) terephthalate monomer.

“We also need to coordinate our global objectives, first of all in Europe,” Crépet explained. “Then, we must not neglect the countries of central and eastern Europe, which are geographically far from Brussels, in order to keep them informed of progress. After that, there’s the rest of the world. Africa deserves our attention. The needs are enormous, both logistical and financial. Finally, an interest group should represent the PET industry in the General Assembly of the UN.”

Another focal area for brands is the potential conversion of captured emissions into packaging materials. CCEP Ventures, the investment arm of CCEP, is partnering with Spain’s Universitat Rovira i Virgili and the University of Twente in the Netherlands to fund research into the use of carbon capture technology.

There are expectations that the R&D projects will develop new carbon capture technology that can be applied on-site. Synthetic fuels to power CCEP’s factories, and sugar to add to its soft drinks are other expected applications.

“We are challenging ourselves to think differently about carbon dioxide, which is so often only seen as a dangerous waste product,” says Craig Twyford, head of CCEP Ventures. “What if we could not only take carbon dioxide out of the atmosphere, where we know it’s causing harm, but also turn it into something useful? Then, we could start thinking of it as a valuable resource.

“Funding these projects is an exciting opportunity for us to be at the forefront of scientific discovery and innovation. We think it has the potential not only to significantly impact our operations, but it could also be rolled out across different industries to reduce greenhouse gas emissions and make better use of the carbon in our atmosphere.”

CCEP has a similar collaboration currently underway with the University of California, Berkeley to develop scalable methods of converting captured carbon dioxide into sugar.

In Germany, refillable PET bottles are used by bottlers for carbonated beverages and mineral water products. Once consumed, the bottles are returned via a deposit return system to be washed and refilled by bottlers for up to 25 cycles.

• There are many regional and local producers: 1,350 breweries, 180 mineral water bottlers, and more than 400 soft drink and fruit juice producers.
• There is a diverse and specialised retail structure for beverages: 3,500 wholesalers and 12,000-plus specialised beverage retailers.
• In 2020, 15.4 per cent of the mineral water market and 13.3 per cent of soft drinks were in PET reusable bottles.
• At the core of the reuse system is the German Wells Cooperative, or Genossenschaft Deutscher Brunnen (GDB), which is the purchasing cooperative for mineral water companies.
• GDB supplies the mineral water springs with everything they need to operate – from bottle caps to forklifts.
• In addition, GDB manages the reusable pools with more than 1 billion bottles and 100 million crates.
• Furthermore, GDB advises its members on technical issues, from practical questions about filling to strategic issues in container development.
• Standardisation, which is not the same as uniformity, is one of the complexities of the system.

Ammal De Paul Bulhosen (left), senior regional sales manager for BritAS Recycling-Anlagen, discusses the PET value chain with Paul Corens, polyester chain Europe leader at Mitsui & Co.
Eco-Plastics in Packaging

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If the plastics packaging industry has learned anything since the turn of the decade, it is just how interconnected global supply chains are, and just how susceptible they are to external forces. The pandemic and the war in Ukraine are two seismic events that have caused upheaval across markets, impacting material and energy costs – and, ultimately, the prompt supply of goods. In this tumultuous environment, suppliers have adapted by moving closer to local markets, to be able to continue to supply customers reliably.

But the relationship between supplier and customer is always a two-way street, and when it comes to caps and closures in the EU market at least, the onus has recently been on beverage manufacturers and brand owners to enforce change further up the value chain.

With just 15 months to go before it becomes mandatory, the requirement for all beverage bottles and cartons under 3-litres sold in the EU to have tethered closures is looming fast. And while many suppliers are confident that their customers will meet the July 2024 deadline, others have expressed fears that they have waited far too long to act. So, just how much progress have manufacturers and brand owners actually made?

Most businesses have understood the need to act well and act fast, says Benoit Henckes, chief executive at United Caps. However, where brands have no solution currently in place or at least at the trial stage, he warns they are taking a big risk, as well as missing a big opportunity to underline their sustainability credentials. He even goes as far to suggest that for some, it may already be too late.

“At United Caps, we coined the term ‘maximum compliance with minimum disruption’, because that nicely encompasses the primary considerations,” Henckes explains. “Fundamentally, brands and bottlers need to be ready to go from day one without unduly impacting costs.”

Prior to the pandemic, the company already had in place a ‘close to you’ strategy, localising production to be able to meet customer needs promptly. “We were localised before it was cool! The post-pandemic period has confirmed that it is the right strategy,” Henckes maintains.

