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FROM THE PRESIDENT's DESK

Mr. Dilip Parekh

OPP

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Dear Members,

Greetings from Organization of Plastics Processors of India!

I am happy to inform that 39th Annual Meet will be held in physical format on Friday 4th August 2023 at Taj Santacruz Hotel, T-1 Terminal, Vile Parle West, Mumbai.

We could not hold Annul Meet in physical format for 3 years because of the Pandemic and Covid appropriate behavior code.

The chief guest for 39th Annual Meet will be Mr. Sunil Kant Munjal, Chairman, Hero Enterprise. He will be delivering a talk on – "Managing Transition In A Family Owned Business". This subject is of utmost importance to almost 85% OPPI Member Companies.

A survey shows only 13% of Family Businesses survive to the third generation and one-third of families disintegrate due to generational conflict Indian Family Businesses form the backbone of the Indian economy and there is a need to extend the lifespan of these businesses to ensure the economy continues to benefit from their contribution.

Traditional managed Family Businesses are undergoing intense churn and transformation due to competition and changing business models in the current disruptive Volatility, Uncertainty, Complexity and Ambiguity (VUCA) environment. As Family Business transition to their next generation, there is a growing need for preparing their next in line leaders for the Success, Growth and Continuity of their existing business as well as Venture into New Businesses.

In view of the above the proposed talk by Mr. Sunil Kant Munjal is very Topical and applicable to majority of OPPI Members.

I appeal all OPPI Members to block the evening of 4th August 2023 and attend the Annual Meet.

With Best Wishes,

Dilip Parekh
President

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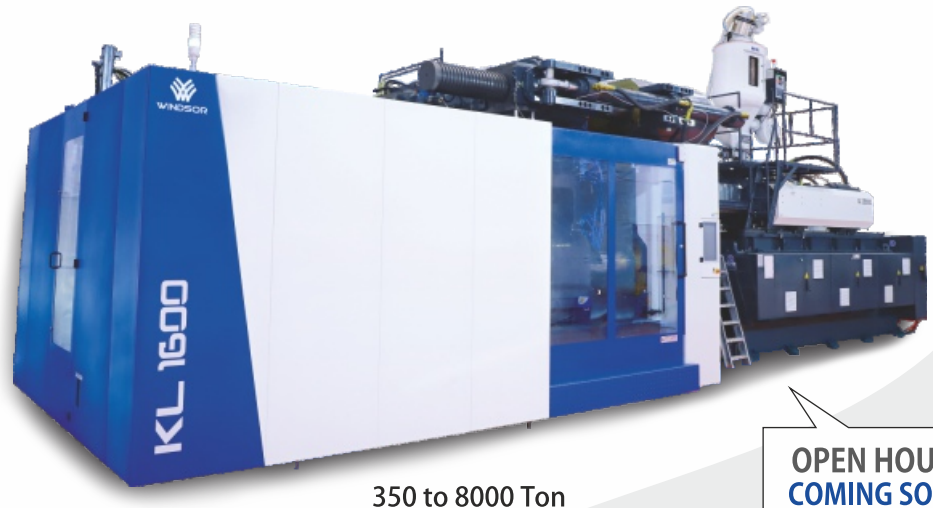

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IPF Bangladesh

The 16th Bangladesh International Plastics, Packaging and Printing Industrial Fair

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Venue : Int'l Convention City Bashundhara (ICCB)

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Bangladesh Plastic Goods Manufactures & Exporters Association

[Exhibit Profiles]

- Plastic: Plastic Bending Machinery, Blow Molding Machines, Extruding Machines, Plastic Compounding Equipment, Plastic Cutting Machines & Cutters, Die Cutting & Casting Machines, Plastic Dryers & Mold Heaters, Injection Molding Equipment, Mold Cleaning Equipment, Spin Casting Equipment, Thermoforming Machines.
- Plastic & Rubber Raw Material & Auxiliaries
- Rubber: Rubber Bending Machinery, Mixing & Refining Machines, Product Molding Equipment, Press & Molding Equipment.
- Quality Detection Instrument and Equipment: Measuring & Detection Equipment, Temperature Controller & Components, Electronic Automatic Instrument, Monitoring Device.
- Machinery Parts and Accessories
- Packaging: Converting Machinery, Packaging Machinery, Packaging Materials, Raw Materials & Auxiliaries, Fiberboard Packages, Paper Bags and Folding Cartons, Rigid Packages, Glass Bottles & Tin Cans. Flexible Packaging, Quality Control Systems, Dosing, Coding & Marking Systems, Physical Distribution Systems, Logistics, Research Centers, packaging Magazines & Associations.
- Printing: Printing Machinery & Accessories, Packaging Print & Process Systems, Printing Materials & Supplements, Post-Printing Machinery & Equipment, Coating Equipment, Silk Screen Printing, Pre-Printing Systems, Envelop Making Machines, Inks, Ink Formulating Systems.

[Booth Prices]

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Deepak Lawale, Secretary General, **ORGANIZATION OF PLASTICS PROCESSORS OF INDIA**

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VietnamPlas

21st Vietnam International Plastic & Rubber Industry Exhibition

18th to 21st October 2023

Saigon Exhibition & Conference Center (SECC), Ho Chi Minh City, Vietnam

We have the pleasure of inviting you to participate in Vietnam Plas scheduled from 18th to 21st October 2023 at Saigon Exhibition & Conference Center, Ho Chi Minh City, Vietnam

Show Report 2022

Countries	Booths	Visitors
19	540	13,700

Rising Demand for Plastics

Vietnam imports approximately 1.94 million tons of plastic.

Raw material worth US$ 2.86 billion

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NEWS FROM INDIA

Cosmo First Exhibits its Product Range at Four Major Trade Shows

Cosmo First, a global leader in speciality films has participated in four prominent trade shows in the label and packaging industry. The company exhibited at LabelExpo Mexico from 26-28 April 2023, Visual Impact from 3-5 May 2023, Interpack from 4-10 May 2023 and FESPA from 23-26 May 2023 highlighting its latest product offerings and industry - leading innovations.

Sharing his thoughts on the same, Mr. Pankaj Poddar, Group CEO, Cosmo First Limited said, "Being innovation-led, we have developed superior - quality and innovative films that fulfill the evolving needs of our clients. Participating in LabelExpo Mexico, Visual Impact, Interpack, and FESPA is of immense importance to us, as it enables us to engage with customers and industry experts in these regions. Our involvement in these events reinforces our commitment to providing cutting-edge and environment - friendly solutions to our customers."

Cosmo First showcased its extensive range of speciality packaging, label, lamination, synthetic paper, promotional films and industrial films along with Cosmo Plastech (Rigid Containers) and Cosmo Sunshield (Window Films) for various applications in these exhibitions. During the exhibitions, Cosmo First team presented personalized packaging alternatives and addressed inquiries from visitors and delegates. The company aims to leverage these exhibitions to foster new collaborations and partnerships, exchange industry knowledge, and gain a deeper understanding of customers' requirements to deliver the most effective and innovative packaging solutions. With a strong focus on innovation, quality, and sustainability, Cosmo First has emerged as a preferred partner for several leading brands across the globe.

Cosmo First is a global leader in specialty films for packaging, animation, labeling and synthetic paper.

Birla Carbon Showcased Sustainable Carbon Black Solutions at Carbon Black World 2023.

Birla Carbon, one of the leading manufacturers and suppliers of high - quality carbon black solutions, participated at the Carbon Black World 2023, in Jingdezhen, Jiangxi, China, from April 12 - 14, 2023.

As a global leader in carbon black solutions, Birla Carbon is dedicated to providing advanced products to the industry while remaining committed to sustainability and circularity. Through its innovation and technical expertise, Birla Carbon has played a vital role in realizing the full potential of carbon black across the tire, mechanical rubber goods, energy systems, plastics, inks, and coatings industries.

Commenting on the participation, John Davidson, Chief Sales & Marketing Officer, Birla Carbon said, "The global Carbon Black World 2023 conference, presents a valuable opportunity for all stakeholders in the carbon black industry, including Birla Carbon, to collaborate and exchange knowledge, ideas, and best

practices. We can contribute to and gain from this dynamic platform to enhance our industry know - how, foster innovation, and develop practical solutions to meet the evolving demands of the market." The theme of Carbon Black World 2023 Exploring Innovations and Sustainability in the Carbon Black Value Chain' - aligns with Birla Carbon's strategy in enabling significant and measurable reductions in carbon footprint.

The Carbon Black World 2023 technical conference featured the most distinguished market analysts and experts from around the world, who presented diverse and balanced perspectives on various topics, including emerging opportunities, latest technological advancements, and other critical industry updates in the carbon black industry.

Corporate India Moving Towards Plastic Neutrality in a Time - Bound Manner

Corporate India, especially companies engaged in the Fast Moving Consumer Goods (FMCG) business and thereby consuming plastics in bulk for packing consumer products, have started becoming plastic - neutral and, therefore, zero discharging of carbon dioxide (CO2) over the last five to six years. This does not mean that corporate India has stopped consuming plastics for packing and started using alternative materials. Instead, they are now exhaling more oxygen by planting new trees, upgrading plants and machinery for less plastic consumption, and ensuring scrap collection and recycling. India's plastic consumption for the financial year 2022-23 is projected to be 22 million tonnes as against the 20.89 million tonnes reported in the previous year. At an estimated rate of 40 percent, around 3.78 million tonnes of plastics remain mishandled for use in landfills, burnt either to produce energy or otherwise and incinerated into the river or sea. Estimates say that only 12 percent of the annual plastic scrap generation is processed across 4,953 registered recycling units that are spread across the country. The registration process for around 823 units still continues.

Rapid urbanization and changing lifestyles of people have called for an increase in plastic demand over the last few decades, resulting in an increase in scrap generation. But plastic articles under circulation will also need to be replaced after their end - of - life use in a few years. This means plastic scrap generation will continue to grow in the future, requiring an effective policy framework to handle present and future generations of plastic scrap in a targeted manner.

India's plastic fact file

Particulars	Volume
India's actual plastic consumption (2021-22)	20.89 million tonnes
Consumption projection for 2022-23	22 million tonnes
Scrap generation (per year) (A)	9.46 million tonnes
Cumulative mishandled volume burnt, buried in landfills, and incinerated (@40% per year)	3.78 million tonnes
Cumulative scrap for recycling (@12% of A)	450,000 tonnes
Registered recycling units with CPCB	4,953 Unit
Un-registered recycling units	823 Unit
Handling by the informal sector	42-86%
Large corporate such as Godrej & Boyce, Nestle India, Dabur, and HUL, among other, have achieved	100% carbon neutral or, plastic-free
India's Pledge for net-zero	By 2070

Sources : Industry, and Websites of Individual Companies; CPCB = Central Pollution Control Boardes

With a lifecycle of around 450 years, plastic is considered one of the largest pollutants and a major source of global warming. It is a menace that the world is currently facing and calling for unified action to reduce global warming by at least 1.5 degrees Celsius by 2050 and prevent natural calamities such as unseasonal rainfall, floods, droughts, and melting of glaciers.

Mishandling of used plastics has caused severe damage to the world, with the choking of municipal drainage and the disappearance of river and sea species. According to reports, plastic waste impacts at least 267 species worldwide, including 86 percent of sea turtle species, 44 percent of seabird species, and 43 percent of marine mammal species.

Government Regulations

India has pledged to achieve carbon neutrality by 2070. To achieve this goal, the Indian government has imposed a ban on single - use plastics (SUPs), which according to the industry, constitute a significant proportion of the country's plastic consumption The thickness of usable plastics has been increased to improve their collection, transportation, and recycling processes.

Additionally, the Indian government has encouraged corporate users to adopt biodegradable and compostable plastics for consumers' use. The government has also enforced a mandatory Extended Producer

Responsibility (EPR) regulation earlier this year, which focuses on collecting and recycling used plastics, especially for consumer goods packaging.

India's EPR rule mandates that Producers, Importers, and Brand Owners (POIBOs) ensure the collection and recycling of post-use plastic packaging materials and submit periodical returns to the Central Pollution Control Board (CPCB). This measure will help the government to enhance plastic recycling and encourage the use of biodegradable and compostable materials without affecting economic growth. Fortunately, Corporate India had initiated plastic recycling initiatives well before the EPR regulations came into force.

Godrej & Boyce focuses on '5R' Process

Godrej & Boyce, the flagship company of the Godrej Group and the producer of branded consumer goods such as appliances, furniture, locks, and security solutions, is focusing on the '5R' philosophy of redesign, reduce, reuse, recycle, and recovery. The company achieved a 'plastic negative' status by recycling 146 percent and 201 percent of its plastic consumption in the financial year 2019-20, and 2020-21, respectively. In the financial year 2020-21, the company recycled 3,264 tonnes of packaging plastic waste compared to its virgin plastic consumption of 1,616 tonnes and recycled 2,261 tonnes of used packaging plastic waste compared to its overall plastic use of 1,547 tonnes.

