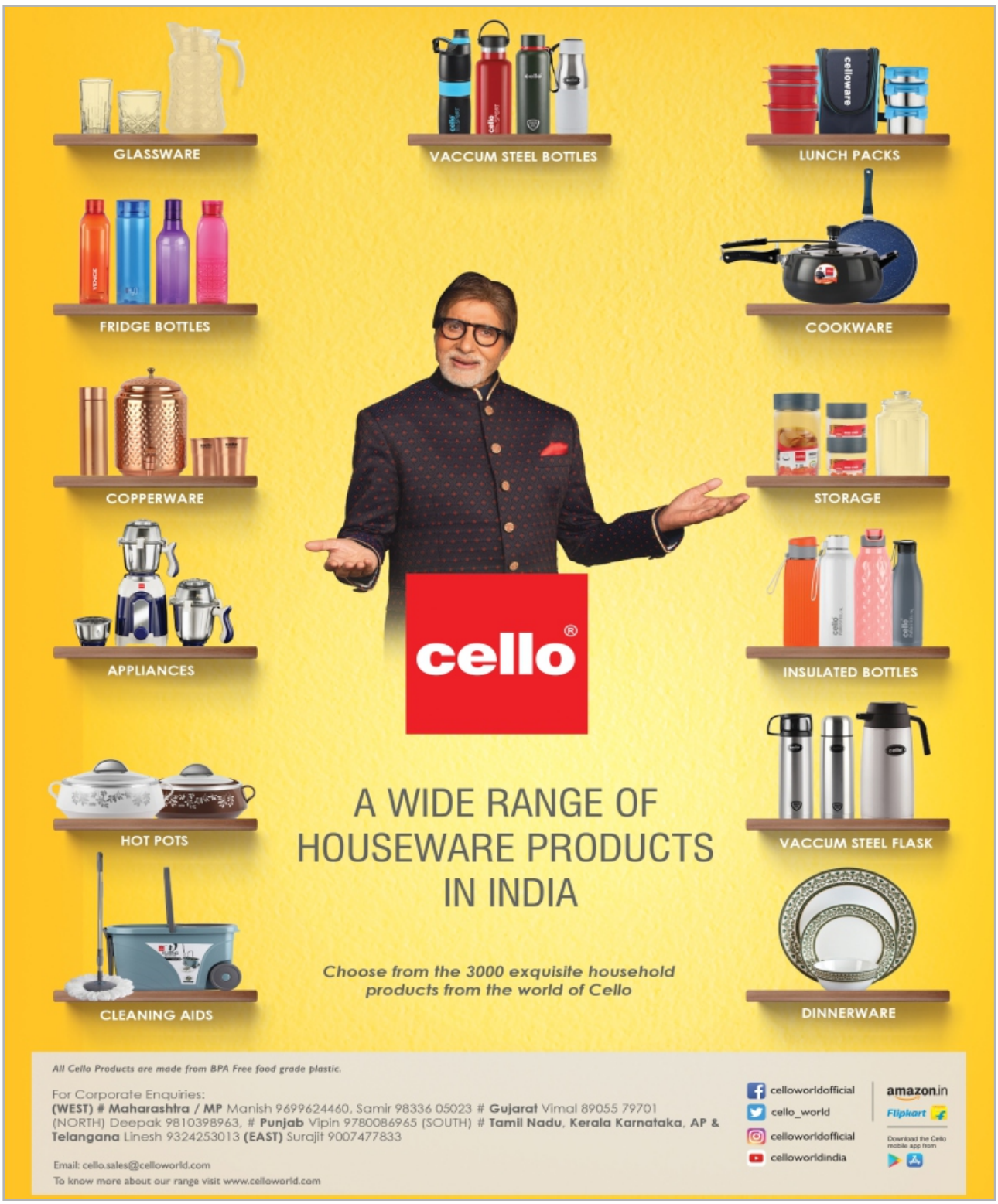
R.N.I. No. MAHENG/2012/45652

PLASTISCOPE

The Official Journal of the Organization of Plastics Processors of India

Volume No. 12 • Issue No. 06 • Mumbai • December 2023



STEER

SHEAR CONTROL. SHEER BRILLIANCE.

DISCOVER A NEW WORLD OF COMPOUNDING INNOVATION AT STEERWORLD.COM

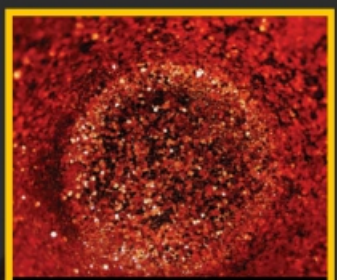
STEER's advanced platforms come with patented task-oriented special elements that provide better control over shear, kneading and stirring. They deliver superior quality, process efficiency and open up a world of new possibilities with their ability to handle shear-sensitive and other difficultto- manage materials.

STEER's OMEGA 1.71 Do/Di high volume, high torque, intelligent processor is perfect for shear-sensitive and low bulk density materials.

COLOURS

AUTOMOTIVE LIGHTWEIGHTING

HIGHLY-FILLED MASTERBATCHES



EFFECT PIGMENTS

BIOMATERIALS

NATURAL FIBERS

STEER's MEGA SPECIAL 1.55 DO/DI co-rotating twin-screw extruder is perfect for colours, legacy engineering thermoplastics, blends and high volume manufacturing.