Another supplier that has adopted a localised approach is SIG, having pursued a policy of procuring its raw materials in the regions where it produces. According to Hanno Bertling, senior product manager for closures, the company has worked to make the changeover to tethered caps as easy as possible for its customers.

“Our new tethered caps are designed to be used with existing SIG filling lines and closure applicators, with no major capital expenditure required by customers,” Bertling explains. “And, to further ease the transition, it was important to us that our customers are allowed mixed production. This means that they can use both the previous caps and the tethered caps.”

While most beverage products are currently still equipped with conventional caps, Bertling says the conversion of filling machines and closure applicators is already advanced at many European SIG customers. “As soon as our tethered caps are fully validated and the corresponding capacities are available, a changeover can be carried out without any problems,” he says. “Therefore, we see no danger of our customers making the changeover too late.”

A similar level of confidence is exuded by Matthias Mueller, chief commercial officer of Contexo. As a machine supplier, Contexo offers assembly systems with an integrated tethered slitting station, and Mueller says he isn’t experiencing too much delay in the switch to tethered caps.

“We have seen increasing demand for machines and have been able to deliver on time – but there is still constant demand for machinery,” he adds.
Italian supplier Sacmi, meanwhile, notes that both converters and bottlers are well aware of the importance of the EU deadline, but acknowledges not everyone has taken the steps in time to meet the requirements of this major transition.

The company, which offers a wide range of tethered caps, believes businesses should prioritise three key considerations when making the switch: preserving the profitability of the solutions to be adopted in compliance with quality standards; ensuring a high level of flexibility with minimal impact on existing lines; and remaining open to new regulatory and market developments.

“We’ve seen how much this can impact the organisation of our customers’ work,” says Riccardo Rubini, post-processing business director at Sacmi. “For this reason, we reiterate the importance of planning such changes carefully and in good time.”

For businesses that still haven’t taken the necessary measures ahead of the July 2024 deadline, Retail & R&D director Anton Sugoniaev suggests there is still time – but not much! Retail, he claims, can work quickly with brand-owner and bottler customers to implement tethered closures without complicated modifications to their production lines.

“With the deadline fast approaching, there is some pressure on equipment producers, so it makes sense to see what can be done without modification and with standard tethered closures from a reliable partner to reduce the potential stress as much as possible,” explains Sugoniaev.

It’s also a tactic advocated by other suppliers. Berry Global makes the point that the production process is essentially the same for tethered caps – for example, no new resins are required. However, it does acknowledge that the filling line needs fine-tuning, with adjustments to feeding lines, capping chucks and camera systems.

Closure systems supplier Arol states that if the switch doesn’t involve a change to the neck finishing, the line modification from a screw-on cap to a screw-on tethered cap can be limited to a few capper and cap feeding components. Still, the company warns that the necessary conversion process has to be planned in good time.

“Many bottlers are also taking the opportunity of switching from standard caps to tethered caps by rethinking their packaging design,” says an Arol spokeswoman. “Therefore, their final choice needs specialist support – and our Tethered Closures Application Team is at their disposal.”

Indeed, the switching to tethered caps perhaps should be seen by brand owners as much as a positive benefit as it is a chore. Benoit Henckes at United Caps argues that there is an opportunity for brands to make sure that the cap they’re using is part of the overall story their packaging is trying to tell. It is an area where he believes United Caps has a competitive advantage, as over 50 per cent of the closures it makes are bespoke to specific customers. “This means we’re good at enabling brands to differentiate,” Henckes adds.

Out-of-the-box tethered options are available from the company, too. At May’s interpack, in Düsseldorf (Germany), United Caps will launch a patent pending tethered closure for cartons. The 23 H-PAK features a tamper-evident band that keeps all parts intact for easier recycling.

“We are pleased to be bringing to market one of the first tethered closures for carton packaging,” says Henckes. “One of the standout features is an audible click when opening, a satisfying sound that lets consumers know their closure is in an open position.”

SIG stole a march on its competitors when it launched three tethered closures for its most popular carton packs in Europe: the DomeTwist for the Combidome carton bottle, and the CombiSwift and CombiMaxx for its family-size packs.

Another recent SIG tethered cap innovation comes with its Combivita family-size packaging. Available in three volume sizes (500, 750 and 1,000ml), Combivita has a slanted top and wider opening to aid pouring with the new TruTwist tethered resealable closure.

“Consumers are increasingly seeing packaging with tethered caps on shelves,” says SIG’s Hanno Bertling. “More and more people in Europe are now aware of the purpose of tethered caps. Nevertheless, we believe that beverage manufacturers and brand owners should continue to put a lot of emphasis on communication and consumer information.”