Over the last four years, the company has recycled 10,000 tonnes of plastic packaging waste and plans to recycle another 25,000 tonnes in the next eight years. The company also aims to address the plastic menace through redesign and innovation under the India Plastics Pact. Godrej & Boyce targets 100 percent of its plastic packaging to be reusable or recyclable, 50 percent of plastic packaging to be efficiently recycled, and 25 percent of recycled content across all plastic packaging. Furthermore, the company has a record of releasing more oxygen through additional plantations than carbon dioxide (CO2) through its factories and premises. It also conserves wetlands and mangroves to reduce the use of energy and water.

Hindustan Unilever in the Fray

Hindustan Unilever Ltd (HUL), the FMCG major and the manufacturer of leading soap and detergent brands, achieved plastic neutrality in 2021 by collecting back more plastic packaging materials than it dispatched to the market. The company, which produces popular brands such as Lux, Lifebuoy, and Surf to name a few, has established pan-India collection centers to boost import and has collected and safely disposed of over 230,000 tonnes of post-consumer - used plastic waste since 2018.

By 2025, HUL plans to halve the amount of virgin plastic it uses in packaging and achieve an absolute reduction of more than 100,000 tonnes. The company also aims to collect and process more plastic packaging than it sells. Currently, the company is focused on ensuring that 100 percent of its plastic packaging is designed to be fully reusable, recyclable, and compostable and that it uses at least 25 percent of recycled plastic in packaging.

HUL has facilitated the environmentally safe disposal of more than 230,000 tonnes of cumulative post - consumer -use plastic waste. Its EPR journey grew from 12 sites in 2017, and collecting 6,500 tonnes of plastic, to over 160 locations, with 116,000 tonnes of plastic collection in 2021.

Procter & Gamble India

After recycling 100 percent of post - consumer plastic packaging waste, Procter & Gamble achieved plastic negativity in the financial year 2021-22. The producer of popular brands, including Ariel, Whisper, Vicks, and Gillette among others, the company collected, processed, and recycled over 19,000 tonnes of post - consumer plastic packaging waste from across the country, which is more than the amount of plastic packaging its products sold in a year.

Additionally, the company has announced plans to set up two more in-house solar plants at its manufacturing sites in Goa and Mandideep (Madhya Pradesh). This is in addition to the existing in - house solar plant that the company set up at its Hyderabad manufacturing site in 2021.

Dabur India Focuses on Sustainability

Dabur India, the largest Ayurveda company in India, has become a completely plastic waste-neutral firm after collecting, processing, and recycling around 27,000 tonnes of post-consumer plastic waste during the financial year 2021-22. The recycling of post - use plastic packaging material includes polyethylene terephthalate (PET) and high-density polyethylene high-density polyethylene (HDPE) bottles, polypropylene (PP) caps and labels, and multi - layered plastics and beverages cartons.

The company launched its Plastic Waste Management initiative during the financial year 2017-18 as part of the government's initiative and collected more than 54,000 tonnes of plastic waste directly from end - users. The plastic - negative achievement exceeds the company's target of collecting and recycling more than 22,000 tonnes of post-consumer plastic waste during the financial year 2021 - 22.

Conclusion

Other companies, such as Zomato, Coca-Cola, Pepsi, Britannia, and Nestle Ltd, have taken the initiative to become plastic-neutral in a time-bound manner by collecting and recycling more quantity of used plastic than they consume. These initiatives would certainly help India become plastic-negative by reducing its use and focusing more on recycling, in addition to emphasizing the use of biodegradable and compostable materials going forward.

(Source : PolymerUpdate)

Husky Expands in India; Pumps up Capacity for Hot Runners, Blood Collection Tubes

Canadian machinery firm Husky Technologies recently commemorated the next phase of expansion to the company's India facilities with ceremonies at its new offices and existing Chennai campus. The events were hosted by local leaders in the region, as well as senior executive, Robert Domodossola, President of Husky's Rigid Packaging business.

“I am thrilled to return to India to mark this special occasion as we expand our presence in this exciting and dynamic market,” said Robert Domodossola, Husky's President of Rigid Packaging. “This celebration reaffirms our commitment to the strong relationships we've been building with our customers in this region since 1999. As we enter our 70th year in business, this investment truly acknowledges the opportunities for growth and demand for Husky's diverse range of complete solution offerings in India.”

These celebrations kick off a robust expansion plan that will see a number of exciting developments executed throughout 2023, including:

- Additional capacity and capability for manufacturing hot runners
- The first ICHOR integrated medical injection moulding system that produces blood collection tubes locally
- The addition of an Advantage + Elite monitoring centre to provide proactive, redictive, and transparent monitoring services to exisiting customers
- Expansion of local OEM parts inventory and team of highly skilled service technicians situated throughout the country to respond to customer service needs swiftly and efficiently

“As we approach 25 years of serving customers in India, our goal is to continue developing and delivering the right mix of innovative technologies, solutions and services that enable all regional producers to meet current trends in increasingly responsive, adaptable and diverse ways,” said Wassim Labban, Husky's Vice President of Rigid Packaging for EEMEIA, SEA and ANZ.

Since selling the first PET system into India in 1999, Husky's presence has grown to include more than 250 systems running in the field, delivery of more than 500 hot runners per year, a team of trained service technicians and a robust parts inventory to support local customers.

As SC Recalls an Order on Anti - Dumping Duty, Questions of Impropriety Loom Large

On April 24, a division bench of the Supreme Court recalled an order issued by another division bench on April 13, directing the Union government to impose a provisional anti - dumping duty on imports of Low Density Polyethylene.

On April 24, a Supreme Court division bench of Justices Sanjiv Khanna and M.M. Sundresh recalled an interim order, which had been issued by another bench of the court comprising Justices Krishna Murari and Sanjay Karol, directing the Union government to impose a provisional anti - dumping duty (ADD) on imports of Low Density Polyethylene (LDPE). Observers say that it is unusual that a recall application is listed before a bench whose composition is completely different from the bench which had first issued the interim order in the case, and the new bench – also of the same strength as the previous one – recalling the order at the end of the preliminary hearing.

On April 15, The Wire broke the story of the Supreme Court's bench of Justices Murari and Karol granting an interim order on April 13 directing the Union government to impose a provisional ADD on imports of LDPE from foreign countries. The bench had issued the order recording the additional solicitor general Vikramjit Banerjee's vehement opposition to it.

The petitioner, the Chemical and Petrochemical Manufacturer Association (CPMA), sought the order in view of the Union government's failure to impose ADD despite the final determination of significant dumping and consequent material injury to the Indian industry by the Designated Authority of the Directorate General of Trade Remedies (DGTR) of the Department of Commerce of the Union Ministry of Commerce and Industry last year. The bench had also taken note of the fact that interim orders granted by various high courts in such matters directing provisional assessment had not been implemented by the government – despite the apex court's confirmation of such orders by dismissing the government's challenge.

The Murari - Karol bench, therefore, directed the imposition of ADD under Section 9A(2) of the Customs Tariff Act, 1975 at the rate determined by the DGTR in its Final Finding, issued through a gazette notification on March 31, 2022. The bench made it clear that the levy of such ADD shall be subject to final adjudication in these proceedings.

Impropriety?

Following the April 13 interim order, the Union of India acted swiftly and filed a recall application on April 20, and the matter was listed on April 24, not before the same bench, but before another bench, comprising Justices Sanjiv Khanna and M.M.Sundresh. This has surprised observers, according to whom, it is against established convention in the court, as a part-heard matter cannot be taken away from one bench and assigned to another, without any valid reason, even if it is done with the consent of the Chief Justice of India, (CJI) who is the master of the roster. According to observers, the recall application ought to have been listed before the same bench.

Observers say that even if there is a valid reason for reassigning the case to another bench, it should have been done in a transparent manner, with the Murari-Karol bench recusing to hear the matter first, so that it could be placed before the CJI for his administrative decision as the master of the roster, for listing it before another bench. The failure to follow this time-tested procedure in this matter is considered a grave impropriety.

One of the law officers of the Union Government involved in the case, however, told this writer: “The relevant internal procedure has been followed. This much I can say. Let the judgment come, then I will speak.”LDPE plastic bags. Representative image. Photo : Cjp24 / Wikimedia Commons, CC BY-SA 3.0

Contents of Recall Application

In its recall application, a copy of which is available with The Wire, the Union fovernment has contended that the CPMA's writ petition was listed for admission hearing on April 13 before Court No.12, presided by Justice Krishna Murari, as item 27. “No prior notice was given to the Respondent and therefore, when the matter was called, the Respondent could not be present. However, on the direction of this Hon'ble Court, the matter

was presented by one of the Ld. ASG and prayed for time as he had to read the papers and also needed to take instructions," the application reads. However, the bench of Justices Murari and Karol proceeded to pass the interim order, despite the concerns expressed by the Union Government, it says.

The Union government has also submitted in the recall application that vital aspects on facts, provisions of law and the constitutional scheme – including the Basic Structure Doctrine of Separation of Powers – had not been brought to the notice of the court in this matter.

The Union government has submitted that the April 13 interim order runs contrary to several judgments of the Supreme Court and none of the judgments were either cited by the petitioners in their writ petition or was the previous bench assisted with these judgments by them during the hearing on that day.

In particular, the Union government has made the following fresh submissions in its recall application:

- On May 11, 2000, the Supreme Court rendered its judgment in Saurashtra Chemicals Ltd vs Union of India, in which it was held that the order of the Designated Authority is purely recommendatory. The appeal lies against the determination, which could be made by the Central Government only. The Supreme Court had declined to exercise jurisdiction under Article 136 of the Constitution and dismissed the Special Leave Petitions in this case.

- In Ground F of the writ petition, the petitioners have cited the decision of the apex court in Reliance Industries vs Designated Authority (2006) to project that the act of issuing the notification under Section 9A of the Customs Tariff Act, 1975 is quasi-judicial and not legislative. This is nothing short of a misrepresentation, as the same decision had been referred by another bench for reconsideration by a larger bench in 2009. This reference, the government claimed, was not brought to the notice of the Supreme Court by the petitioners.

- In Union of India vs Meghmani Organics, a three-judge bench of the Supreme Court reconsidered the previous decision in Reliance Industries and held that only proceedings before the Designated Authority are quasi-judicial. In this case, the Supreme Court had held that the Union government "appears to have a discretion" in the matter of determining the quantum of provisional duty as well as final duty but a clear limitation that ADD cannot exceed the margin of dumping as determined by the DA.

- On September 1, 2020, a larger bench of the Supreme Court consisting of three Judges, rendered the judgment in Designated Authority vs The M/s Andhra Petrochemicals Limited in which it was held as follows: "The DA, no doubt, follows a prescribed quasi - judicial procedure where a determination on whether to impose or not to impose anti-dumping duty takes place (through a report). However, this proceeding culminates with a recommendation; the Central Government finally decides whether to impose such a duty, the extent of such duty, and its dudration… Also, the power to levy duty is discretionary,… which leaves it to the Central Government to levy ADD…"

The recall application claimed that not bringing to the attention of the Supreme Court, all the above decisions including those favourable to it as rendered by various high courts, has resulted in the passing of the interim order on April 13.

The recall application also has provided a short summary of the effects and consequences of the April 13 interim order as follows:

- The finance minister's policy decision not to give effect to the recommendation of the Designated Authority dated March 31, 2022, and thereby not to impose either provisional or final ADD, has not been impugned, challenged or questioned before the Supreme Court. The April 13 interim order, therefore, runs contrary to the decision taken by the Union government creating a complete hiatus between the executive branch and the judicial branch of the Constitution.

- It is a well-settled legal position that a Writ of Mandamus would not lie either against the Parliament or against the Union government either to legislate a law or issue a notification. A Mandamus would issue only when there is a duty to be performed by an authority, and there has been a failure or a dereliction in compliance of the said duty imposed by law.

When the final relief is not one which can be granted by the Supreme Court, it is unprecedented that the petitioners have persuaded the court to grant an interim relief by way of imposing a provisional duty which requires both the Union government to issue a notification and both Houses of Parliament to approve the same.

- The April 13 order requires an issuance of a notification and placing the same before both Houses of Parliament, and this has created a hiatus not only between the executive and the judicial branches but also the legislative branch.

- Issuance of notification is a legislative power delegated to the Union government. It does not precede seeking any public opinion or a public hearing. The Union government, as part of political governance, makes policy choices based on the needs and circumstances including public interest and issues notifications from time to time. Issuance of a notification is a matter of legislative exercise of discretion.

- It is a solemn mandate through Article 265 of the constitution that there shall be no levy and collection of taxes without the authority of law.

- The expression 'law' under the constitution has been interpreted repeatedly tomean a law through a legislation or delegated legislation. Neither Executive instructions nor judicial orders can create either a charging section or exemption from the charge. The authority to levy and collect taxes should be through the process of law and not through judicial orders.

- Constitutional architecture makes a clear distinction between the quasi-judicial and judicial exercise of power vis-a - vis the exercise of legislative / delegated legislative power. This is foundational and constitutes a Basic Structure Doctrine under Article 50 of the constitution through the Doctrine of Separation of Powers.