For more information write to sunil.dutt@steerworld.com or call 99001 01518

FROM THE PRESIDENT's DESK

Mr. Dilip Parekh

OPP

CONTENTS

Dear Members,

Greetings from Organization of Plastics Processors of India!

I am interacting with you as we are on the verge of saying "Goodbye" to 2023 and Welcoming 2024. I take this opportunity to wish you and your families a Very Happy, Prosperous, Peaceful and Healthy 2024.

Our Country is on the cusp of becoming third largest economy in the world. Of course this depends on the productivity of each one of us!

A few days back the following advertisement caught my attention:-

The Upcycling of Plastic Waste into Useful Products will certainly be a boon to the entire global Plastics Processing Industry. Upcycling plastics reduces the amount of waste that gets to landfills. Most plastics contain chemicals that cause soil degradation and water pollution. Upcycling plastics helps to support local businesses and industries and help entrepreneur in waste management.

I appeal to all OPPI members to upcycle the Plastic Waste and reap the benefits.

With Best Wishes,

Dilip Parekh
President

Printed, Published and Edited by:
DEEPAK LAWALE on behalf of **ORGANIZATION OF PLASTICS PROCESSORS OF INDIA,** Printed at **DESIGN WORLD CREATIONS,** Unit No. 204, A-Wing, Suashish IT Park, Off. Dattapada Rd, Borivali East, Mumbai - 400 066 and Published from ORGANIZATION OF PLASTICS PROCESSORS OF INDIA, 404/405, Golden Chambers, New Link Road, Andheri (West), Mumbai 400 053.
Editor: **DEEPAK LAWALE**

YIZUMI | HPM

SKIII Series Advance Injection Molding Machine

SKIII Series

New machine model Introducing in India




More effective

- Improved injection speed
- Improved plasticizing effect
- Shorter cycle time

More stable

- New clamping technology enhancement
- Injection unit structure and plasticizing components

More energy-saving

- New hydraulic circuit design
- Optimized structure of the injection unit for lower resistance and higher energy efficiency
- Upgraded servo system for higher energy efficiency

Further improved applicability

- Offer more specifications, more power, faster response, and more precise stage control. Wider range of product and raw material applications.

YIZUMI PRECISION MACHINERY (INDIA) PVT. LTD.

Address: Plot No.1062 – 1063, Sanand G.I.D.C. ,Phase – II, SANAND -382170, Ahmedabad

Tel: +91 90999 06175 Email: info.india@yizumi.com Web: www.yizumi.com

OPP
Organization Of
Plastics Processors Of India

IPF Bangladesh

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

24th - 27th January, 2024

Venue : Int'l Convention City Bashundhara (ICCB)

Organizers : Yorkers Trade & Marketing Service Co., Ltd.
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]

✱ **Corner fee: Surcharge 10 %**

✱ **The prices above exclude VAT by 5%**

Shell Scheme: USD$ 320/sqm (Min.9sqm=3m x 3m= 9 sqm) = USD$2790
9 sqm including : carpeting, 3 folding chairs, 1 lockable counter, 1 round table, 3 spot lights, 1 waste basket, wall partitions, fascia name, one 5-AMP power point

Bare Space: USD$ 290/sqm

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

: 404/405, Golden Chambers,
New Link Road, Andheri (West),
Mumbai - 400053.

: secretarygeneral@oppindia.org
: www.oppindia.org

: +91 22 66923131
: +91 9322591715

Organization Of Plastics Processors Of India

OPP

PLASTPOL

28th International Fair of Plastics & Rubber Processing
21st to 24th May 2024, Kielce, Poland.

The International Fair of Plastics and Rubber Processing PLASTPOL is Central and Eastern Europe's largest event for the plastics processing industry

The expos bring together leading Polish and international market companies; they showcase the latest solutions for plastics and rubber processing. Plastpol is much more than the offer of over 600 companies from 29 countries. There is also an immense dose of knowledge, conferences, discussion panels, seminars and networking meetings. Over the years, Plastpol has become the best platform for establishing relationships, and presenting premiere solutions and technologies. This is the right place for exchanging knowledge and signing international contracts and agreements.

7	600	29	15000
EXHIBITION HALLS	COMPANIES	COUNTRIES	VISITORS

Participation Fees:

- Open Area Indoors:- 530 PLN per sqm
- Extra Charges:- 15% extra for Corner Stall (2 sides open)
- 20% Extra Charges for 3 sides open, minimum 40 sqm.
- 25% extra charge for island (4 sides open) minimum 81 sqm.
- Registration Fees 620 PLN.
- Standard Stand Construction 105 PLN per sqm.

The Exhibitor can have stand construction made by an external company. Targi Kielce can prepare the complex stand and the price will be as per the design.

Page 1 of the Application Form, Brochure are attached herewith.

Please fill up the contract form attached herewith and Email scanned copy of filled Application form to **secretarygeneral@oppindia.org;**

DEEPAK LAWALE, SECRETARY GENERAL
ORGANIZATION OF PLASTICS PROCESSORS OF INDIA
404/5, Golden Chambers, New Link Road, Andheri (West), Mumbai - 400 053 INDIA
Tel: +91-22-66923131/32 **Email:** secretarygeneral@oppindia.org **Web:** www.oppindia.org

OPP
Organization Of
Plastics Processors Of India

ORGANIZATION OF PLASTICS PROCESSORS OF INDIA

37 YEARS OF SERVICES TO PLASTICS INDUSTRY

SERVICES OFFERED BY OPPI

Deepak Lawale, Secretary General
ORGANIZATION OF PLASTICS PROCESSORS OF INDIA,
404/5, Golden Chambers, New Link Road, Andheri (West), Mumbai – 400053.
Tel: +91-22-66923131 / 66923132 | Fax: +91-22-26736736 | Email: secretarygeneral@oppindia.org | Website:- www.oppindia.org

OPP
Organization Of
Plastics Processors Of India

The 36th International Exhibition on Plastics and Rubber Industries

Chinaplas 2024

Chinaplas
国际橡塑展

The 36th International Exhibition on Plastics and Rubber Industries

CHINAPLAS 2024 - April 23-26, 2024 at National Exhibition and Convention Center (Shanghai), PR China.