However far along the journey in the switch to tethered caps businesses might be, it is clear that they are becoming an ever more common and recognisable feature on beverage bottles in Europe. Those failing to embrace change, therefore, are only delaying the inevitable.
Silver has been slaying mythical werewolves, witches and vampires for centuries, but it has also been a deadly adversary for bacteria. Steven Pacitti reviews its use in plastics packaging and what the future holds for this powerful element.

Antimicrobial additive is based on silver-ion technology, which has long been used as an antibacterial agent. In fact, the antimicrobial properties of silver have been known and used for centuries. The process works by disrupting the metabolic activities of bacteria, preventing them from converting nutrients into energy, which inhibits bacteria survival, reproduction and colonisation.

Another company that recommends the use of silver is UK-based BioCote, which uses silver-ion technology to create a surface on which up to 99.9 per cent of microbes cannot survive.

“Our silver-ion technology never stops working and is regarded as food-contact safe,” explains David Hall, BioCote’s managing director. “It’s safe for use with water and offers up to 99.9 per cent bacteria-killing efficacy. It’s the original silver bullet. The silver is maintained within a glass matrix for its lifetime.”

Miliken’s AlphaSan silver-based antimicrobial additives utilise silver ions as the active ingredient, which slowly release via an ion exchange mechanism.

When AlphaSan is compounded directly into plastics, a controlled release of silver ions from the surface is regulated to maintain an effective concentration at or near the surface of the component. This, says the company, guarantees long-term reliability as the silver ions are only released when bacterial growth is probable.

Damian Harvey, global category manager for Polygiene, which acquired antimicrobial solutions provider Addmaster in 2021, agrees that silver is the best solution for food-contact as it does not migrate and is suitable for processing polymers at up to 600 deg C.

“We use a range of silver additives depending on the customer requirements and application,” explains Harvey. Why, though, does silver monopolise any discussion on antimicrobial additives? Alternatives exist – such as zinc and lactic acid – but they are either not suitable or are not approved as biocides.

BioCote’s Hall adds that copper is another option but its use has not been approved by the Biocidal Products Regulation (BPR) and so cannot be used with thermoplastics. “Peppermint and rosemary are also natural antimicrobials, which sounds nice but they have limited process temperature ceilings of around 180 deg C in a masterbatch carrier, therefore most injection moulding temperatures would carbonise them,” he explains. “Caution should be used in considering nanotechnology as in this form they do not carry food approval status and as the nanoparticles are so small they could have a tendency of getting into the food chain.”
active substances contained in these products, by the European Chemicals Agency, the are handled. Before they can be authorised consistency in the way that biocidal products harm, the BPR has created pan-European over time. that they could leave the pack structure and caused by the migration focus on nano silver. Antimicrobial additives can help assuage on – and confusion about – biocides are on – and confusion about – biocides are as well as the suppliers of them, must first be approved, which is a lengthy process. Similar regulation exists in the US. “The biocides we use are compliant with EU and US regulations,” states Polygiene’s Harvey. “However, food-contact application might need additional registration and that is where we an support customers and work with them globally.”

**Bridging the disconnect**

The first quarter of 2020 – coinciding with a certain pandemic – created something of an explosion in demand for antimicrobial additives as consumers worried about anything they came into contact with, from trolley handles to takeaway containers.

Although life must eventually return to normal, BioCote’s Hall points to two primary areas that simply cannot relax on hygiene: medical and food. However, the focus for packaging is often “price, price, price”, and this causes something of a disconnect for certain applications, especially as silver can be considered expensive.

“Many applications are single-use so there is a disconnect also if we sell a reusable product – our additive – for that,” adds Hall. However, if the additive extends the shelf-life of meat, for example, by two-to-three days, then it becomes a moot point compared with the cost of throwing food away because it has perished. The technology needs to fit the value proposition.

Hall notes that the cost of using the additive is purely for the product itself, with the converter’s process remaining unchanged: “We work with cling and stretch wrap as our product is suitable for film as well as other processes. All the settings remain the same as far as the converter is concerned.”

BioCote offers different technologies, with Hall stating that his company would consult with the customer about what material, process and claims they want to use/make, and then deliver the best solution. “We have 48 grades but plastics packaging might often need food approval, BPR approval and be able to survive processes above 200 deg C,” he says.

And the microbial technology itself is sustainable, adds Microban’s Cherrington: “It is manufactured using recycled silver, helping to reduce landfill burden and the need to mine for new sources of silver. It has been fine-tuned to reduce the amount of silver required to effectively protect products, further improving the sustainability of the treatment.”