PLASTIC PRODUCTS AND NEW TECHNOLOGIES

New Protective Film by Polifilm for a Variety of Common Glossy Plastic Surfaces

More and more manufacturers of plastic panels are adopting a strategy of diversification. They are using a range of different polymers in order to reduce their dependence on individual raw materials. The drawback, until now, was that each polymer required a specific type of protective film. Now POLIFILM PROTECTION can provide a single film solution that promises optimum adhesion to a wide variety of polar plastic surfaces.

The new addition to POLIFILM PROTECTION's product portfolio offers manufacturers of plastic sheets significantly more flexibility as well increased efficiency in procurement, storage and production. There is no need for manufacturers to stock multiple film types to ensure reliable protection of different glossy plastic surfaces, one protective film from POLIFILM PROTECTION is all that is needed. The result, frequent roll changes and system downtimes are avoided, machine running times are optimized, production runs smoothly, and profitability increases.

Perfect Protection Along the Process Chain

The new solution from POLIFILM PROTECTION makes no compromises when it comes to surface protection. It provides reliable protection for glossy plastic sheets made of PMMA, PET, polycarbonate (PC) and polystyrene (PS) against damage and dirt during manufacturing and further processing. The optimally tailored adhesive properties and film characteristics ensure excellent performance during processing steps such as drilling, milling, line bending and flat thermoforming. As the film is transparent, it also facilitates visual inspection during production and helps avoid confusion. Furthermore, since this is a co - extruded film, the adhesive is not found as a layer on the film but, is actually integrated into the film during co-extrusion. This guarantees that the new protective film can be removed without leaving any residues, or requiring reworking.

Novel Polyolefin - Based Adhesive Formulation

Developing a film that combines these properties whilst at the same time being suitable for a wide range of common polymers was a challenge: PMMA, PC, PS and PET are some examples of high - energy, polar plastics. The molecular interactions between the adhesive and the surface mean that the base adhesive actually has to be individually matched to the respective polymer otherwise the adhesive strength can increase uncontrollably during the time the film is left on the surface or, if it is exposed to heat.

However, application specialists at POLIFILM PROTECTION have succeeded in overcoming this challenge and developed a unique, co - extrudable adhesive raw material which is based on polyolefins and saturated tackifiers. This prevents strong chemical reactions between the adhesive and polar surfaces. The adhesive force remains at a constant, optimal level and ensures the desired level of adhesion throughout.

The new protective film is fully recyclable, available in film thicknesses of 30 to 110 μm and can be applied easily within your processes within a wide temperature window of 20 to 80 °C.

Industry Partners & Nova Chemicals Establish Bope - HD Film Supply to Create Fully Recyclable Packaging

NOVA Chemicals Corporation ("NOVA Chemicals"), a leading supplier of polyethylene resin for food packaging, Polyethylene supplier Nova Chemicals Corp. says it has reached "a significant milestone" in the global availability of biaxially oriented high - density polyethylene (BOPE - HD) film.

Utilizing Nova's resin, biaxial film manufacturers across the world have successfully produced BOPE - HD film on commercial tenter frame lines, Nova officials said in a May 1 news release. Nova describes BOPE-HD film as a fully recyclable alternative to traditional, non - recyclable, mixed material films for flexible packaging.

Calgary - based Nova announced the availability of its Surpass Tx150 - A resin in 2020 as the world's first BOPE - HD resin specifically designed to run in the tenter frame process, for the production of BOPE - HD film. Strategic relationships were formed between biaxial film manufacturers and Nova, to deliver the BOPE - HD films to market, and meet the growing global demand for fully recyclable packaging. The collaborators include Inteplast (U.S.), JK Materials (South Korea), Oben Group (Ecuador), and Polivouga (Portugal).

Achieving a fully recyclable, lightweight, and flexible package using BOPE - HD required focused innovation and collaboration. "Producing BOPE - HD film was not a simple process," said Inteplast's director of R&D and technology Rafael Bayona shared. "This was a major transformation that demanded persistence and dedication, and we are confident in our ability to reliably produce BOPE-HD film. The collaboration and feedback we have received from our customers has been a key factor for our success."

Nova says that BOPE-HD films are well - suited for various applications such as meat and poultry, cheese, seafood, snack food, carton liners, baked goods, fresh produce, frozen foods, deli bags, and more. Aurum Process Technology, a packaging company in Spain, leveraged BOPE - HD to enhance its aseptic industrial cooking and packaging method, T - Sensation process technology. "This effort resulted in finished particulate food, ready meals, and pet food in fully recyclable, mono - material packaging," Nova said.

Brückner Maschinenbau (Brückner), a leading supplier of production lines for manufacturing biaxially stretched films, has been instrumental in bringing the supply of BOPE - HD online, Nova said. Brückner has sold 18 BOPE / BOPP hybrid lines worldwide, with nine lines already in operation. These lines allow for additional capacity, which is key to the continued development and production of BOPE - HD solutions.

Utilizing one of the Brückner lines currently is film manufacturer Polivouga. "Understanding the positive impact of these fully recyclable films on our industry and the environment is precisely why we have invested in a hybrid line that can satisfy the demand for BOPE - HD film," said Diogo Barros, technical service and development manager from Polivouga.

Packaging equipment suppliers, such as Effytec, which supply horizontal form - fill seal manufacturing equipment also support the adoption of fully recyclable films containing BOPE - HD by providing packaging solutions to companies like Aurum.

"The successful launch of these films relied on the collaborative efforts of all the players involved in bringing mono - material packaging to the consumer and store shelves, including equipment manufacturers, film converters, and product packagers," said Owen Lightbody, Nova's team leader, application development.

Floatable and Sustainable Shrink Sleeve Material: Thinner Polyolefin Film from Innovia Maximises Pet Bottle Sorting and Recycling.

After successfully introducing RayoFloat™ APO into the global shrink sleeve market, Innovia Films is extending the range by developing a thinner version, APO45, to accompany its market leading APO50. This film will not only give a yield and material saving over thicker films, but the low density nature of the polyolefin based film, means that the finished sleeves are lighter than a comparable PET sleeve, helping to cut carbon emissions for transport throughout the whole supply chain.

RayoFloat™ APO's key attribute is that it is floatable. "Shrink sleeves made from PVC or PET are extremely problematic and inefficient through PET bottle recycling processes, as they sink, and contaminate the PET resin produced. However, RayoFloat™ APO, as it is a low - density polyolefin material, crucially floats during the sink / float recycling separation process, resulting in a high yield of high - quality PET flakes", explains Alasdair McEwen, Global Product Manager - Labels & Graphics. "Sorting is key for recycling - the thinner the shrink sleeve film is, the easier the sorting technology can detect the PET material and sort the bottle into the right fraction."

Using APO as their shrink sleeve material of choice, means that brand owners and packaging producers can meet new forthcoming regulations around "Extended Producer Responsibility" (EPR) schemes, and meet packaging for design for recycling guidelines like those from RecyClass. APO is also approved and certified for its recyclability by the industry's main global bodies, the European PET Bottle Platform (EPBP) and the Association of Plastic Recyclers (APR).

The material science behind RayoFloat™ APO has also been further developed to ensure that the film has the excellent optical properties required for this market, namely excellent clarity, and high gloss levels. McEwen adds, "The visual appearance of APO is now second to none and is comparable to long standing shrink sleeve films like PVC and PET, meaning there is quite simply no reason not to use it".

Teijin Automotive Technologies Supplying Key Exterior Components on New Lotus Emira

If you've seen the all - new Lotus Emira, you'll likely notice its dramatic exterior styling. The sleek exterior of this mid - engine premium sports car is made possible, in part, by the advanced composite exterior panels provided by Teijin Automotive Technologies. Specifically, Teijin Automotive Technologies is providing the right - and left - hand doors; right - and left - side rear quarter panels, and the inner, outer and lower shells of the tailgate

The doors, rear quarter and tailgate outer panels are manufactured using the company's proprietary TCA Ultra Lite® material. This low - density, Class A surface material is up to 43 percent lighter than a traditional composite material, and approximately the same weight as aluminum. However, because it is a compression - molded composite, it can achieve dramatic styling cues not possible with a stamped metal and is dent and corrosion resistant. This award - winning material is being produced on the company's state - of - the - art sheet molded compound (SMC) compounding line in Pouancé, France.

Specific design cues include a sculpted section in the door that leads airflow toward the intake, which is molded into the rear quarter panel. This design serves a dual purpose, providing air intake and cooling for the engine bay.

"The body panels of the Lotus Emira had to satisfy a number of requirements including aerodynamic design and styling, but also have to be lightweight, strong and provide a high - quality Class A finish," said Paul Tedstone, Executive Director of Supply for Lotus Cars. "By using lightweight composites for the body panels, including the doors, we were able to combine all the engineering and styling requirements in the stunning design of this award - winning sports car."

The inner panels for the tailgate are made from a structural grade, low - density SMC, featuring a glass fiber content optimized for strength. All outer panels are provided to Lotus

with a conductive primer, and the interior tailgate panel is provided with a black texturized coating. All components are being manufactured at the Teijin Automotive Technologies facility in Leça do Balio, Portugal.

“To have the opportunity to be a part of this iconic vehicle brand, bringing an all - new, dynamic sports car to the market has been exciting for us,” said Chris Twining, CEO, and Teijin Automotive Technologies. “Our Class A ultra - light composite materials enhance both the appearance and performance of this exotic - looking, premium vehicle.”

Teijin Automotive Technologies' Ultra Lite technology uses proprietary, treated glass bubbles to replace some of the CaCO3, allowing the resin to adhere to the matrix and increase the interfacial strength between the bubble and the resin. This treatment technology results in a more robust resin mix making molded parts more resistant to handling damage, preventing micro - cracks that cause paint pops, pits and blistering, and improving paint adhesion and bonding characteristics.

TCA Ultra Lite offers automakers an opportunity to achieve a Class A finish with a material that is resistant to corrosion, dents and dings, ultimately providing the consumer with a vehicle that doesn't rust and won't be subject to the scratches and dings that mar the surface of any vehicle panel made of metal.

Monomaterial Blister Packaging for Pharmaceuticals

Swiss - based sterile packaging producer Sudpack Medica announced an all PP blister pack for pharmaceuticals.

The PP - based top and bottom webs are manufactured in a unique coextrusion process, which makes it possible to add oxygen and ultraviolet barriers.

Sudpack's monomaterial blister film solution.
Photo Credit: Sudpack Medica

The mono - material product is compatible with existing recycling material streams in many areas. A life cycle assessment conducted by Sphera software showed that the packaging concept is associated with a greatly reduced climate impact as well as lower energy and water consumption compared to other popular blister solutions.

Sudpack demonstrated its performance live at Interpack held on May 4-10 in Dusseldorf.

Henkel Debuts Ultra - High Thermal Conductivity Pressure - Less Sintering Die Attach Adhesive that Meets Automotive Grade Reliability Standards

Henkel announced the addition of Loctite Ablestik ABP 8068TI to its growing portfolio of high thermal die attach adhesives. With 165 W / m - K thermal conductivity, the new pressure - less sintering die attach paste boasts the highest thermal capability in the company's semiconductor packaging portfolio, meeting performance requirements for high - reliability automotive and industrial power discrete semiconductor devices.

"High voltage applications like those found in automotive ADAS systems, EVs, industrial motor controls, and high - efficiency power supplies require superior electrical and thermal performance," says Henkel's Global Market Segment Head for Semiconductor Packaging Materials, Ramachandran Trichur. "Currently, the only viable die attach alternative to Pb solder - which will soon be phased out and cannot meet certain thermal demands - is sintered silver (Ag). Henkel pioneered pressure - less sintering die attach, allowing the use of standard, low - stress processing, and we have now formulated our fourth and highest thermal conductivity material to date, which tackles the stringent thermal and electrical requirements of next - generation power

packages. "Henkel's newest pressure - less sintering die attach formulation meets multiple metrics for power semiconductors like MOSFETs, which are increasingly incorporating silicon carbide (SiC) and gallium nitride (GaN) materials as alternatives to silicon (Si) for improved efficiency. Loctite Ablestik ABP 8068TI is compatible with traditional Si and newer wide - bandgap semiconductors, among other power discrete devices. The 165 W / m - K ultra - high thermal conductivity die attach adhesive has demonstrated excellent sintering properties with good adhesion on copper (Cu), pre - plated (PPF), silver (Ag), and gold (Au) lead frames, robust electrical conductivity and stable RDS(on) after 1,000 hours of thermal cycling, and MSL 3 reliability. Recommended for dies measuring 3.0 mm x 3.0 mm or smaller, Loctite Ablestik ABP 8068TI fully cures at 175° C or above to form a rigid sintered Ag network in the bulk epoxy and at the interface. Because pressure - less sintering is a drop - in replacement for standard die attach, high pressure is not required to achieve this robust structure, eliminating stress on thin die. Workability of the material is also notable at three hours of void - free open time and 24 hours of stage time with no degradation in shear strength.