SPECIAL DISCOUNT FOR BOOKINGS THROUGH OPPI

Coming up next is CHINAPLAS 2024 - The 36th International Exhibition on Plastics and Rubber Industries - to be held at National Exhibition and Convention Center (Shanghai), PR China from 23rd to 26th April 2024.

In CHINAPLAS 2024 it will once again be an important event on the industry's calendar and the starting point for decisions that shape future products, processes and solutions.

Organization of Plastic Processors of India has tied up with Tibro Tours Pvt. Ltd. for CHINAPLAS 2024 packages. All Companies booking Tibro Packages CHINAPLAS 2024 through Organization of Plastic Processors of India will be eligible for discount.

Please find attached herewith Tibro's Standard Launched packages based on hotel options. Kindly write to us to secure your travel arrangements on confirmed basis.

Deepak Lawale, Secretary General,
Organization of Plastics Processors of India

404/5, Golden Chambers, New Link Road, Andheri (West), Mumbai 400053 INDIA

+91 9322 591 715 | +91-22-66923131/32 secretarygeneral@oppindia.org www.oppindia.org

NEWS FROM INDIA

Weak Short-Term Demand Raises Concern about India's Petrochemical Capacity Additions

The Indian petrochemical industry is planning to add massive production capacities of both polyethylene (PE) and polypropylene (PP) based on expectations of a rebound in long-term demand from both domestic and international markets. If implemented according to schedule, these capacity additions will not only reduce India's dependence on imported petrochemicals but also create an oversupply, leading to price pressure in the near term.

According to reports, India plans to add 2.4 million metric tonnes per annum (MMTPA) of new PE capacities and 3 MMTPA of new PP capacities in the next three years. HPCL-Mittal Energy Ltd, a joint venture between state-run HPCL and the private company Mittal Energy, is preparing to commence commercial production on its 450,000 tonnes per annum of high - density polyethylene (HDPE) project, in addition to 800,000 tonnes per annum of linear-low density polyethylene (LLDPE) and HDPE capacity. Russia - backed Indian refiner Nayara Energy is working on a strategy to commercialize 450,000 tonnes per annum of PP production capacity by this month's end.

India's petrochemical production ('000 tonnes)

Categories	FY 2022-23	FY 2021-22	Variations (%)
Synthetic fibre	4,006.38	4,040.01	(-)0.83
Fibre intermediate	4,988.03	5,481.67	(-)9.01
Polymers	11,486.62	12,470.65	(-)7.89
Synthetic rubber	344.86	382.63	(-)9.87
Synthetic detergent intermediates	703.02	780.39	(-)9.91
Performance plastics	1,960.16	1,697.68	15.46
Olefins total	11,296.05	12,527.02	(-)9.83

The government-owned Hindustan Petroleum Corporation Ltd (HPCL) proposes to commence two separate projects of LLDPE/ HDPE production with capacities operating at 550,000 tonnes per annum each in 2024.

Additionally, Hindustan Petroleum Corporation Ltd is commencing 1 million tonnes of PP project in 2024. Chennai Petroleum and Indian Oil Corporation have decided to commercialize their PP production capacity of 475,000 tonnes per annum and 450,000 tonnes respectively this year itself.

Indian Oil Corporation has yet another project of 200,000 tonnes per annum scheduled for commercialization in 2025. The public sector GAIL India has also proposed to commence a 500,000 tonnes per annum of PP plant in 2025. Additionally, Haldia Petrochemicals' PP plant with a cumulative capacity of 900,000 tonnes per annum is expected to come on stream in 2028.

"India's current petrochemical demand remains weak, which, we believe, will be temporary. However, producers are expecting a robust longer-term demand due to strong economic growth in India. Unfortunately, China's housing sector slowdown pulled down the country's petrochemical demand despite a marginal recovery in the downstream products and eventually an increase in industrial activity. Overall, the additional output coming in from these expanded capacities is all set to create an oversupply, albeit temporarily," said a senior official with a large petrochemical producer.

India's aggregate petrochemical demand

Financial year	Demand (million tonnes)	Demand growth (%)
2024-25(f)	61	7.02
2023-24(f)	57	7.54
2022-23	53	8.16
2021-22	49	13..95
2020-21	43	(-)8.51
2019-20	47	7.00

Robust Long-Term Demand

India's petrochemical demand is projected to rise by 7.5 percent, reaching a record high in the current financial year 2023-24. This growth is attributed to the forecast of robust economic growth fuelled by the government's massive infrastructure spending and the resurgence of post-pandemic consumer activities. After contracting in the financial year 2020-21 due to pandemic-related disruptions in factories and trade, India's petrochemical consumption rebounded and outpaced the growth of the gross domestic product (GDP).