It also stays inert until it comes into contact with bacteria, she explains, adding that the company’s SilverShield additive has been proven to reduce the growth of Salmonella enterica, E. coli, MRSA and VRE by up to 99.9 per cent in two hours at room temperature.

The use of antimicrobial additives is certainly becoming a point of interest for anyone using recycled material, but they know it adds a cost to the package and so many are barely dipping their toe in the water.

With a wide range of additives for different polymers, as well as textiles, coatings and paper, Polygiene’s bespoke offering highlights how one size does not fit all.

“Our technologies are used by packaging customers globally, so that products can be reused, reducing the need for single-use plastics, while delivering durable product protection from bacterial growth,” says Harvey. “We want products to last as long as they possibly can before they need to be replaced and, ultimately, help businesses and consumers make the change from consumables to durables, helping to reduce waste.”

Some brands have transitioned from plastics to paper due to a belief that it’s more environmentally friendly. As Harvey explains, this could have other implications, as paper-based material can be a good food source for bacteria.

BioCote, meanwhile, sells to more than 50 countries and Hall expects good opportunities in the mid-term for antimicrobial additives in plastics packaging, especially on the back of single-use plastics bans.

“There is a responsible message there, too, as the additives can prolong freshness, but you do have to be careful with health claims,” says Hall. “The additive is a biocide and it is a regulated industry.”

The growing demand for eco-friendly and reusable plastics is no doubt driving current packaging trends, prompting manufacturers to rethink the design of their products so that they stay fresher for longer.

As social attitudes and global legislation continue to fight against plastics pollution, packaging products with built-in antimicrobial technology show great potential for slowing down the accumulation of plastics waste, by encouraging a culture of reuse.

Hall believes that some external attacks on – and confusion about – biocides are caused by the migration focus on nano silver. In this instance, the particles are so small that they could leave the pack structure and the antimicrobial qualities are exhausted over time.

Designed to protect consumers against harm, the BPR has created pan-European consistency in the way that biocidal products are handled. Before they can be authorised by the European Chemicals Agency, the active substances contained in these products, as well as the suppliers of them, must first be approved, which is a lengthy process. Similar regulation exists in the US. “The biocides we use are compliant with EU and US regulations,” states Polygiene’s Harvey. “However, food-contact application might need additional registration and that is where we an support customers and work with them globally.”

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More information from:

BioCote  biocote.com
Microban International microban.com
Milliken & Company milliken.com
Polygiene polygiene.com
Being an entrepreneur in the printing and packaging industries in Cyprus requires a lot of work and dedication – a lifetime of dedication, in fact. And that’s exactly what it took for John Eleftheriades to set up and run the largest packaging printer in the field on the 9,251 sq km island.

The Republic of Cyprus, as it is formally known, faces many challenges. A UN presence still controls the buffer zone between the Cypriot Turkish- and Cypriot Greek-controlled areas, illegal immigration is at an all-time high, the country is highly dependent on imports for its energy supply, and ‘golden passport’ issues have altered business ethics. Yet, facing down all these issues, you can still find an entrepreneurial figure like Eleftheriades.

Founded in 1965, the company Eleftheriades established originally dealt with general printing work. In 1986, J Eleftheriades Offset Printers was set up under his management, and it refocused on printing paper-based packaging for soft drinks, alcohol, food, drugs and cosmetics. By 1997, it had expanded its activities into related sectors and a sister firm – Bietik – was set up to print self-adhesive labels.

“Since 2001, the company has upgraded its technology through the purchase and installation of high-tech UV flexographic presses to print on materials such as BOPP, OPP and PET for the packaging of food and the labelling of soda and water bottles,” says Eleftheriades. “This technology gave us a competitive advantage to develop in a field where most packaging products are imported into the Cypriot market.”

An early adopter of digital printing, the business invested in one of the first Xeikon toner digital presses in 2003. This gave it continuous printing to a high quality, in addition to the ability to use self-adhesive materials and deliver orders within 24 hours. “At the time of installation, there wasn’t even a manual on how to use the press!” quips Maria Eleftheriades, the owner’s daughter. “Luckily, Xeikon managers were willing to help. Today, we have a second Xeikon press and I have joined the business to supervise the increasing orders for digital labels. The high demand comes from bakeries (sandwiches and pastries) with a wide range of labels in shorter runs. We also produce self-adhesive stickers for traditional halloumi cheese, which, after a long political battle, has earned the EU-registered Protected Designation of Origin.”