As Trichur concludes, the power device market will only accelerate in application uses and performance requirements, making high - capability, high thermal die attach solutions an operational necessity: "There is an increased demand for power devices across market sectors, including automotive, industrial power storage and conversion, and aerospace, to name a few. For power semiconductors, sintered die attach is the prevailing and most reliable solution to deliver the die attach strength, integrity, and thermal and electrical conductivity required. Loctite Ablestik ABP 8068TI provides all this in a formula that enables simple processing to protect thinner, more complex dies."

Aldi Introduces Fully Recyclable Handwash Pumps in a Supermarket First

Aldi has become the first major UK retailer to offer fully recyclable own - label handwash packaging in a bid to reduce packaging waste.

The UK's fourth - largest supermarket has removed the glass and metal components from the pumps, making its handwash packaging fully recyclable at home.

The move will allow over 200 tonnes of packaging material a year to be more easily recycled.

It is the latest move in Aldi's efforts to reduce its environmental impact and develop more sustainable packaging alternatives for its products.

Luke Emery, Plastics and Packaging Director at Aldi, said: “Reducing waste is incredibly important to us and our customers, and we will not stop looking for ways to improve our packaging to ensure shoppers know they are making more environmentally friendly choices when buying their everyday products.”

INEOS World First with Recyclable Flexible Packaging Film Made from More than 50% Recycled Plastic Waste

INEOS has announced a world first as it has produced ultra - thin, rigid film used for recyclable flexible packaging products made from more than 50% recycled plastic. It is the first time such a high proportion of recycled waste plastic has been used in packaging products.

INEOS' polymer know - how and Hosakawa Alpine's state of the art Machine -Direction Orientation (MDO) technology have come together to process Recycl - IN resins containing more than 50% recycled plastic to make polyethylene film. This new film will be used to manufacture recyclable single polymer flexible packaging products that replace difficult - to - recycle multimaterial packaging products.

The INEOS Recycl-IN product range compounds recycled plastic waste with highly engineered new resins. It helps converters and brand owners retain the high quality of their products while increasing recycled content.

The announcement follows INEOS' investment in a new Hosakawa Alpine MDO film line to develop flexible packaging films made from a single polymer family. This approach increases the recyclability of plastic packaging.

Products such as stand - up pouches already provide a convenient, low carbon solution for transporting every - day goods. This further development will ensure that packaging can be manufactured from raw materials containing a high percentage of recycled plastic waste and be recyclable in the future.

The success of this demonstration shows that Recycl - IN can be applied to demanding film extrusion applications such as MDO polyethylene. It enables advanced technical film applications to use mechanically recycled polyethylene. The combination of Recycl - IN resins and this leading technology will enable INEOS to make a unique contribution to the development of a circular economy for these products.

Recycl - IN resins are also certified as providing a reduction in carbon emissions of between 25 and 50 per cent (1) when compared to the use of virgin feedstocks.

Rob Ingram, Chief Executive, and INEOS O&P Europe North, said: “We share people's concerns about plastic waste, showing we can help produce more recyclable end products using large quantities of recycled materials shows our commitment to creating a more sustainable future.”

“Now that we've proved the concept, we open the door to exploring the application of Recycl - IN and MDO technology to other flexible packaging products where we can make a real difference.”

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Drones and Injection Molding Ready for Takeoff

Drones and unmanned aerial vehicles (UAV) are approaching an inflection point where their production volumes — and functionality — will increasingly point to injection molding.

A confluence of the broader trends of lightweighting, reshoring and automation that seem to be

impacting so many different sectors are combining in the unmanned aerial vehicle (UAV) space in a manner that could pose huge potential for injection molders. Last week, I had the opportunity to participate in a panel discussion at the Xponential 2023 show in Denver. Co - hosted by AUVSI (Assn. for Uncrewed Vehicles International) and Messe Düsseldorf North America, the event promises to help attendees "design the plan for an autonomous future."

As UAVs seek to take on an array of new tasks from last-mile delivery and air taxis to wildfire management and policing, they're approaching broader acceptance and point to a ubiquitous presence in our not - so - distant future. If those and other markets continue to grow, the build volumes for these vehicles will soon favor the economics of plastics injection molding over current production methods and materials.

At Xponential, the panel discussed just that, with Blue Halo, a maker of UAVs and unmanned aircraft systems (UAS), swapping out a machined aluminum chassis for its newest craft, which has civilian and military uses, for an injection molded one. The switch provided the benefits familiar to most when it comes to metal - to - plastics conversions: lighter weight, parts consolidation, easier assembly, with some additional bonuses include the ability to be coated and offer greater chemical and heat resistance (to wit: I was shown video of a laser trying and failing to impact the molded chassis).

Lowering the weight of these vehicles allows them to either carry more of a load, which could take the shape of more gadgetry, i.e. sensors, cameras, etc., or actual load if they're doing civilian or military deliveries. Shedding weight also means they can fly further or faster. Often times lowering the craft's mass leads to a combo of those two: slightly longer / faster trips with slightly higher cargo.

Automation and Reshoring Angles

Just as robots and automation in the plastics manufacturing space are often tasked with relieving humans from dirty, dangerous or repetitive tasks, UAVs can let people avoid dangerous or monotonous jobs ike surveilling battlefield enemies, mapping out forest fires or shuttling other humans around.

On the reshoring front, the world's largest maker of drones, China - based DJI (Da - Jiang Innovations), has been facing increasing regulatory pressure from states and the U.S. government, including outright bans of their sale. These moves, including the proposed Increasing Competitive for American Drones Act, introduced this year in the U.S. Senate, would open the market up to U.S. makers of UAVs.

Injection molders may only need to look skyward for their newest market opportunity.

SACMI Launches its Range of Caps for The New 26/22 mm GME 30.40 Neck Finish

With the launch of 4 new one-piece cap models, SACMI extends its range on the **GME 30.40** standard. More than 30 caps are now available in the 26/22 mm family SACMI launches 4 new GME 30.40 one - piece cap models, extending its range in the **26/22 mm family** to offer the broadest array of solutions for the new **GME neck finishes**. In parallel, SACMI provides a complete **product development** service, helping customers make the transition with profitable, certified, ready-to-use solutions.

GME 30.40 neck finish for CSD, still water and N2 pressurized water.

Intended for both carbonated soft drinks (CSD) and still water /nitrogen - pressurized water, the new GME 30.40 neck finish caps deliver unmatched results in terms of sustainability, quality and performance; they also provide plastic savings of up to 30-35% while meeting the same requisites.

Tethered - friendly.

SACMI's AB26 CSDT5 is a 1.8 g CSD tethered-compatible cap that complies with the strictest specifications established by the main international brand owners. The new GME 30.40 neck finish cap belongs to a broad family of tethered solutions developed by SACMI to meet every market need ahead of regulatory changes within the industry.

Halogen - free Flame - Retardant Additive Introduced for PE Foams

The new additive from Tosaf delivers performance at low concentrations to crosslinked and non - crosslinked polyethylene (PE) foam.

Growing demand for PE foam

Adoption of PE foam is advancing steadily on account of its corrosion resistance, dimensional stability, and thermal insulation in a range of applications, including acoustic and mechanical dampers as well as flooring, pipe insulation, and decorative elements. However, its low fire resistance requires the addition of flame retardants. Here, the trend is toward halogen - free formulations for environmental and safety reasons, especially in Europe and the United States. Tosaf has expanded its range of flame - retardant masterbatches to include appropriate materials that do not impair the properties of the foam, but at the same time enable compliance with international fire - protection standards.

Masterbatch is efficient at low concentrations

As the latest addition to its HFFR masterbatch range, grade FR9185PE is suitable not only for non - crosslinked but also for crosslinked PE foams. In the event of fire, its phosphorus - based active ingredient initiates a gaseous mechanism that stops combustion by reacting with the resulting free radicals. Other halogen - free systems that rely on the formation of a protective layer that suffocates the fire or on water vapor to cool the combustion require significant dosage. Only 10 to 15% dosage of this product is required to achieve performance similar to halogen - based systems that typically need 30% to 60% dosage.

Further, grade FR9185PE ensures effective dispersion in the foam and does not negatively affect foam nucleation or crosslinking levels, resulting in a consistent cell structure and a high - quality foam product with preserved mechanical properties and thermal stability.

Halogen - free flame retardants are relatively new to the market. Their development is complex, and it is quite challenging to match the diversity offered by halogen - based products, making FR9185PE EU a truly innovative material, according to Tosaf.

For applications that still demand halogen - based products, Tosaf's portfolio has options:

- Chlorine-based flame retardants uch as FR9327PE offer good performance, are cost-effective, and can be used for non-crosslinked PE foams. They are not suitable for crosslinked PE, and have limited thermal stability.

- Brominated flame retardants, such as FR1653PE, are suitable for all types of PE foams. They provide thermal stability, perform at a level that meets stringent fire standards, and do not affect the properties of the foamed product.

New production plant

To meet growing demand for flame retardants, Tosaf has invested in a new, state - of - the - art

production facility. A laboratory is available for testing in accordance with a range of fire standards, including a cone calorimeter for full combustion analysis. In addition, the company has established pilot lines that simulate real production conditions and allow flame - retardant additives to be tailored for specific applications.

PureCycle's Flagship Polypropylene Purification Plant Reaches Mechanical Completion

PureCycle Technologies, Inc. (Nasdaq: PCT) announced it has reached mechanical completion of its first polypropylene ("PP") purification plant in Ironton, OH (the "Ironton Facility"), and submitted documentation to Leidos Engineering, LLC ("Leidos"), the site's independent construction monitor, for formal certification of completion.

PureCycle prepared the final closure documentation consistent with the requirements set forth by Leidos and believes the information to be complete and sufficient. The Leidos certification is required to achieve key milestones in connection with PureCycle's Ironton facility. Contemporaneous with, and independent of, the Leidos certification process, the Ironton Facility will now begin operational pre - startup, safety review processes, and the march toward initial pellet production, which is currently anticipated to commence in the second quarter of 2023.

The Ironton Facility, once fully operational, is expected to produce 107 million pounds of Ultra - Pure Recycled (UPR) resin annually, making high - quality recycled PP plastic more accessible at scale. PureCycle uses an innovative technology to remove nearly all contaminants, colors, and odors from polypropylene plastic waste.

"2023 will continue to be an exciting year for PureCycle as we kick off operations at our flagship facility in Ironton. Now that construction is complete, we can begin our ramp - up plan and start producing UPR pellets," said Dustin Olson, PureCycle's CEO. "This is a transformative moment for PureCycle, for all of those that have supported us and invested in our Company, and for our goal of creating an 'infinitelysustainable planet.' We can't wait to bring our sustainable, high - quality, no-compromise UPR resin to our customers and start to create a truly circular economy for plastics."

PureCycle licenses the patented process for making high - quality recycled resin from The Procter & Gamble Company, whose scientists developed this technology. Victor Aguilar, Chief Research, Development and Innovation Officer at The Procter & Gamble Company added, "We are very proud to see this technology commercialized. This is an important step toward making recycled materials more readily integrated into products and packaging and consistent with P&G's interest in enabling more sustainable solutions for our industry. Thank you, PureCycle, for driving greater scale from our invention, and many thanks to our joint team of scientists who dedicated their time and expertise to bring this important project to fruition."

In addition to the sustainability benefits, PureCycle's first purification plant will provide the Ironton community with an influx of new jobs.

Bill Dingus, Executive Director at the Lawrence County Economic Development Corporation added, "We are so excited to bring this cutting - edge company and technology to Southern Ohio. PureCycle is a welcome member to our community, and we are thrilled to watch their company change the world. This facility will bring approximately 80-100 high - wage jobs to our region and put Ironton, Ohio at the center of the global recycling transformation."

About PureCycle Technologies

PureCycle Technologies LLC., a subsidiary of PureCycle Technologies, Inc., holds a global license for the only patented solvent - driven purification recycling technology,

developed by The Procter & Gamble Company (P&G), that is designed to transform polypropylene plastic waste (designated as No. 5 plastic) into a continuously renewable resource. The unique purification process removes color, odor, and other impurities from No. 5 plastic waste resulting in an ultra - pure recycled (UPR) plastic that can be recycled and reused multiple times, changing our relationship with plastic. www.purecycle.com

Forward - Looking Statements

This press release contains forward - looking statements, including statements about the financial condition, results of operations, earnings outlook and prospects of PureCycle. In addition, any statements that refer to projections, forecasts or other characterizations of future events or circumstances, including any underlying assumptions, are forward - looking statements.

Forward - looking statements are typically identified by words such as "plan," "believe," "expect," "anticipate," "intend," "outlook," "estimate," "forecast," "project," "continue," "could," "may," "might," "possible," "potential," "predict," "should," "would" and other similar words and expressions, but the absence of these words does not mean that a statement is not forward-looking.