According to a report, India's petrochemical demand is expected to reach 57 million tonnes per annum (MTPA) in the financial year 2023-24, compared to 53 MTPA reported in the previous financial year. In the financial year 2024-25, India's petrochemical demand is forecasted to remain at 61 MTPA. This growth projection signifies an increase in the consumption of petrochemical value chains in the future and a healthy growth rate for the industry.

New start-ups

Company	Grade	Capacity ('000 tonnes)	Commencement
HPCL-Mittal Energy Ltd	HDPE	450	2023
Nayara Energy	PP	450	2023
HPCL-Mittal Energy Ltd	LLDPE/ HDPE	800	2023
Hindustan Petroleum Corporation Ltd	LLDPE/ HDPE	550	2024
Hindustan Petroleum Corporation Ltd	PP	1,000	2024
Chennai Petroleum	PP	475	2024
Indian Oil Corporation	PP	450	2024
Indian Oil Corporation	PP	200	2025
Gas Authority of India Ltd	PP	500	2025
Haldia Petrochemials	PP	900	2028

Except for a significant contraction in the financial year 2020-21 due to a slowdown in industrial activities, the overall demand for India's petrochemicals and raw materials has consistently surpassed the country's economic growth. According to the recently released report titled 'Indian Petrochemical Industry 2023', India's petrochemical demand declined by 8.5 percent to 43 MTPA in the financial year 2020-21, compared to 47 MTPA in the previous year. India's National Statistical Office (NSO), under the Government of India, reported a GDP de-growth at (-)6.6 percent (revised from -7.3 percent earlier) for the financial year 2020-21, in contrast to the 4 percent growth recorded in the previous financial year.

Following the de-growth, India's petrochemical demand gained momentum in the financial year 2021-22, driven by an overall economic recovery and a resurgence in factory activity. As the pandemic's impact subsided, primary petrochemical and derivative resumed their business activities, coinciding with the recovery in consumer demand. Since then, India's petrochemical demand for gas consistently surpassed the growth of the country's economic growth.

Consumption - Centric Growth

The report also highlighted that the demand for products in the petrochemical value chain in India is expected to accelerate simultaneously. Polyolefins are projected to witness a growth at 7.7 percent, while surfactants and synthetic rubber are expected to record phenomenal growth rates of 6 percent and 6.1 percent respectively, in the financial year 2023-24. Other key petrochemicals, according to the CPAI report, may also experience a growth of 9 percent in the financial year 2023-24.

The leading industry body representing the entire petrochemical industry in India further asserts that the vision for the next five years for this sector is to achieve investment - led growth, primarily driven by the private sector. To accomplish this objective, the government is diligently working on policies to attract investment from both domestic and foreign sources. The work plan includes further liberalizing the direct investment (FDI) policy, simplifying labour laws, enhancing the ease of doing business, implementing power sector reforms, and last improvement in banking, insurance, and pension sectors.

Apart from these, the government's ongoing efforts to promote economic development in India are the main factor influencing the expansion of the petrochemical industry. The government implemented several initiatives to improve the industry's overall competitiveness, quality, and output. Initiatives such as 'Make in India', the 'Aatmanirbhar Bharat', and the 'Production - linked Incentive (PLI) Scheme' have been implemented to attract domestic manufacturing and facilitate exports.

Meanwhile, the industry has taken several measures to promote growth with the introduction of innovative products. These include mandatory standards set by the Bureau of Indian Standards (BIS), public procurement policies for chemicals and petrochemicals, schemes for establishing plastic

parks, and adequate support for research and innovation through the establishment of centers of excellence. All these policy initiatives, along with the low cost of manufacturing capital goods and manpower, and the overall demand scenario, are boosting business confidence to plan larger petrochemical complexes in India.

With substantial capacity additions planned in both primary production and end - product consumption, the Indian petrochemical industry could witness the implementation of new projects worth approximately US$144 billion (over Rs 10 lakh crore) as the country seeks to bridge the gap between the shortage of domestic supply and the increasing consumer demand.

Vision 2040

India's annual petrochemical consumption is likely to increase to 80 MMTPA by 2040, forcing the country either to invest immensely in building new capacity or increase imports. Population growth, development, and economic expansion are set to drive the demand. Presently, as Asia's third-largest economy, India annually consumes around 57 MMTPA of various grades of petrochemicals, with the per capita consumption standing at a third of the global average.

Source: Polymer Update

Marico Innovation Foundation Plans to Promote Innovation in Plastics Sector

Marico Innovation Foundation (MIF), founded in 2003 by Marico Ltd's chairman Harsh Mariwala,

mainly to nurture innovation across business and social sectors, is looking at the potential and possibilities of innovations in the plastics sector.

MIF's CEO Suranjana Ghosh told businessline in an online interaction that the foundation has identified plastics as a sunrise sector. "We (Marico) are a consumer company that uses a lot of plastic. We want it to be part of the solution and not just the perpetrators of the problem. So we worked with the Indian Institute of Science and Praxis Global Alliance to come up with a report or playbook called the potential and possibilities of plastic," she said.

Waste Management

The report focuses on the entire plastics waste management value chain and the solutions to be able to mitigate those problems. "As part of that in the playbook, we have actually identified 15 different innovative start-ups in India that are using innovative technology to be able to solve the plastic problem," she said.

Whether it is in terms of reuse or reduction or recycling or alternate materials, these 15 innovators cover that broad spectrum, Ghosh said, adding that the report was made public in January this year with MIF focussing a large part of this year's activities on it. MIF is of the view that it will be able to mentor market access, a level of funding support and special projects where it will be able to deploy technologies.