The company continues to utilise offset technology for its core source of orders and income, which is where the volume is. But, since 2001, John Eleftheriades has also been convinced by flexo technology, and...
specifically UV flexo, which he says delivers outstanding results. “My first investment was an Italian Omet UV flexo press for €1.3 million [$1.4m],” he recalls. “I took a serious risk there. But Omet customised the press for us so it was 62cm-wide. We discovered that it was a first for them, too. To this day, we are still the only printer of film labels in Cyprus, making our own flexo plates in-house, which helps us to be fully independent and up-to-date with the latest computer-to-plate technology.”

**Flexibility first and foremost**

The variety of presses and equipment on the factory floor is striking, and underlines the entrepreneurial strategy of adjusting orders to suit the most efficient and cost-effective technology for any given application. Having cornered the market on the island and developed lots of long-term relationships allows the printer to pass on a considerable amount of the soaring electricity prices that it has had to contend with during production.

The geographical position of Cyprus, in the middle of the Mediterranean, makes maritime transport key. The port of Limassol is 60km away from the factory, located south of Nicosia. Almost all of the materials and films used by J Eleftheriades Offset Printing are imported. Films come from Jindal and Cosmo Films – both in India – paper from MM Austria and Iggesund, and toner and ink from Xeikon or its parent company Flint Group, and from Hubergroup for offset printing.

Asked about the trend towards the replacement of plastics with fibre packaging, Eleftheriades says: “Yes, we’ve witnessed that trend here too, but also the reverse. Interestingly enough, the pharmaceutical sector is sticking to cardboard boxes. In the past, we used to be a partner with MeadWestvaco for printing Coca-Cola boxes for a lot of marketing campaigns, but they switched to lighter cardboard options or lighter plastics wraparound.

“The drinks and food sectors for film labels continue to grow, especially if you remain creative! Among our staff, a few are US-educated and keep proposing special marketing campaigns for labels. This is very successful here. It is essential to have talented staff. Most of our customers are keen to optimise their packaging but don’t realise the important savings that can be made with ink reduction.”

One retailer that Eleftheriades is keeping a very close eye on is Lidl Cyprus, which recently opened its 19th store on Limassol’s seashore as it continues its rapid expansion. The retailer has introduced a new commitment to ‘improve and reduce packaging responsibly’ on its private-label items, letting consumers know of the improved sustainability of the packaging, while adhering to transparency principles. “We follow what they are doing closely but for the moment they are not our customer, having their printing business sourced elsewhere,” he admits. “Numerous certifications are a prerequisite, so we are adapting our production hall accordingly. It is constant work-in-progress.”

As Eleftheriades ticks towards 60 years in the business, he is set to fulfil his dream of installing another state-of-the-art UV flexo press from Gallus. This, he says, will be a fully automated inline press with foil decoration, stripping and creasing. Only gluing is not included.

“We joke that it is like putting in a pig in one end and getting a ready-made ham sandwich at the other,” he says. “The equipment will arrive in three or four containers from the US. Luckily, the container traffic has improved in recent months and is almost back to normal. I will truly enjoy seeing this press in operation!”

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**Company profile**

**Turnover (for J Eleftheriades Offset Printers and Bietek):** €5 million ($5.3m)

**Employees:** 40

**Equipment:** 45 machines (presses, cutters, creasers, decoration) ranging from Heidelberg and Bobst models to an Omet UV flexo eight-colour press
Confections of a packaging mind

An expert on sustainability and the circular economy, Nestlé UK & Ireland's head of packaging Sokhna Gueye has a solid technical background in plastics, having worked for the company for ten years in both France and Switzerland. To coincide with International Women's Day on 8 March, she spoke with Steven Pacitti

**Sustainability**

Nestlé set a target of 100 per cent of its packaging to be reusable or recyclable by 2025. Are you on track with that, and how big a role will plastics play in achieving this target?

Sokhna Gueye: We have extensively reviewed our packaging portfolio and are making huge transformations to redesign our non-recyclable packaging for recycling. We are on track to have all of our packaging ‘designed for recycling’; our Purina mono-material pouches announcement is a good example of this. However, there are challenges because the waste management infrastructure in the UK and other countries where Nestlé operates is not well developed. Currently, not every local authority collects all packaging for recycling, and kerbside collection across the UK is very inconsistent and overall recycling rates are still low.

**What legislation/regulations do you support, and what would you like to see done by governments in the UK and across Europe?**

Nestlé UK & Ireland actively supports regulations towards effective and efficient Extended Producer Responsibility and deposit return schemes, which, when well designed, will drive increases in packaging collection and recycling rates. On reusable packaging, we welcome policies towards a circular economy.

**What are your latest developments in recycling infrastructure?**

We have invested £1.65 million [$1.95m] in the Yes Recycling plant in Fife, Scotland, where hard-to-recycle plastics are collected from households and processed. The plant turns flexible plastics, like our Nescafé coffee bags or Purina pet food pouches, into new products to give the packaging a new life. The plant started its operations in September 2022.