The forward - looking statements are based on the current expectations of the management of PureCycle and are inherently subject to uncertainties and changes in circumstances and their potential effects and speak only as of the date of this press release. There can be no assurance that future developments will be those that have been anticipated. These forward - looking statements involve a number of risks, uncertainties or other assumptions that may cause actual results or performance to be materially different from those expressed or implied by these forward-looking statements. These risks and uncertainties include, but are not limited to, those factors described in the section of PureCycle's Annual Report on Form 10 - K for the fiscal year ended December 31, 2022 entitled "Risk Factors," those discussed and identified in public filings made with the U.S. Securities and Exchange Commission (the "SEC") by PureCycle and the following:

PureCycle's ability to obtain funding for its operations and future growth and to continue as a going concern;

- PureCycle's ability to obtain funding for its operations and future growth and to continue asa going concern;
- PureCycle's ability to meet, and to continue to meet, applicable regulatory requirements for the use of PureCycle's UPR resin in food grade applications (including in the United States, Europe and other future international locations);
- PureCycle's ability to comply on an ongoing basis with the numerous regulatory requirements applicable to the UPR resin and PureCycle's facilities (including in the United States, Europe and other future international locations);
- Expectations and changes regarding PureCycle's strategies and future financial performance, including its future business plans, expansion plans or objectives, prospective performance and opportunities and competitors, revenues, products and services, pricing, operating expenses, market trends, liquidity, cash flows and uses of cash, capital expenditures, and PureCycle's ability to invest in growth initiatives;
- PureCycle's ability to complete and commission its first commercial - scale recycling facility in Lawrence County, Ohio (the "Ironton Facility") in a timely and cost - effective manner;
- PureCycle's ability to complete the necessary funding with respect to, and complete the construction of, (i) its first U.S. multi - line facility, located in Augusta, Georgia (the "Augusta Facility"); (ii) its first commercial - scale European plant located in Antwerp, Belgium and (iii) its first commercial-scale Asian plant located in Ulsan, South Korea, in a timely and cost - effective manner;
- PureCycle's ability to sort and process polypropylene plastic waste at its plastic waste prep ("Feed PreP") facilities;
- PureCycle's ability to maintain exclusivity under the Procter & Gamble Company license
- The implementation, market acceptance and success of PureCycle's business model and growth strategy;

- The success or profitability of PureCycle's offtake arrangements;
- The ability to source feedstock with a high polypropylene content at a reasonable cost;
- PureCycle's future capital requirements and sources and uses of cash;
- Developments and projections relating to PureCycle's competitors and industry;
- The outcome of any legal or regulatory proceedings to which PureCycle is, or may become a party, including the securities class action case;
- Geopolitical risk and changes in applicable laws or regulations;
- The possibility that PureCycle may be adversely affected by other economic, business, and/or competitive factors, including rising interest rates, availability of capital, economic cycles, and other macro-economic impacts;
- Turnover or increases in employees and employee-related costs;
- Changes in the prices and availability of labor (including labor shortages), transportation and materials, including significant inflation, supply chain conditions and its related impact on energy and raw materials, and PureCycle's ability to obtain them in a timely and cost - effective manner;
- Any business disruptions due to political or economic instability, pandemics, armed hostilities (including the ongoing conflict between Russia and Ukraine);
- The potential impact of climate change on the company, including physical and transition risks, higher regulatory and compliance costs, reputational risks, and availability of capital on attractive terms; and Operational risk.

Should one or more of these risks or uncertainties materialize or should any of the assumptions made by the management of PureCycle prove incorrect, actual results may vary in material respects from those projected in these forward-looking statements.

All subsequent written and oral forward - looking statements or other matters attributable to PureCycle or any person acting on their behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this press release. Except to the extent required by applicable law or regulation, PureCycle undertakes no obligation to update these forward - looking statements to reflect events or circumstances after the date of this press release or to reflect the occurrence of unanticipated events.

Borealis Launches Stelora™, a New Class of Engineering Polymer that Pushes the Boundaries in Performance and Sustainability

Borealis, one of the world's leading providers of advanced and circular polyolefin solutions and a European market leader in base chemicals, fertilizers and the mechanical recycling of plastics, is launching Stelora, a new class of sustainable engineering polymer offering increased strength, durability and a step change in heat-resistance capability.

Stelora was developed in collaboration with TOPAS Advanced Polymers, the world's leading producer of cyclic olefin copolymer (COC). It is created using a unique process that combines COCs, which are a relatively new class of clear, high - purity polymer, with polypropylene (PP). The result is a state - of - the - art material called ethylene-propylene - norbornene (EPN) that is suitable for a wide range of technically advanced applications, primarily used in e - mobility and renewable energy generation. This solution offers a sustainable alternative to replace conventional engineering polymers, which meet the high temperature requirements required for the new generation of energy - saving power semiconductors for invertors.

“Stelora is a unique solution that combines enhanced sustainability with elevated performance. We are confident that, within a short time, it will replace existing engineering polymers in a wide range of applications, providing our customers with a cost - effective, high - performance solution that also drives circularity and energy efficiency.” explains Ilkka Pentillä,CEO, Tervakoski Films Group, a long - standing Borealis customer of capacitor grades.

The first commercially available application of Stelora is within a high - heat - resistant capacitor

film. This dielectric capacitor film made with Stelora offers all of the benefits of the equivalent made using PP resin as a dielectric, but with significant performance enhancements including exceptional heat resistance, superior electrical properties at high temperatures, and increased efficiency. Stelora-based film is also fully compatible with existing converting lines, so it can be processed by customers without the need for investment in new equipment, infrastructure or assets.

Supporting the Transition to Renewable Energy and E-mobility.

Heat - resistant capacitors are an important enabler in the transition to renewable energy and E-Mobility. By closing the product performance gap between polyolefin based polymers and high - temperature engineering plastics, Stelora improves the overall efficiency of heat - resistant capacitors .

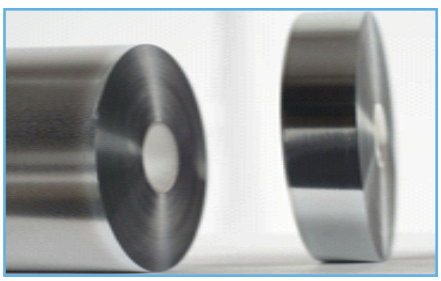
Their cost and energy efficiency benefits are based on several complementary mechanisms:

High - heat - resistant capacitors degrade more slowly, so they need to be replaced less frequently. This makes them more suitable for use in offshore wind installations, where repairing and replacing parts is challenging. As the capacitors can tolerate higher temperatures, less space is required for cooling, reducing the size and construction cost of inverters. The same size - reducing mechanism enables the production of smaller and more energy - efficient final products that use transmitted energy, including electric vehicles.

A Circular Way

Stelora's sustainability benefits go beyond energy efficiency. Like many products in Borealis' portfolio, it is produced using renewable feedstock, allowing customers to achieve their sustainability targets, and supporting the transition to a circular economy, fully in line with Borealis' mindset EverMinds(TM).

Bart Verheule, Global Marketing Director, Energy: “At Borealis, we're strongly aligned to the principles of both the UN Sustainable Development Goals and the European Green Deal. And therefore, with Stelora, we're proud to be launching this transformative material solution for capacitor film, that combines outstanding performance with a number of important sustainability advantages as we reinvent essentials for sustainable living.



Though the capacitor film market shall be the first to enjoy its benefits, we're exploring how Stelora's many advantages can be potentially extended to other high performance applications in different sectors”.

Sabic Launches Sustainable Resin for Electrical Goods

Chemicals producer SABIC, has launched 'LNP ELCRIN WF0051iQ', a compound featuring thin - wall, non - brominated / non - chlorinated flame retardance (FR). It is the newest addition to the company's growing family of sustainable iQ resins. The company believes it is well suited for electrical applications. The new grade will increase SABIC's already significant diversion of post - consumer polyethylene terephthalate (PET) water bottles, which are chemically upcycled into polybutylene terephthalate (PBT) resin. At the end of 2022, the company had already diverted 400 million 0.5-liter bottles through its iQ upcycling technology.

The Regulation, which will enter into force in twenty days, supports the industry's efforts to substitute lead stabilisers in PVC production. In fact, VinylPlus has been working proactively to substitute lead, and since 2015, the EU PVC industry across all EU-27 Member States has ceased using lead - based stabilisers.

With this restriction, the European Commission Regulation builds upon the industry's efforts to reduce the use of hazardous substances in PVC products and further enhances the circularity of the PVC industry. The Regulation will restrict the import of lead-containing PVC products from third countries where lead is still used as a stabiliser. It will also set a way forward to enable the recycling of PVC products

containing legacy lead additives in a manner which safeguards human health and the environment. Additionally, the industry will be given enough time to adjust to the new rules, ensuring the continuity of recycling and enabling the industry's contribution to the EU's circular economy.

Brigitte Dero, VinylPlus Managing Director, commented: "PVC is a building block of our modern societies: it is a versatile, durable and highly recyclable polymer, widely used in various applications, including building and construction, energy production, agriculture, and healthcare. It plays a significant role in enabling the EU Green Deal, and the industry's commitment to increase its recycling rate contributes to the EU circular economy.

The restriction on lead in PVC represents a significant step in enabling the PVC industry to meet its ambitious recycling targets of one million tonnes per year of recycled PVC used in new products by 2030 in a safe way for human health and the environment. VinylPlus is committed to continuing its efforts to accelerate the European PVC value chain transition to a circular economy, and we look forward to collaborating with all stakeholders to achieve our common goals."

Circular Packaging Based on Perstorp's Akestra 100 and Akestra 110 Announced as an Endorsed Solutions in Europe

The Technical Committee of the Tray Circularity Evaluation Platform (TCEP) of PETCORE Europe has officially endorsed the use of Akestra 100 and Akestra 110, products manufactured by leading specialty chemicals innovator Perstorp, for the production of heat - resistant PET trays. Furthermore, the committee has recognized that the use of Akestra 100 and Akestra 110 do not have a negative impact on current European PET recycling streams.

The Tray Circularity Evaluation Platform (TCEP) is a voluntary European industry initiative that provides PET thermoforms design guidelines for recycling, evaluates thermoform packaging solutions and technologies, and facilitates understanding of the effects of new PET thermoforms innovations on the recycling process. The TCEP initiative fully supports the economic and environmental sustainability of the European PET value chain.

Akestra 100 and Akestra 110 are a high-performance products that enable customers to enhance recycled PET by adding heat resistance capabilities and also achieve sustainability targets by increasing recycled material content and enabling design for circularity. With this endorsement, Akestra™ 100 and Akestra™ 110 are established to enable a circular packaging solutions with high post-consumer content (high PCR), and for being recyclable in existing recycling streams for tray - to - tray. Akestra™ 100 and Akestra™ 110 are hereby confirmed in Europe as replacement of fossil based, linear traditional packaging made of polystyrene or polypropylene.

"We are thrilled to receive this endorsement from PETCORE Europe. To help our food value chain partners to design improved circularity in food packaging has been a missing piece in the puzzle. Akestra 100 and Akestra 110 can help to close the material loop in hot - fill applications to enable circular packaging solutions and a massive saving of fossil raw material and CO2 emissions over time. This is a true example of our long term vision and mission", says Patrice Pinsard, EVP Strategic Markets & Innovation at Perstorp.

Akestra 100 and Akestra 110 Enable:

Design of circular thin wall food packaging solutions* for hot-fill applications

Glass-like transparency and heat resistance up to 100°C

Tunable performance characteristics

**Post-consumer recycling of tray packaging solutions with Akestra 100 and Akestra 110 have been verified at commercial scale.*

Rajoo Engineers Limited India Launched the First ever sheetline for HIPS Christened LAMINA

Marking its foray into the renewable energy sector, with Lamina è sheet extrusion lines , Rajoo takes a giant step forward, matching extrusion excellence with functionality, building a sort-after solution in the world to produce the highly complex EVA/POE sheet for solar cells; an approach that would certainly turn out to be a trend - setter.

Well understanding that if India has to realise the vision of its renewable energy programme, local manufacturing of related equipment will play a pivotal role, believes Rajoo. Extending its skills of extrusion, leveraging its strong understanding of the polymer chemistry (EVA being a rubbery material, and low shrinkage being a crucial parameter) and its 15 years of experience of producing sheet extrusion lines for EVA, Rajoo Engineers, smartly builds India's first line to produce EVA/POE encapsulant sheet for solar cells. A move that would save the country precious foreign exchange and, at the same time, empower solar panel manufacturers, while presenting an opportunity for plastic processors to get a solution that is more cost-effective to buy and operate. The confidence that Rajoo commands as regards the local availability of parts and service support will only further the comfort of this growing solar panel industry.

The versatile solution of Lamina è series of sheet extrusion lines comes with an output range of 300 to 900 kg/hr (in both monolayer and multilayer versions), width of 1,300 – 3,000 mm and a thickness range of 0.30 – 0.90 mm. The line is equipped with a fully automatic and continuous gravimetric feeding system and has energy-efficient extruders with universal barrier screws. The screw elements and screw profiles are designed according to the physical and chemical nature of EVA and POE resin. Furthermore, the peculiar EVA-use T-die is designed as per the extrusion rheology.