Creating Alternatives

"We have technologies that are as diverse as AI-based waste sorting systems, which can actually sort waste at the speed of six tonnes per hour. And because it's ERP, it can identify brands by colour. It's a 2D and 3D - based technology," she said.

It is fast making the entire process of sorting efficient, which is currently a big problem. Then, there is Padcare, which basically recycles sanitary napkins into corporate products such as stationery items.

"We are trying to see how we can build more of these collection centres. There is another company that basically uses industrial waste plastic and converts it into construction materials. So, these technologies extend the shelf-life of plastic and prevent them from getting into the landfill," Ms. Ghosh said.

Another start-up is creating plastic alternatives from seaweed, cultivating a variety that will be able to provide alternative packaging material.

Roping in Corporates

The foundation will likely begin the third phase of this in January 2024. "It is a circularity project that we are really hoping will solve the plastic issue in either tier-II and III cities. We are currently in the process of evaluating which one to go for," the CEO said.

MIF is trying to rope in corporates for this. It has literally reached out to most of the corporate firms. “For example, a lot of restrooms across the country have sanitary napkin collection boxes. McDonald's has expressed interest in placing such boxes in its restaurants. If that happens, Padcare will be able to get a lot of material,” she said.

MIF, which onboards early stage start-ups at threshold levels of ₹70 lakh to ₹1 crore until they become “Soonicorns”, is looking to help start-ups that have a societal impact in creating either livelihoods or mitigating some sort of environmental problems.

Zero Equity Support

“Our process is rigorous and the definition of innovation is watertight. We're looking at something which is first of its kind, unique in its category with the technology being backed by science and should be difficult to replicate at least for another one,” Ghosh said.

The nature of support that the foundation offers is mentorship with zero equity. “It's beyond capital as we work on everything that we would have identified as a challenge for that particular entrepreneur,” she said.

Each challenge that MIF would have identified in agreement with the start-up takes between six and eight months to close before it moves on to the next one. “We allocate a very specific domain expert mentor either from the vertical universe or externally so that they're able to then handhold the entrepreneur and give them a very bespoke sort of solution to being able to overcome the challenges that they're facing,” the foundation's CEO said.

CSR Partnerships

MIF, a philanthropic organisation, has created two unicorns so far — S4S technologies and Atomberg. “Both of these hit the ₹100-crore mark while we were mentoring them. S4S created a dehydration technology inventing new food processing machines for farmers' use. It helped create about 400 women micro-entrepreneurs in the agri space,” Ghosh said.

The foundation is looking at partnerships with leading corporate social responsibility arms, who are also first in the agri domain. “We have never worked in a partnership - based model before. So this is again a first for us,” the CEO said.

MIF is building a network of last-mile delivery organisations, including Farmer Producer Organisations so that it can provide its innovators access to markets — small and marginal farmers. “We understand that in order to create more demand for the innovators products, we need to be able to fortify the market access aspect as well,” Ghosh said.

Exciting Innovations

MIF is exploring partnerships with other agri focus network groups to attract more innovators. “Agri will become more sub-sector focused. We want to shortlist a few crucial sub-sectors from a food security standpoint or technology standpoint of view. We plan to take these up in the next financial year,” the CEO said.

The foundation is getting a lot of information on niche sub-sectors but it wants to see which needs its support and how it can scale them up. One of the exciting innovations is by a firm start-up called Greenpod, which has come up with patented sachets that extend the shelf-life of fruits and vegetables. “This at a fraction of the cost of any cold storage solution. The sachet activates a defence mechanism slowing the ripening process and minimising microbial attacks. No toxic chemicals are involved in this and there are no emissions,” Ghosh said.

Such solutions will help tackle the cold storage infrastructure issue. “Even if you have cold storage that runs on renewable energy, you don't have that infrastructure across the country which is why almost 30-35 per cent of all produce in the country is going to waste,” she said.

Agri Polymer

Then, there is another start-up UrbanKisaan, which does hydroponic systems and high-yield farming in urban settings with minimum water, she said, adding that it has entered into a joint venture with an Oman-based institution to scale up production.

Another promising firm is EF Polymer which has developed an agriculture polymer that absorbs water 100 times its weight. This helps the water retention capacity of the soil. It improves soil fertility and reduces leaching of nutrients, Ghosh said, adding that the company has begun supply to the US, which is proof of its potential.

Source : Popular Plastics and Packaging

Navitas Alpha Renewables Raises INR 70 Million in Seed Round to Accelerate Sustainability in India

- The company will use these funds to further invest in R&D and product development.
- This round was led by Niveshaay with participation from Madhusudan Sarda, IVY Growth Associates, and others.

Navitas Alpha Renewables Private Limited (NARPL), a solar EVA manufacturer and a subsidiary of Navitas Solar, has raised INR 70 million in its seed funding led by Niveshaay (Investment Advisors) with participation from Madhusudan Sarda, IVY Growth Associates, and others.

NARPL is a joint venture between Navitas Green Solutions Private Limited and Alpha Plastomers Private Limited. It is strategically positioned to leverage strengths from one of India's leading solar module manufacturers and a major participant in the plastic packaging industry.