**Women in industry**

How has the fast-moving consumer goods (FMCG) industry changed during your time within it, in terms of gender equality? And have you noted any differences across the UK/Switzerland/France during your career?

I am happy to see that gender balance has increased in the packaging industry. In the earlier years of my career, I was on several occasions the only woman in the meeting room. Nowadays, it’s rare.

**What positives have you witnessed, and what still needs to improve?**

My own team is quite diverse: it’s 60 per cent women, five languages are spoken, and employee ages range from 18 to 60. Over the past few years, there has been a massive awareness campaign and deployment of training for all managers and employees on the importance of diversity and inclusion and unconscious biases. We have a pool of purpose-driven young talent at Nestlé, and I want to make sure that we leverage all the experience in the organisation to coach them, and provide them with equal opportunities to thrive and contribute to make the business a force for good.

International Women’s Day for me is also an opportunity to recognise male leaders who stand up for women and encourage more to do so. I have come across fantastic male allies from whom I have learned a lot and who entrusted me with increasing responsibilities.

**What advice would you give to other women hoping or thinking about entering or progressing in the FMCG industry?**

My advice would be don’t try to fit into a mould. Believe in yourself and be yourself. That’s how you will add more value to an organisation. It is also important to surround yourself with a strong network of allies who support and encourage you, as well as mentors who can offer you genuine guidance and help you advance in your career. Remember that becoming a successful leader (whatever the gender) takes time, dedication and hard work. Keep learning, growing, developing your skills, and never give up on your dreams and aspirations.
Polylactic acid (PLA) is a common material in the UK, and is found in food packaging such as clear cups, lids and salad boxes.

PLA’s popularity in food packaging is in large part owing to its marketing, which has focused on the material’s biodegradability and it being derived from renewable resources, such as corn or sugarcane.

However, the result of recent investigations into PLA’s environmental impacts is in sharp contrast with how the material was initially marketed to supermarkets. As a result, several of the UK’s most prominent chains, including most notably Tesco, have backtracked on PLA and encouraged the removal of it from shelves.

Naturally, supermarkets continually review their position on all materials and formats in order to reflect evolving scientific opinion and the ability of recycling industries to deal with packaging at end-of-life.

Tesco, for example, annually publishes a list of preferred materials to support its suppliers in the material choices that they make when developing packaging.

Notably, a cursory glance at Tesco’s list for 2022 reveals that PLA was categorised as a red material, meaning that it could not be widely used within the retailer’s packaging.

PLA has therefore been listed alongside polystyrene, PVC and PVDC as materials that cannot easily be recycled.

Understanding PLA’s environmental implications can help to contextualise why Tesco and other retail giants have abandoned the material, and where they are likely to find alternative food packaging.

Why use PLA in the first place?

PLA was developed to replace commonly used petroleum-based polymers, such as PET. The following advertised qualities made PLA an appealing alternative for packaging decision-makers: it is non-toxic – and can be used to package food; it offers high-clarity display – presenting food clearly; and it is compostable – providing a more ecologically-friendly alternative to common plastics.

Food packaging companies were persuaded to buy into it. On the surface, businesses were offered a recyclable plastic with exceptional clarity, allowing for great presentation of hot and cold food products. The needs of businesses seeking to meet sustainability goals were met. PLA was said to be easily integrated into current post-consumer processing facilities, implying that PLA polymers could be simply recycled after usage. However, as many organisations are now discovering, this is not the case.

What is the lifespan of PLA?

In 2021, PLA was the most widely-used ‘bioplastic’ in the world. It is classified as a ‘number 7 plastic’, which covers plastics that are sometimes recycled, and sometimes not.

In fact, the decomposition of PLA is much slower than expected, and its full breakdown is only achievable under extremely specific conditions. Firstly, the plastics can only be composted in an industrial composting plant. The required ambient conditions must keep PLA at temperatures above 55-70 deg C, which requires a lot of energy. Even under these industrial composting settings, PLA takes anywhere from a few days to several months to decompose.

If discarded in nature, PLA might take at least 80 years to decompose. It cannot be composted at home or put in a household green bin either, since the micro-organisms and environmental conditions found in non-industrial settings are not enough to break down the plastics on their own.

When PLA combines with other plastics, it contaminates them, rendering the other plastics unrecyclable. Once tainted with these chemicals, even previously sustainable food packaging made of rPET needs to be industrially disposed of, rendering rPET’s sustainable attributes useless.