This solution has chartered a diversification for Rajoo to look beyond 'extrusion for packaging alone' and enter into newer and upcoming markets. While bringing in a lot of cheer to the solar panel manufacturers, this launch has provided a diversification opportunity for Rajoo's existing and sizeable customer base with a reliable business model into which Rajoo can provide a good insight! This fascinating solution is another 'Rajoo Step' towards Make - in - India and will once again put Indian manufacturing on the global map.

“We are very excited as we have commissioned our first line. A lot of research has gone into conceptualising this machine.

The EVA sheets used for encapsulation in solar cells are a very crucial element in the manufacture of the solar panels and I am glad that we took this bold step that would make a difference to India's energy programme and India's journey towards energy independence by 2047,” highlights a buoyant Ms. Khushboo Chandrakant Doshi, Managing Director, Rajoo Engineers Limited.

Ettlinger Looks to Increase Efficiency of Melt Filtration in New Range of Machines

Recyclates of the highest quality are a highly sought - after commodity in the plastics processing industry. In line with demand, stricter requirements are also being placed on the productivity of the recycling systems. The high - performance melt filters from the ERF series from Ettlinger, claims it is a cost - effective solution for providing corresponding product quantities for the recyclable material cycle. The manufacturer's flagship is the ERF 1000.

When processing easy - flowing materials, for example for injection moulding applications, its four rotating, perforated drums can filter up to ten tonnes of plastic melt per hour. The company claims that the system's benefits include continuous operation in a stable process at consistent pressure and long operating times without filter changes. The very low melt loss in the range of a just few percent as well as the possibility of changing each drum individually and without interrupting production also contribute to the high cost efficiency of the ERF 1000.

The company says that all three sizes are designed for energy efficiency and are suitable for filtering common thermoplastics, including soft PVC. The proportion of contaminates such as paper, aluminium, wood, elastomers (rubber or silicone) or high - melting polymer composites can be up to 16%. ERF melt filters can in principle be used in any extrusion line – either single or twin - screw and irrespective of the type of pelletising system or other downstream unit. Thanks to their compactness, it is claimed they are also very suitable for retrofitting existing extrusion lines. Typical applications range from recycling through to sheet and film extrusion and compounding. In film recycling in particular, the finest mesh size of 60 μm opens up possibilities for achieving benchmark qualities.

Boston Matthews Announces Development of Adjustable Co-Extruder

Extrusion machinery manufacturer Boston Matthews has announced a new space saving Vertical Co-Extruder (Jockey) and main Extruder production set-up. The new extruders are designed using one common base, thereby reducing the usual footprint to a minimum, saving production space.

The unit shown comprises of a 75mm main single - screw extruder with a 30mm Vertical Co - Extruder with the company offering a range of extruder sizes / outputs to meet the customer's specific requirements. This also includes options for the processing of Fluorocarbons and high temperature polymers such as PEEK.

The company claims that the Vertical Extruder has complete movement – including up & down; forward & back; and a complete 270° swivel.

Boston Matthews says this virtually eliminates all alignment and reduces it to just fine adjustment. The company claims that the precision fine adjustment will help to simplify and reduce set - up time, whilst minimising the risk of damage to the tooling during the process.

Both Extruders are controlled by one central control system using the Boston Matthews developed SMART Control System.

This is a colour touch screen PLC control which also provides control, recipe storage, alarms, trending, network connectivity, and management set security levels, production data export and production monitoring safety controls.

The company believes that AC, direct - drive technology provides precision screw speed holding for the highest quality melt and output performance whilst at the same time ensuring maximum energy efficiency is obtained. Direct-Drive also greatly reduces operational noise, dust and routine maintenance.

Any routine maintenance has been designed so that the operator can carry it out without the need for calling on specialised maintenance personnel.

Protolabs Report Reveals Robotics Innovation Hindered by 'Crucial' New Material Supply Chain.

A new Protolabs report reveals that almost one third (32%) of robotics industry experts believe that soft robotics and new materials will have the biggest impact on how robotics manufacturing will develop in the next five years. Meanwhile, more than one quarter (29%) see the material supply chain as the most serious barrier to progress.

Protolabs

Sustainability and speed were highlighted as important factors for innovation and product development in fresh applications.

The "2023 Robotics Manufacturing Status Report" is based on a survey of key players in robotics, and insights from industry experts, providing an engineer's guide to the latest status and future trends in hardware, materials and innovation in robotics manufacturing. It explores the core technologies that make up a robotics project and the role of digital manufacturing to develop and test new parts from new materials faster.

The report examines the increasing use of robotic manufacturing in Industry 4.0 and how new robotic hardware and software will solve tasks in uncontrolled and hostile environments. Soft robotics, such as grippers that enable robots to perform more logistical tasks, is expecting a compound annual growth rate of 35.1% between 2022 and 2027 with biomedicine, food and agriculture set to benefit.

Discussing the report, Stephen Dyson, Client Programs Manager – Protolabs EMEA, says: “Using new materials and technology requires several iterations for testing and refinement, so the development cycle has to be fast. Digital manufacturing using 3D printing, CNC machining and injection moulding uses data to help manufacturers make the right design and production choices to prototype and test faster. This, coupled with the number of new materials available for such manufacturing, is helping steer robotics into previously unheard - of applications.”

Per Sjorbrg, Host of Robots in Depth added: “Robotics is expanding into new areas with great benefits to organisations, such as soft grippers that will accelerate automation in logistics and agriculture. Fast and convenient design iterations in all materials and production methods is key to keeping costs down, which will make applications much more accessible and financially viable. New materials are critical to these developments, which is why industry experts are concerned about the supply chain.”

Cone Tumble Blender Utilizes Diffusion Mixing

The pictured Ross Model VCB-50 V Cone Tumble Blender is designed for atmospheric

operation and features a stainless-steel type 316 intensifier bar fitted with high-speed 19-in. chopper blades operating at 475 rpm to reduce the size of agglomerates. The intensifier bar doubles as a spray bar equipped with fan-style nozzles for minor liquid additions.

Photo: ROSS

The V-shaped vessel is driven by a 30-hp motor to approximately 12 rpm, while the intensifier bar is driven by a 15-hp motor. Sanitary tri - clamp connections, mirror finish on the product wetted parts promote easy cleaning, inside and out.

The control panel includes a 7-in. color touch screen display with individual start / stop and speed controls, jog function, cycle timer and a recipe system.

The Power of Self - Emptying Technology for Extrusion Lines

Thermoplastic extrusion line operators contend with a wide range of daily challenges. Color changes and contamination are two common and complicated obstacles to maintaining

production schedules and producing high - quality end products that meet your customers' needs. Issues like color streaking, black specks and other material changes can lead to excessive downtime, scrap, and wasted resources. The result? Unnecessary frustration and costs for you.

Why is this problem so rampant?

Complete cleaning is essential for maintaining effective and efficient extrusion production lines. Any material that remains after each run (and accumulates over time), from color pigments to additives, must be entirely removed from equipment, including screws, dies and metering pumps. Thorough purging of all contaminants helps keep lines performing optimally and consistently.

Is manual cleaning the answer?

Manual cleaning takes more time and labor than most producers can spare. Lines must be shut down to complete the task, which significantly cuts into both productivity and revenue. Intensely laborious, manual cleaning also poses safety risks to your teams. None of this is ideal.

Self - emptying technology can make a tremendous difference

Specialty purging compounds can alleviate many complications from the cleaning process and create exceptionally better output consistency. Advanced capabilities, like the self - emptying technology, can make a tremendous difference by facilitating the quick and complete removal of dark colors and carbon from parts. The self-emptying technology is also ideal for machine shutdowns. The equipment will be free of resin residue after using a self - emptying purge compound, resulting in no carbon specks contaminating parts on start-up.

One standout product that utilizes self - emptying technology is Chem - Trend Ultra Purge™ 3615. Especially effective at removing residue from the hard-to - reach dead spots, such as the back of the flights of the screw, that make the screw so difficult to clean completely. Ultra Purge™ 3615 works with such quickness and ease that the result is up to a 75% reduction in downtime and scrap for color changes, shutdowns / start - ups, and carbon removal.

Versatility makes the difference

The versatility of Ultra Purge™ 3615 is particularly attractive to producers. It's ideal for a wide range of resins and works well for extrusion and blow molding machines with and without accumulators, which can be extremely difficult to purge. Ultra Purge™ 3615 is a chemical purging compound that typically requires less product to be effective and is less abrasive on equipment.

Ultra Purge™ 3615 in the real world

One Chem - Trend customer running a multilayer extrusion line recently saw great success by implementing Ultra Purge™ 3615 to purge recycled material. The line tested consisted of three extruders – one using virgin polyethylene and two using recycled polyethylene, which was leaving a lot of residue and various color contaminants inside the screw and die. Even subsequent manual cleaning wasn't sufficiently finishing the job.

This was no surprise to Chem-Trend's experts. Multilayer extrusion lines are well known to add complexity to the cleaning process. More layers mean more areas to clean, a larger combination of material properties to contend with, and more components that may be difficult to reach.

Using Ultra Purge™ 3615 was the solution. From the start of the first use, a large amount of color residue was extracted. After just five minutes, color particles were visibly extracted from the equipment, successfully completing the purge.

Ready to see what Ultra Purge™ 3615 can do for your extrusion line? Please visit Chem - Trend's Purging Compound Solutions page to learn more and contact a purging compounds expert.

Ejector Range Enlarged

Hasco has enlarged its demolding portfolio with roughly 600 new ejector versions, while also providing customers an ejector range selection table to assist in selecting the right product. The interactive selection table is available on Hasco's website in its media library. It includes information on the properties

and applications of the different versions that can be found, while the technical properties provide details of the specific areas of application for the respective ejector pins.

Hasco's ejector range features a total of 26 product groups and 5500 variants to virtually cover all moldmaking applications. Customers can initially choose a certain ejector pin and then click directly on the product group within the PDF. From there, a direct link is made to the corresponding portal page.

The ejector configurator enables simple, online configuration of individually cut-to-size ejectors. With a few clicks, the length is defined and the delivery time and price are directly displayed. Hasco says short delivery times reflect the efficiency and reliability of the ordering process.

Wittmann Battenfeld with Energy - Efficient and Resource - Saving Injection Molding Technology at the Plastpol

Wittmann Battenfeld Polska will present to interested trade visitors ultra-modern injection molding machines and process technology, as well as state-of-the-art robots and auxiliaries at the Plastpol 2023 in hall F, booth No. F-9.

The Polish market is one of the most important export markets for the Wittmann Group. Consequently, the Plastpol is a key platform for Wittmann to present latest technologies to this market in cooperation with its subsidiary Wittmann Battenfeld Polska.

At this year's Plastpol, two servo-hydraulic injection molding machines will be shown.

On a SmartPlus 90 / 350 equipped with the new control unit B8X as well as the CMS Lite conditioning monitoring system and an automation cell designed and manufactured by Wittmann Battenfeld Germany, Wittmann produces a spirit level made of ABS with a 1+1-cavity mold supplied by SOLA, Austria. As a first production step, the top and bottom parts of the spirit level housing are injection molded. The top part is then deposited and printed at a laser station. Simultaneously, the bottom part placed on a tray is fitted with vials from SOLA. Next, the top part is pressed onto the bottom part by a pre - set force. The finished parts are then transported to a testing station, where the positioning of the vials is checked by a vision system. After quality inspection, the finished spirit levels are removed and deposited on a conveyor belt by a WX138 robot from Wittmann.

Special features of the SmartPlus are high levels of cost and energy efficiency and repeatability. By using proven technologies combined with carefully selected options, it has become possible to offer an excellent price/performance ratio for these machines.

Airmould 4.0

The second machine is a SmartPower 60/210. This machine comes with Airmould internal gas pressure technology. Using this technology, a clothes peg will be manufactured with a 1+1 cavity mold. In the Airmould process, nitrogen is injected into the cavity partly or completely filled with melt by an Airmould nozzle specially developed for this purpose, which leads to the formation of a bubble structure. In this way, substantial quantities of material can be saved, with the result of a significant cost advantage especially for mass products such as clothes pegs. In this application, the latest-generation Airmould technology, known as Airmould 4.0, will be demonstrated. It stands out by its compact hardware, plus a high level of user friendliness through its integration in the Unilog B8 control system. All components were developed and are produced in-house by Wittmann Battenfeld.

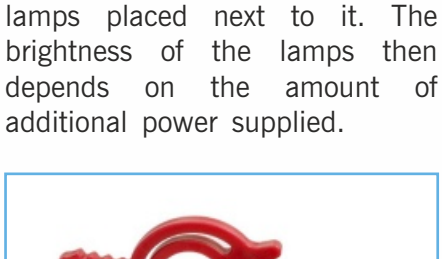
Automation and auxiliaries

In addition to the robots and auxiliary appliances connected to the machines on display, numerous robots and auxiliaries from Wittmann will also be shown as stand - alone solutions at the Plastpol in Kielce.