The fresh funds will be invested to add incremental capacity and strengthen the company's R&D initiatives. The company will also use part of the capital to ramp up its testing capabilities and improve its product's value proposition. At the same time, NARPL will also work on new products like POE encapsulants to gain an edge in the industry. **Commenting on the successful fundraising, Akshay Agarwal, Director of NARPL, said**,"It is a privilege to have the support of such strong and like-minded investors at this early stage of NARPL's journey. With the backing from Niveshaay, in addition to our existing investors, we are well on our way to capitalizing on the opportunity and becoming an industry leader."**Commenting on the investment, Arvind Kothari, Founder of Niveshaay, said**, "Given the enormous potential of the renewables sector and the NARPL team's relentless pursuit of success, this investment seems an ideal way to support India's transition to sustainable energy. We at Niveshaay are excited to help the NARPL team take advantage of the growing solar opportunities in the country." NARPL recently signed an MOU and entered into a technical partnership with a domestic EVA line manufacturer. It allowed the company to co-develop an exclusive low-cost, higher efficiency manufacturing technology than current alternatives. This leg-up, together with its R&D investments, will help the company grow in the future.

About Navitas Alpha Renewables Pvt Ltd (NARPL)

Navitas Alpha Renewables Private Limited (NARPL) is a joint venture between Navitas Green Solutions Private Limited (Navitas Solar) and Alpha Plastomers Private Limited (Alpha Group). The company manufactures EVA encapsulant films, a critical input in solar module manufacturing, and markets them under the brand "EVO FCP". With its foray into manufacturing in 2020, the company is now a preferred supplier to solar module manufacturers and an integral part of India's burgeoning renewable energy industry. The company operates a manufacturing facility in Gujarat, India, located at Hojiwala, Surat with an aggregate installed capacity of 600 MW, as of June 30th, 2022

Source: Navitas Solar

Indian Manufacturing Market has the Potential to Reach US$ 1 Trillion By 2025 - 26

The manufacturing sector in India has been witnessing a proliferating growth in investment, depicting crucial phase in the country's economic arena. As per the published dossiers by the Department for Promotion of Industry and Internal Trade (DPIIT), manufacturing sector engrossed substantial Foreign Direct Investment (FDI), with FDI equity inflows tallying around USD 17.51 billion in the FY 2020-21 itself. This surge emphasizes intensified investor confidence and exhibits India's attractiveness as one of the most lucrative manufacturing destinations in the world, as per Colliers India.

The 'Make in India' initiative, a government-led campaign aimed at encouraging domestic manufacturing, has played a pivotal role in accelerating investments. Furthermore, policy reforms and incentives, comprising of the Production Linked Incentive (PLI) scheme, the government has pro - actively incentivized various manufacturing industries, such as automobiles, electronics, and textiles, nurturing an environment conducive to augmented investment. "The Indian government is actively fostering a conducive environment for global manufacturing companies through strategic initiatives such

as the Bharatmala Pariyojana Project, the proposed DESH Bill, National Logistics Policy, appropriate taxation and incentives for various sectors, thereby enhancing opportunities in the industrial market. Emulating these measures, Indian states offer a myriad of advantages to industrial players, including incentives, subsidies, robust infrastructure, and essential utilities. These companies also assess critical factors such as Ease of Doing Business, government policies, economic conditions, pricing, labor availability, regulatory environment, supply chain efficiency, proximity to transport nodes, and raw material accessibility when considering entry into the Indian market," **said Swapnil Anil, Executive Director & Head, Advisory Services at Colliers India.**

Propelled by progression in significant sectors and urged by favorable megatrends, India's manufacturing sector has started itself into new geographies and sub sector/segments. Emphasis on the competitive advantage of a skilled workforce and lower cost of labor, the manufacturing sector is also beholding an amplified inflow of capital investment and M&A activity, leading to a surge in manufacturing output and consequential increased contribution to exports.

The manufacturing GVA at current prices was estimated at US$ 110.48 billion in the first quarter of Fy24.

The manufacturing sector contributes around 17% to the GDP supported by robust physical and digital infrastructure which is expected to grow to 21% in the next 6-7 years. India is well-positioned to enhance its manufacturing sector, making considerable advances in global supply chains.

The automotive sector, a keystone of India's manufacturing prowess, has seen prominent interest from global players like Tesla and Ford, depicting intents for establishing or expanding their manufacturing footprints within the country. Electronics manufacturing experienced a rise in investments, particularly in smartphone production domain.

Major players like Apple's contract manufacturers established assembly units in India, implying a shift to local production strategies. Additionally, the textiles and garment manufacturing sectors have witnessed upsurge in investment activities, with several global brands reconsidering their sourcing strategies and investing in Indian textile units, take advantage of on India's competitive advantages in the said domain. The Government of India's Ministry of Heavy Industries and Public Enterprises has launched SAMARTH Udyog Bharat 4.0 in 2021 as a strategic initiative intended to enhance the manufacturing sector's competitiveness, predominantly in the capital goods domain.

The government is committed to fostering comprehensive national development by emphasizing the development of industrial corridors and smart cities. These corridors are intended to encourage the adoption of advanced manufacturing practices as well as to facilitate integration, monitoring, and the creation of a favorable environment for industrial growth with employment for more than around 27 million workers.