Furthermore, PLA is marketed as being manufactured from organic materials, but the actual manufacturing process is chemical. As such, PLA is not exempt from the Plastic Packaging Tax that businesses must pay in the UK.

In retrospect, the PLA concept was misleading from the outset and presented to misinformed packaging decision-makers.

Currently, only one material meets the requirements for high-clarity, low-cost food packaging: rPET. It is the most common clear plastics container material in the UK and can be recycled several times, providing a quasi-sustainable lifespan that suits the plastics industry’s ever-changing and evolving demands.
Chinese packaging converter Lamipak is on course to open its latest factory in Indonesia by the fourth quarter of 2023, and in the process become the largest manufacturer of aseptic packaging in the country.

Originally announced in May 2022, the $200 million plant in Cikande (Serang Regency) is 65km to the west of Jakarta and is the company’s second in Indonesia. Lamipak manufactures a variety of aseptic cartons and pillow pouches for dairy products.

Designed to have a capacity of 18 billion packs per year, the installation will be implemented in two phases with the initial part set for later this year having an output of 9bn packs. The production floor will occupy 55,079 sq m of space. With sustainability in mind, the factory will have solar panels on its roof and abide by LEED Gold certification guidelines.

“The Serang Regency Government will support the construction of the Lamipak factory because it will provide many benefits for Indonesia, especially for the people in Serang Regency, such as job creation and being able to grow micro, small and medium-sized enterprises,” says Ratu Tatu Chasanah, head of Serang Regency.

“The core mission of our expansion is to become a global leader in the food and beverage packaging industry by being a one-stop solution provider through offering lowest carbon footprint products,” comments Anil Kaul, vice-chairman of Lamipak.

In January, the company reported that it had reached 12bn aseptic packs in total annual sales volume in 2022, an increase of just over 40 per cent from the previous year. Lamipak followed its Indonesia investment news by detailing plans to expand its facility in Kunshan, China.

The converter has also published its second annual Sustainability Report, in which it reported that it had passed greenhouse gas verification from SGS in being carbon neutral in Scope 1 and 2.

The company sells to 75 countries. More information from Lamipak, No. 369 West Xinnan Road, Kunshan, Jiangsu Province, China 215300. Tel: 86 512 5756 2350. Email: contact@lamipak.biz. Web: lamipak.biz
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UPCOMING SHOWS FOR 2023

CHINAPLAS
17-20 April
Shenzhen, China
chinaplasonline.com

INTERPACK
4-10 May
Düsseldorf, Germany
interpack.com
Eco-plastics in Packaging booth EN/A01

BIOPAC
8-9 May
Düsseldorf, Germany
bioplasticsmagazine.com

LUXE PACK NEW YORK
10-11 May
New York, USA
luxe-packnewyork.com

EXPO PACK GUADALAJARA
13-15 June
Guadalajara, Mexico
pmmi.org

PLAST
5-8 September
Milan, Italy
plastonline.org

PACK EXPO
11-13 September
Las Vegas, USA
packexpolasvegas.com

LABELEXPO EUROPE
11-14 September
Brussels, Belgium
labelexpo-europe.com

PPMA SHOW
26-28 September
Birmingham, UK
ppma.co.uk

FAKUMA
17-21 October
Friedrichshafen, Germany
fakuma-messe.de/en

ARABPLAST
13-15 December
Dubai, UAE
arabplast.info
Strength in numbers

What is impossible to do alone, can often be made possible through teamwork. And that spirit of collaboration dominated the news agenda last month, following the announcement of a series of industry-wide joint ventures (JVs) and partnerships.

ALPLApharma, a division of ALPLA Group, and Spanish packaging company Inden Pharma were first up in establishing a JV, with the aim of strengthening their respective footprints in the pharmaceutical market. ALPLApharma’s production sites in Greece and Poland, along with Inden Pharma’s two facilities in Spain, will fall under the JV. The firms are also jointly building a plant in Germany, which is scheduled to open in June.

Polymer producer Neste entered into a strategic partnership with Illig to advance the production of more sustainable thermoformed plastics packaging through the use of demonstration case studies. Such case studies will aim to verify the ‘drop-in’ nature of renewable and recycled materials for demanding applications.

Golden Triangle Polymers Company, meanwhile, a JV company formed by Chevron Phillips Chemical and Quantum Polymer, has broken ground on an $8.5 billion integrated polymers facility in Orange, Texas, USA. The plant is expected to begin operations in 2026.