The low energy consumption of the Wittmann robot series will be demonstrated at the Plastpol by

an interactive showpiece known as the ErgoRobot. This application consists of a robot and a bike used as an ergometer. The trade fair visitor serves as the “power source”. While riding the bike he sets the robot in motion. The robot used in this case is a Primus 14 in the standard version with an R8 control system, an appliance normally used for pick & place applications on machines with clamping forces ranging from 50 to 150 t. The moving bike pedals drive via force transmission a servo motor mounted on the rear wheel. In the ErgoRobot application, this motor functions as the robot's power supply. The electricity generated by the motor is transmitted to the robot and sets it in motion.

To enable the Primus 14 to move at 100% of its top speed, the bike rider must generate about 150 watts of power. This is roughly the power required by an average refrigerator with freezer compartment to suit a four-person household. If more power is generated on the bike, the surplus is used to light two floor lamps placed next to it. The brightness of the lamps then depends on the amount of additional power supplied.



Clothes peg, manufactured with Airmould 4.0 internal gas pressure technology.

In addition to this application, Wittmann Battenfeld Polska will exhibit a Sonic 108 robot at the Plastpol. The robots of the sonic series have been optimized for maximum-speed parts removal in packaging and pick - and - place applications. They are designed for cycle times below 4 seconds.

Moreover, a Codemax RFID-coded coupling station including its M8 network control system will be shown. The latter prevents the supply of wrong materials to a processing machine caused by an operating error.

Wittmann Battenfeld Polska will also present a wide range of auxiliary equipment. The dryers to be shown include an Aton plus segmented wheel dryer, a compact dryer Drymax primus 60 - 150 and a Card 10S compressed air dryer. The Aton plus segmented wheel dryer combines a constant dew point with energy efficiency. It comes with the Wittmann drying wheel, many energy-saving functions, a touch - screen user interface and the Net5 system.

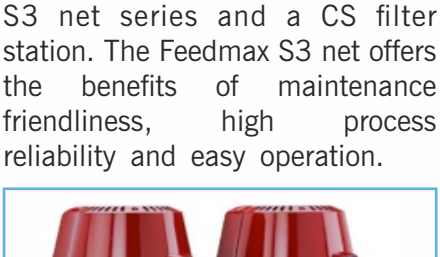
ErgoRobot application using a Primus 14 robot from WITTMANN with an R8 control unit.

This enables parameter setting and the administration of material loaders. The Drymax dryers are equipped with two desiccant cartridges, which deliver a continuous flow of process air with consistent drying air quality for perfect drying of plastic granulate. The compressed air dryers from the Card series are small and efficient. They are ideally suited for drying applications with low throughput rates.

As representative examples of temperature control technology, Wittmann Battenfeld Polska will show its appliance models Tempro primus 90, Tempro basic C120 and Tempro plus D140. The outstanding features of Tempro temperature controllers are reliability and easy operation. A small heat exchanger requires less circulating water, with the result of much shorter heating and cooling times.

In addition, the volumetric blenders Dosimax MC balance and Dosimax basic will be showcased at the Plastpol. The specific design of these blenders provides even, extremely accurate dosing of colorants. Together with the volumetric blenders, a Gravimax primus 14 gravimetric blender will also be on display.

From its materials handling equipment range, Wittmann Battenfeld Polska will present a Feedmax basic material loader, several units from the Feedmax S3 net series and a CS filter station. The Feedmax S3 net offers the benefits of maintenance friendliness, high process reliability and easy operation.



Feedmax S3 net

The range of exhibits is rounded off with granulators from the G-Max and S-Max series. The

models on display will be a G-Max 33 beside - the - press granulator and an S - Max 3 screenless granulator. G - Max granulators are energy - efficient and come with a small footprint as well as a sound - insulated cutting chamber. The S - Max granulators feature toothed rollers with low motor speeds (27 rev/min at 50 Hz) for efficient, low-cost granulating of engineering plastics as well as styrene, acrylic and fiberglass - reinforced materials.

Gravimax 14

Granulator S-Max 3

As an additional attraction, the sports car of Adam Zentner, a freelance employee of the company, will be exhibited at the booth of Wittmann Battenfeld Polska – the vehicle with which Adam Zentner won the Polish championship in Class D5 of the CEZ Circuit Endurance contest in 2022.

Icma San Giorgio, Five Lines for Re-compounding of Post-consumer Plastic Waste

In the last 6 months ICMA has successfully completed four installations, with a fifth due to come shortly, of recycling lines dedicated to re-compounding of post-consumer plastic waste, all equipped with high-performance co-rotating twin-screw extruders model ICMA **MCM 110** and **MCM 140** High Torque.

Lines are installed in 3 different sites located **in Europe** and owned by major plastic processors.

All projects comprise the engineering and subsequent construction, installation and start - up of **turn - key** lines dedicated to the recycling of polyolefin, either polypropylene or polyethylene, with different density and possibility to add fillers and/or modifiers depending on the single set - up.

The selected extruders have enhanced degassing systems for efficient extraction of contaminants. The high torque of the extruders also provides an optimal filling of the screw and therefore a maximum production output in the range **of 2 to 4 tons** per hour depending on size of extruders, filtering tasks and type and / or density of the scrap.

Single systems of the line are generally integrated into ICMA's control panel, and all cabinets have **remote control gates** for efficient post - sale service.

All lines are equipped with gravimetric dosing systems and with forced feeders, in its latest design and when appropriate, for light scraps, notably difficult to feed into the extruder.

ICMA's line with MCM 110 extruder during installation

Thermoregulation system is highly precise and is made following the strict standards used in engineering compounds where also square design for barrels is a must in modern extruders.

Filtration systems, depending on the setup of the different lines delivered, can achieve **80 microns** to guarantee maximum purity of the processed scrap with limited sacrifice for output range.

Underwater pelletizers are set at the end of each line, necessarily for big outputs.

“Sustainability and ESG policies are more and more driving processors to invest in advanced mechanical recycling “says **Giorgio Colombo**, MD at ICMA “our latest generation of co - rotating extruders combined with 50 years of experience as turn-key specialist in this field makes **ICMA the partner of choice** in this dynamic and challenging industry”.

CIRCULAR ECONOMY/ BIO-PLASTICS/ RECYCLING

Highlands Based Recycling Scheme Aims to Reduce Single use Cups

According to charity Keep Scotland Beautiful, around 200 million single use cups are used and discarded in Scotland every year. Only 4% of these are recycled.

To combat this, a new reusable cup scheme, Cup Movement in the Highlands, was launched by environmental charity Keep Scotland Beautiful.

A recent survey highlighted that 81% of people in the Highlands thought takeaway venues needed to do more to make it easier for people to buy and use reusable cups if they wanted to while 90% are concerned about the environmental impact of takeaway cups being littered.

In response the pilot reusable cup scheme has been developed in partnership with local businesses that sell takeaway drinks in the area around the NC500 route. The scheme uses App technology from cup system suppliers Vytal. 25 businesses have signed up to trial the scheme, running until Autumn 2023, with the aim to make it easy for people to make the switch from single - use cups to reusable ones for their takeaway drinks.

The process works like this:

- Download the Vytal app.
- Order your favourite brew.
- QR code from the customer and cup scanned.
- Return within 14 days.
- Repeat.

Catherine Gee, Deputy CEO of Keep Scotland Beautiful, said: "While the convenience of single use cups often wins over reusable options, they come at a cost, to our environment, and also for those businesses using them to sell their hot and cold drinks in.

"Single use cups are a classic example of the throwaway culture that we want to help change. Millions of single use cups are wasted every year, and we want to make reuse the norm. "Our planned trial of a reusable cup scheme in collaboration with NorthCoast 500, Zero Waste Scotland and Highland Good Food Partnership builds on the learning from our innovative Cup Movement® in Glasgow.

"I'd urge everyone to download the Vytal App and get drinking guilt free coffee."

Tara Jaffray, owner of Corner on the Square in Beauly, said: "We all have to take the chance to do our bit, and reduce waste at every given opportunity. As a new owner of a hospitality business offering takeaway, I am very conscious of the amount of single use cups we use. I am delighted to be taking part in this trial initiative and hope to educate and encourage as many customers as possible to join the Highland Cup Movement."

Cup Movement® in the Highlands is funded through the Bring It Back Fund, a £1.4million fund launched by long term partners UK environmental charity Hubbub and Starbucks.

Alex Rayner, General Manager at Starbucks UK, said: "We are really proud that Keep Scotland Beautiful is receiving funding for

such an important reuse initiative, and we look forward to seeing how their trial progresses. We've introduced an array of different reusable activations over the years to test and trial new ways to encourage reuse. Our latest work with Hubbub, the Bring It Back Fund, builds on our reusables work, aiming to find new ways to inspire people and our customers to choose to reuse. It is important for us as a company that we continue to drive industry - wide innovation, as we work to increase reusability and inspire greater reusables uptake in local communities across the UK. This forms part of our long - term goal to reduce waste and become a resource positive company."

ExxonMobil, Cyclyx, Sealed Air, and Ahold Delhaize USA Demo Advanced Recycling for Plastic Waste

In 2022, industry leaders ExxonMobil, Cyclyx International, Sealed Air, and Ahold Delhaize USA announced their intention to be the first in the United States to successfully launch a circular food packaging proof of concept leveraging advanced recycling. During a successful demo, plastic waste was collected from grocery stores, diverting it from landfills. Leveraging ExxonMobil's Exxtend™ technology for advanced recycling, plastic waste is broken down into its molecular building blocks and attributed through a mass balance approach to new plastic for food-grade packaging. This collaboration demonstrated that creating a circular economy is achievable with value chain collaboration. Following a viable test, the process is now being evaluated for scale.

- Circular solution for food packaging waste was first of its kind in the U.S.
- Flexible plastic waste from the food supply chain was recycled and attributed to ISCC PLUS certified-circular polymers used for new food - grade packaging
- First announced in April 2022, the project is now being evaluated for scalability Creating a circular economy for food contact plastic packaging in applications where there are strict safety and performance requirements is a difficult challenge facing the industry.

"This project helps demonstrate how Exxtend technology can widen the range of plastic materials that can be recycled while delivering certified - circular polymers with the critical performance attributes of virgin plastic," said Dan Moore, vice president, Polyethylene, ExxonMobil. "Advanced recycling is making the impossible possible and is an important enabler to support a circular economy." Ahold Delhaize USA brand Food Lion supported the initial pilot, collecting plastic waste for recycling at select store locations. With more than 1,100 stores across 10 states, Food Lion is one of the five brands that comprise the Ahold Delhaize USA network - the largest grocery retail group on the East Coast and the fourth largest in the nation. "Across Ahold Delhaize USA companies, we have ambitious goals around recyclable and reusable packaging," said Adam Springer, manager, Product Sustainability, Ahold Delhaize USA. "Based on the initial pilot, we're optimistic about being able to leverage this process at additional scale and look forward to exploring it further as part of this collaboration." Cyclyx, a joint venture between Agilyx Corporation and ExxonMobil, was responsible for sorting and pre - processing the waste packaging materials collected from the Food Lion stores, before delivering them to ExxonMobil's Baytown, Texas facility. "The interface between the Food Lion stores and the Baytown facility was critical and required an innovative approach to feedstock management," said Joe Vaillancourt, CEO, Cyclyx. "Part of our process is to identify the chemical composition of the waste plastics we receive. This allows us to create custom blends of post - use plastic feedstock that are tailored to the specifications required for advanced recycling." At the Baytown facility, Exxtend technology for advanced recycling is used to recycle the valuable end of life plastics and attribute them via mass balance accounting to certified - circular polymers. "The technology provides a reliable source to attribute to high - performance, certified - circular polymers," Moore said. "The resulting polymers, such as Exceed™ S, Exceed™ XP, Exceed™ and Enable™ performance polyethylene (PE), have the characteristics of virgin resins, which is critical for food - grade packaging." Sealed Air, which is leading the packaging industry by designing and creating high - performance packaging materials that can be remade, converts the certified - circular PE resins into food - grade flexible film that is used, in the case of this proof

of concept, to package select Nature's Promise fresh poultry. The packaging then returns to stores used on products purchased by customers, demonstrating an example of the circular economy. "By collaborating with suppliers and customers, we were able to identify, design, and commercialize an innovative flexible packaging solution which supports circularity," said Ron Cotterman, vice president, Global Corporate Affairs, Sealed Air. Leveraging ExxonMobil's existing manufacturing assets, Exxtend technology can be rapidly scaled to process a wide range of plastic waste. To help meet the growing market demand for certified - circular plastics, ExxonMobil plans to increase its annual advanced recycling capacity to 500,000 metric tons, or approximately 1 billion pounds, by year - end 2026 across multiple sites globally.

Nalgene Bottle Production Completes Conversion to Certified 50% Recycled Material

Nalgene Outdoor Has Completed the Conversion of its Reusable Water Bottle Manufacturing Process to Eastman's Tritan Renew.

Nalgene Outdoor announced that as of January this year, it had completed conversion of its manufacturing process for reusable bottles to Eastman's Tritan Renew, a certified 50% recycled material by the mass balance method of determination. Widely used to describe recycled content, the mass balance method involves tracking the amount of recycled material entering and leaving the production process and using these figures to calculate the average recycled content in the product.