With all the policy incentives and various initiatives, the Indian manufacturing market has the potential to reach US$ 1 trillion by 2025-26. Number of MoU's in Manufacturing sector by various states

There has been various MoUs signed but different states in India to boast industrial and manufacturing sector. The Maharashtra government has signed 21 memorandums of understanding (MoUs) of INR88, 420 crore at World Economic Form in 2023. The MoU have employment potential of over 55,000 jobs. The MoU conversion rate in Maharashtra is 30- 40%. Andhra Pradesh signed MoUs in Global submit 2023 with 352 firms in with proposed investment of 13.5 crore. These projects of launched successfully will create 6,00,000 jobs within the state. In addition to this, Gujarat has signed 3 MoUs in Oct 2023 worth INR 3,000 crores for textile, industrial park, engineering, including auto sector; 9,000 new employment opportunities followed by Tamil Nadu state, which has signed total 79 MoUs in year 2022-23 with the total sum of 165,748 cr.

Impact of Government Policies

Various states in India, including Gujarat, Maharashtra, Rajasthan, Madhya Pradesh, Telangana, and Andhra Pradesh, have strategically implemented a range of incentives to attract and support manufacturing plants within their borders. In Gujarat, the government offers Common

Environmental Infrastructure Facilities at 40% of the project cost up to INR 50 crore, along with a concessional rate for land use conversion for industrial purposes. Maharashtra extends support by providing manufacturing plants with land at concessional rates and offering a 10-year tax exemption on profits earned from manufacturing activities. Mega and Ultra Mega projects in the state also benefit from the government's equity partnership of 9% with Financial Closure Institutions exceeding INR 500 crore.

Rajasthan provides a substantial investment subsidy, covering 75% of the state tax due and deposited for a period of 7 years. Meanwhile, in Madhya Pradesh, large - scale industrial units with investments exceeding INR 10 crore are eligible for a Basic IPA ranging from 40% to 10%. Additionally, financial assistance of up to INR 1 crore is provided for the development of power, water, and road infrastructure, along with support for the establishment or development of industrial parks, including a 15% assistance cap at INR 5 crores.

Telangana focuses on easing the establishment of manufacturing units by providing doorstep access to essential resources like land, power, and water. The government contributes 50% of the infrastructure cost from the Industrial Infrastructure Development Fund (IIDF), with a maximum limit of INR.1.00 crore. The state also supports the adoption of cleaner technologies by offering a 25% subsidy, up to INR 5.00 lakhs, for implementing 'Cleaner Production Measures.' Lastly, in Andhra Pradesh, anchor units receive the benefit of required land for their projects at 25% of the land prices, based on the appraisal from the Andhra Pradesh Industrial Infrastructure Corporation (APIIC). These multifaceted incentives showcase the states' commitment to fostering a conducive environment for manufacturing growth and economic development.

Govt Working to Ensure Export Sector Becomes Self - Sustaining – Hon'ble Piyush Goyal

India is aiming to achieve the $2 trillion export target by 2030 and in the process it is moving this industry out of the government support to make it self - sustaining and cost competitive, Union minister Hon'ble Piyush Goyal said while addressing Infinity Forum 2.0 virtually at Gujarat Finance Tec - City (GIFT City).

GIFT City will play a pivotal role in powering India's exports to $2 trillion by 2030, and then onwards to up to $10 trillion that it envisages to see by 2047, said the Union Commerce and Industry Minister. "During the next 2-3 decades we hope to see sustained, inclusive growth, during which we are confident of offering sustainable and inclusive development for every single person in the country. In that story, our international engagements will play a very important role," he said.

He said India's target of crossing a $1 trillion economy in the next three years, having $1 trillion of merchandise and $1 trillion of service--collectively $2 trillion of exports by 2030- will have a massive impact on the country's economy. "This export-led growth will create jobs and work opportunities for youth, give a boost to 'Make In India', further opportunities to Start Up India vision, and encourage new innovators to come up with brilliant ideas," he said.

This will have a huge impact on India's macroeconomic fundamentals, with a stronger infusion to $600 billion foreign kitty, further strengthening its positioning both as a global economy and ensuring its fast-track growth, Goyal added. "Towards that hand-holding, we yesterday allocated Rs 2,500 crore for interest equalisation to ensure that our small exporters, MSMEs particularly, continue to get export support in terms of interest equalisation to equate interest between Indian rates and international rates.

"But our approach has been that we are moving our export industry or sector more and more out of the clutches of government support to make it self-sustaining, to make it work on the strength of its own cost competitiveness, and also on the strength of high-quality goods and services that we offer to the world," he said. Goyal said IFSC, in the coming years, will become a big source both for finance and insurance and other aspects of India's growth story.

"I am sure we can leverage Indian talent through the GIFT City to expand our exports manifold in the years to come," he said. GIFT City can play a very important role in three areas -- global finance and accounting, export of educational services, and consultancy and advisory services,

Goyal added. GIFT City can play a very important role in three areas -- global finance and accounting, export of educational services, and consultancy and advisory services, Goyal added.

"As India is poised to power the world's economy for decades to come, GIFT City will provide a pivotal role (and) will power India's exports for our first threshold of $2 trillion by 2030, and then onwards to take it up to $10 trillion that we envisage to see by 2047," he added.

Single KYC for all Financial Services soon - DEA Secretary

The government may soon come up with a single KYC (Know Your Customer) for all financial services to further improve ease of doing business, a top finance ministry official said. “The work on single KYC for all kinds of financial services is in the making and should come out soon,” said Mr. Ajay Seth, Secretary, Department of Economic Affairs .