There was also joined-up thinking on display from packaging converter TricorBraun last month, which signed an exclusive agreement with ProPac bottles that allows it to sell biodegradable bottles specifically designed for the nutraceutical industry in the US and Canada. Both companies will be heartened to hear that global bioplastics production is set to triple in the next five years and reach 6.3 million tonnes, according to the latest figures from European Bioplastics. The applications expected to show the most growth are related to agriculture.

Another route to gaining footholds in new markets is through mergers and acquisitions. Leading the way was Constancia Flexibles, which agreed to acquire Drukpol Flexo. The Polish company mainly serves domestic food and home/personal care markets for local and international customers.

There were also two noteworthy deals involving coexisting business entities of the same name. Printing firm MPS Systems BV acquired a ‘significant’ shareholding in MPS Systems (UK) in order to streamline parts and technical service support for customers; and HultamaToki took full ownership of HultamaToki Tailored Packaging, the Australian foodservice packaging distribution and wholesale group.

Partnerships aimed at boosting the circular economy are being forged with increasing regularity, and last month was no exception. Recycling firm TerraCycle has linked up with EverEva, a company that specialises in waste management tracking, to implement technology that uses real-time, optimised data to revolutionise the collection operations for all TerraCycle waste streams.

Dutch chemical recycling firm Avantium is partnering with US company Origin Materials to accelerate the mass production of the key elements of biopolymers for use in plastics. And another chemical recycling company, PureCycle Technologies, has agreed a deal with iSustain Recycling to source and divert up to 10 million pounds (4,535 tonnes) of PP waste from landfills and waterways.

It’s also been a strong month for packaging innovation, particularly in food and drink. Nestlé set the standard by introducing a recyclable refill pouch for its Nescafé Gold Blend and Nescafé Original instant coffee. The 150g pouch is 97 per cent lighter than a 200g glass coffee jar. Also in beverages, start-up company DiFold launched a foldable water bottle that it says provides a reusable and recyclable alternative to single-use water bottles. The Origami Bottle uses bio-based thermoplastics copolyester supplied by DSM Engineering Materials. Mars Wrigley China, meanwhile, launched its first rPET packaging in form of a canister lid for domestic chocolate brand Cui Xiang Mi. The 216g canister lid is made from 100 per cent rPET, resulting in ‘no change’ in the final product compared with its predecessor.

Usage of PET in plastics packaging continues to grow, a trend further boosted by the publishing of a lifecycle assessment (LCA) that found PET bottles are better for the environment than glass bottle and aluminium can equivalents. The LCA, released by the National Association for PET Container Resources, concluded that PET bottles create less solid waste, use less water during production, and generate fewer emissions.

And finally... Amazon deliveries may get a whole lot greener, after it was revealed that the e-commerce giant is to fund a Toronto-based start-up that turns food waste into bioplastics. Founded in 2017, Genecis uses specialised bacteria to convert organic waste – including bread crusts and other food scraps – into biodegradable bioplastics that can be used to make food packaging. Amazon wants to explore ways to use Genecis’ bioplastics in its own packaging, as a recyclable – and no doubt much more durable – alternative to cardboard.

The view from the back

Once upon a time, pioneers were innovative and bold. I will stop short of saying ‘fearless’, for history is littered with the many failures of those who pursued their goal with varying degrees of recklessness. With the passing of time, promotional tactics have increasingly been used to explain the motives when introducing ideas and products that are considered to be pioneering. This approach can be self-defeating, where a failure to fully evaluate market or social impact might lead to the emergence of unexpected negative aspects that overshadow any positive features.

We live in an age where businesses boast of being first at anything and where a multiplicity of companies claim to lead the market. Major UK retailer Sainsbury’s has certainly embraced such views and has subsequently suffered in terms of financial impact and market share. Today, it appears to value being first so highly that it still appears to throw everything into a new project with reckless abandon – the true sign of a traditional pioneer.

This assumption might be demonstrated by the recent and almost instant withdrawal of plastics trays from the company’s entire minced beef range across all of its stores, to be replaced by a vacuum-packed alternative. Like most UK retailers, Sainsbury’s is working to reduce plastics packaging and has also committed to making all of its plastics packaging recyclable, reusable or compostable by the end of this year.

The new vacuum packs are claimed to reduce the plastics content by a minimum of 55 per cent. In a statement announcing the change, the company suggested that smaller packaging offered benefits including using ‘freezer and fridge space more efficiently by taking up less space’. It did not mention government and appliance manufacturers’ recommendations that consumers should prevent vacant space to allow such devices to operate efficiently and to save energy.

It also failed to point out that the new packaging did not carry an on-pack recycling label, although the plastics can apparently be placed in front-of-store bins; something that does not help home delivery customers, but which nevertheless follows the true spirit of a pioneering initiative.

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