Nalgene reusable water container. Photo Credit: Nalgene

The reusable bottles made with recycled material are expected to both replace single use bottles and help divert waste plastics from landfills. The process of converting to Tritan Renew, a copolyester, began in 2020. According to the company, it has re - purposed more than 2.35 million pounds of plastic waste since that time, and anticipates using 1.5 million pounds of recycled material each year now that the conversion is complete.

Nalgene bottles have been made using Tritan since 2008, when many brands switched away from using polycarbonate over public health concerns surrounding BPA content.

Nalgene Outdoor is based in Rochester, NY and owned by Thermo Fisher Scientific. The company sources and makes its bottles within the United States.

Industrial Validation of the Holygrail 2.0 Technology Marks New Milestone Towards Advanced Sortation

The Digital Watermarks Initiative Holygrail 2.0 Has Reached a New Milestone with the Successful Validation of the Digital Watermark Technology's Advanced Sortation Capability in an Industrial Environment, Delivering Positive Results Particularly in Relation to the Separation of Food and non - food Waste Streams. The Industrial Trials Took Place at the Wellman / Indorama Recycling Plant in Verdun, France, Using a Prototype Detection Module Developed by Machine Vendor Pellenc St and Digital Watermarks Technology Provider Digimarc, as Part of the Holygrail 2.0 Initiative.

This assessment focused on a PET waste stream, with two primary objectives - to remove watermarked non - food PET bottles from the stream to meet EFSA guidelines i.e to reduce non - food PET content in a food PET stream to less than 5%, and to create a non - food PET output stream.

Trial preparation

This industrial - level assessment, carried out in January and February 2023 under the supervision of the HolyGrail 2.0 technical team, built on the success of the previous Initiative's semi - industrial trials performed in 2021 and 2022.

5.6 tons of watermarked non - food PET bottles were produced, and then mixed with post - consumer waste at material recovery facility SUEZ in Epinal, France, to mimic typical waste workflows. Multiple fractions of

mixed waste containing around 200.000 watermarked bottles were created, baled, and shipped to the Wellman / Indorama recycling facility for sorting tests.

Execution and Objective Achievement

The trials were carried out on a fully operational line - equipped with the digital watermark detection module - working in standard operating conditions with nominal throughput of 3 tons / hour and belt speed of 3 metres / second. An NIR unit was also used in combination to assist with blowout.

Detection efficiency was 92.1%, while sorting efficiency was 88.3%, on average. For two - pass sorting, the detection and sorting efficiencies were 95.9% and 95.1% respectively.

Solar Reactor Converts Carbon Dioxide and Plastics into Sustainable Fuels

To solve plastic and carbon dioxide pollution, we cannot scrub a magic lamp or deploy magic wands – neither Alexa nor Google can lend a hand yet. Science is at odds with magic, but its discoveries often have a fascinating factor within them. A new system for processing both plastic waste and CO2 at the same time is one of them.

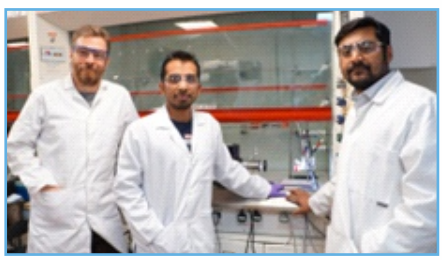
Scientists at the University of Cambridge developed a solar reactor that can transform greenhouse gases (GHG) and plastic waste into sustainable fuels and chemicals, using sunlight as the only energy source. During the testing phase, plastic bottles became glycolic acid, and Co2 was turned into syngas. This is a synthesis gas, a mixture of hydrogen and carbon monoxide that is the basis for generating other liquid fuels, polymers, and pharmaceutical products.

The research was conducted in the Reisner Lab at the Yusuf Hamied Department of Chemistry, of the British university. Professor Erwin Reisner is the paper's senior author, with Ph.D. scholar Subhajit Bhattacharjee and Dr. Motiar Rahaman as the co - first authors of the study.

“In conventional processes, converting CO2 - either through electrochemical or photoelectrochemical reaction - usually means obtaining oxygen only through a counter - reaction. Our process allows oxidizing plastic into a valuable chemical for the pharmaceutical industry. “All of this with only sunlight as an energy source,” Rahaman explained.

Processing CO2 and plastic at the same time

The solar reactor has two compartments, one for processing plastic and one for greenhouse gases. An ion - exchange membrane separates the two chambers, which can operate simultaneously. A solar cell generates photovoltage upon sunlight irradiation powering the reaction. The system can perform even with lower light intensity. At the moment, the mini reactor can process pre - treated polyethylene terephthalate (PET) plastic. It means that plastic that has previously undergone chemical treatment. Regarding GHG, these can be captured directly - from industrial plants exhausts, for instance - to then be conveyed inside the reactor. Additionally, given the compartmentalization, the two output streams are separated, and there is no mixture of products. In the future, researchers envision processing any kind of polyester plastic.



Flexibility and tuneability

Yet, to make the reaction happen, there is the need for a catalyst – the element that accelerates or initiates a chemical reaction. Within the Cambridge system, it is up to it to transform the two waste streams into valuable products. The device's design allows for flexibility and tuneability. The catalyst can be changed, to obtain different outcomes. Equally, the solar module can be adjusted to keep the best performance as the catalyst is switched.

“By changing the catalyst, the device can be tuned to produce different outputs,” explains Bhattacharjee. The scientists experimented with three catalysts, and each one of them generated different products. First,

amolecular catalyst - a chemical molecule - converted CO2 into carbon monoxide. Second, a bimetallic alloy produced syngas selectively. Third, a bio-catalyst - an enzyme - transformed carbon dioxide to formate - a liquid energy carrier.

Getting the most out of sunlight

Another key element of the system is the device's light absorber, made with perovskite materials. These represent an alternative to silicon solar cells. After years of research, they are demonstrating increasing solar yields. Furthermore, they can be manufactured with cheaper raw materials. In the case of the Cambridge research group, silicon could not be a suitable option for overshooting reasons. When an overshoot occurs, it means that a signal or a function exceeds its target. By contrast, perovskite represents the best option to bring the reactor into a range to allow carbon dioxide and plastics conversion.

Yet, the researchers do not exclude using silicon in future versions of the solar reactor. “Overshooting can be overcome in the future and larger scale development by having multiple batch reactors in line is possible. Besides, perovskites have a good absorption rate in the visible light region, allowing maximum utilization of the available solar energy,” explains Bhattacharjee.

What's more, the solar module can work with lower light levels. Cloudy days do not compromise its functioning.

AMP Robotics Unveils new AI-enabled Automated Sortation Solution, Introduces Integrated Facility Offering for new Recycling Infrastructure.

AMP Cortex™- C is a compact version of AMP's industry - leading AI - guided robotics system that adapts to space constraints and brings the company's proven AI expertise and robot technology to more facility locations. Cortex - C is a small - footprint, easy - to - install robot designed to provide MRFs and plastic reclamation facilities (PRFs) with a consistent, reliable sortation solution for tight locations that are hard to staff or where existing labor could be redistributed.

“As demand for automation in the waste industry continues to grow, we've expanded our capabilities to provide customers with solutions for both new and existing recycling facilities alike,” said Matanya Horowitz, founder and CEO of AMP Robotics. “We've gained invaluable experience from developing best - in - class technology and deploying hundreds of systems globally, and the modern recycling infrastructure we're creating through retrofit solutions and facility expansion is helping more economically recover valuable commodities and increase recycling rates.”

New Compact Robotic Sortation Solution

AMP Cortex™- C is a compact version of AMP's industry - leading AI - guided guidedis a compact version of AMP's industry - leading AI - guided robotics system that adapts to space constraints and brings the company's proven AI expertise and robot technology to more facility locations. Cortex - C is a small - footprint, easy - to - install robot designed to provide MRFs and plastic reclamation facilities (PRFs) with a consistent, reliable sortation solution for tight locations that are hard to staff or where existing labor could be redistributed.

Cortex - C leverages AMP's proven robot technology and gripping innovation, unmatched AI for object recognition, and patented control software consistent with AMP Cortex™ units. The system shares the robustness, reliability, and experiential learning of AI gained from a global fleet of more than 300 installations and fits into additional locations to expand sortation points and material recovery within facilities.

“The expertise we've built in recycling technology has enabled us to expand where and what we can sort so we can bring the benefits of AI - driven automation to more locations in more facilities,” said Jeremy Neigher, general manager of AMP's technology solutions group. “We're committed to innovating so we can deliver the latest advancements in AI and automation to our customers to increase their profitability and improve their bottom line.”

Cortex-C is adaptable to an array of conveyor belt sizes, angles, and configurations, without the need for costly retrofits or downtime. AMP completes installations over the course of a weekend with on - site support. Cortex - C shares parts and components with the standard Cortex system, with similarly

minimal service expectations to streamline the fleet within a facility. Like AMP's other solutions, Cortex - C is backed by the company's dedicated service and support teams.

Scientists Discover Backyard Fungi that can Break Down Tough Plastic in Just 140 Days

Almost a third of the world's plastic waste is polypropylene, a hardy plastic used to make bottle caps and food containers that can take hundreds of years to degrade. But now, scientists have harnessed two strains of fungi found in soils to break down lab samples of polypropylene in just 140 days.

The team of Australian scientists behind the study, led by graduate student Amira Farzana Samat, have described their work as an "important stepping stone" in designing practical biological ways to treat plastic waste.

"It's the highest degradation rate reported in the literature that we know [of] in the world," University of Sydney chemical engineer Ali Abbas told the Australian Broadcasting Corporation's technology reporter Danny Tran.

While it might be a speed record for fungi, plastic - munching bacteria recently discovered in a compost heap have been able to break down 90 percent of PET, or polyethylene terephthalate, in just 16 hours. But a bit of healthy competition is good; that's how evolution works.

More than 400 microorganisms have so far been found to degrade plastic naturally, with fungi attracting a fair bit of attention for their versatility and ability to degrade all sorts of synthetic substrates with a powerful concoction of enzymes.

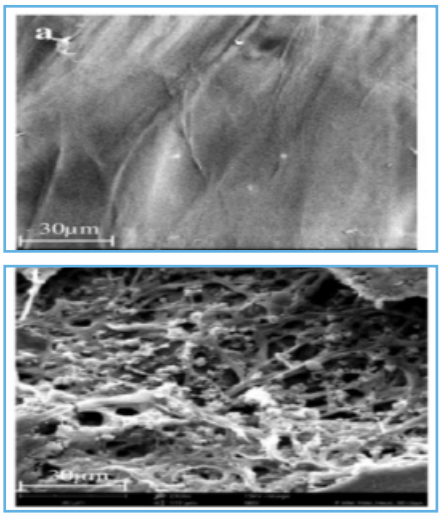
"Recent studies suggest some fungi may even degrade some of the 'forever chemicals' like PFAS, but the process is slow and not yet well understood," explains microbiologist Dee Carter of the University of Sydney.

On a basic chemical level, plastics are a string of carbon atoms adorned with different side chains that give each type of plastic its specific properties. Recycling plastics, in theory, should be as easy as picking apart the repeating subunits that makeup plastics and reassembling them into something new. But there are so many different types of plastics that when all sloshed together and mixed with other materials as waste, they are practically impossible to separate and recycle. Most plastic waste is either incinerated or dumped into landfill.

"We need to support the development of disruptive recycling technologies that improve the circularity of plastics, especially those technologies that are driven by biological processes," says Abbas. Lab experiments showed that together, the two fungi could decompose granules and thin films of polypropylene, along with aluminum - coated polypropylene sheets.

While the researchers don't yet know how exactly the fungi digested the plastic – that could be the focus of future research – the thinking is that fungi degrade materials like plastic into simpler molecules that they can then absorb or excrete.

As you can see in the image below, the usually smooth plastic became riddled with pockmarks as the fungi did their dirty work.



The method requires a pre - treatment step with either UV light, heat, or a chemical reagent, to weaken the waste material so the fungi can attack. This step mimics the environmental conditions necessary for fungi to latch onto and pry open plastics and is designed to make the degradation process more efficient.

Abbas says their method could be scaled up like any fermentation process but adds that his team has not yet optimized the experimental conditions for working at industrial scales. The method is also no substitute for efforts to reduce plastic waste, he says.

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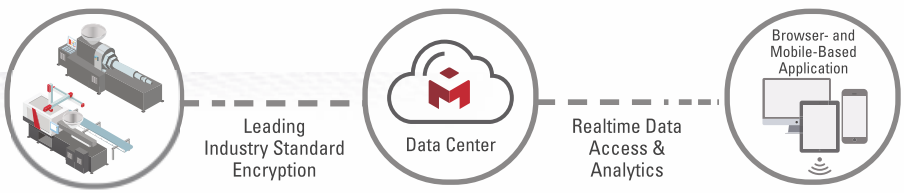

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