“The government has set up a committee headed by the deputy RBI Governor and it has completed their work,” Mr. Seth said. The move was first announced by the Finance Minister Mrs. Nirmala Sitharaman last year to further reduce the compliance burden of businesses. "We are also now working in such a way that once you have given your KYC, it can be applicable at various institutions at various times for various requirements that you may have and you may not have to do it each time, even if the businesses that you're engaged in are slightly different," Mrs. Sitharaman had said.

On UPI

Talking about India's digital infrastructure in general and UPI payment in particular, Mr. Seth said that the world is now recognizing the model and many countries after Singapore, including UAE and US are now asking the government to connect to their digital payment system. “We started with Singapore, now we are getting requests from the US to connect to our payment system,” Seth said, adding that the Reserve Bank of India and the US Federal Bank are already in talks regarding that. Mr. Seth added that India's digital payment infrastructure is adding about 4% to the economy.

PLASTIC PRODUCTS AND NEW TECHNOLOGIES

How Food Packaging Directly Influences Sales

The global food packaging market is projected to reach $ 468 billion by 2028, according to Globe Newswire. This growth highlights the significance of food packaging in the industrial space.

Beyond the essential function of protecting food products from contamination and spoilage, packaging can improve sales. Indeed, research shows that 81% of consumers try something new because the packaging caught their eye, and 65% have bought products again because of the packaging.

Below, we explore food packaging trends and why they matter to businesses.

Innovative Food Packaging Trends

According to a survey by Ipsos, 72% of consumers agree that packaging design influences their purchasing decisions. This finding demonstrates the benefits of creating a visually appealing package design. One of the latest trends in food packaging is incorporating smart packaging and creating an "unboxing experience" for consumers.

This may include customized touches, such as personalized messages or images, to make a package more memorable and engaging. Additionally, visually appealing elements like pops of color, company logos, or stickers make a package stand out on a crowded shelf.

To optimize the consumer experience, packages may include items like candy, a toy, or stickers that customers weren't anticipating. A QR code on the box that links to more information and an option to join a rewards program can also provide a more personalized experience and increase the potential of a returning customer.

Impact of Innovative Food Packaging

According to a report by McKinsey, consumers are willing to pay more for products in sustainable packaging. Sustainable packaging, such as compostable or recyclable materials, can help reduce waste and minimize the environmental impact of packaging. Additionally, creative and innovative packaging can help companies differentiate themselves in a crowded marketplace and build customer brand loyalty.

When customers have a memorable and positive experience with a package, they are more likely to become repeat customers and recommend the product to others. For example, according to McKinsey, around 55% of shoppers recommend products in branded packaging.

Why Food Packaging Matters

Innovative and engaging food packaging can significantly impact consumer behavior and brand perception. By incorporating creative elements on the outside and inside of the package, food manufacturers can create a more memorable and personalized experience for customers.

Sustainable packaging can also help reduce waste and minimize the environmental impact of packaging. As the global food packaging market continues to grow, companies need to stay up-to-date with the latest trends in packaging to stay ahead of the competition.

Source: Thomas Insights

Helping to Improve Crop Revenue and Ease of Harvest, with Cooling Diffused Greenhouse Films

- Durability
- Toughness
- Cooling effect
- Cost optimization

Challenge:

Heavy rain and wind can limit production of tropical open field crops. While greenhouses protect against weather extremes, conventional films admit too much solar radiation, raising temperatures that limit yields.

Important considerations for greenhouse in tropical climates include:

- Durability - films need to be able to withstand heavy rains and typhoon winds over multiple crop cycles
- Solar radiation levels - Light transmission needs to be maintained at levels of between PAR 400 to 700 nm which is important for photosynthesis to take place, while limiting infrared radiation within the greenhouse.
- Light conditions – sunlight should be filtered and diffused to ensure uniform light distribution inside the greenhouse.

Greenhouse films developed for tropical climates can help to meet these challenges to improve productivity and extend greenhouse life.

Solution:

ExxonMobil, Ampacet, and Vis and Son Company Limited (VSC) worked together to study durable cooling diffused films designed to meet the challenges of tropical greenhouses.

Based in Thailand, VSC is one of the leading companies in the manufacture of polyethylene films and sheets. They produce an extensive range of agricultural films products from greenhouse films to mulch to grow bags.

Ampacet, a global masterbatch producer, specializes in color and additive masterbatches for plastics with a history of agriculture and plasticulture expertise.

The study combined ExxonMobil's Exceed™ XP performance polyethylene with Ampacet's HEATSCREEN 34 cooling additive and VSC's advanced extrusion technology to produce a 150 μm cooling diffused film that delivers improved durability as well as optimal light and heat transmission properties.

This cooling diffused film was put to the test in an organic watermelon greenhouse in the northern Thai city of Chiang Mai.

These were the Observations:

- Durability – The film structures have shown high retention of the tensile properties under sun exposure for more than 2 years and they continue to be in use. They are also proven to last > 5 years in accelerated aging exposure under WOMS Chamber vs market reference which drops below threshold within 2 years.
- Toughness – Exceed™ XP performance polyethylene enables converters to easily fabricate exceptionally tough films with very high dart impact and puncture resistance, and tensile strength at break for high-integrity greenhouse and walk-in tunnel covers.
- Temperature – with the cooling additive, temperatures inside the greenhouse especially during hot season is seen to be lowered by 2 to 5^{o} C.

In addition, using Exceed XP and Enable™ performance polyethylene to replace LLDPE/LDPE blends helps converters to reduce the number of resins that need to be sourced hence reducing inventory costs. Additionally, better bubble stability and ease of extrusion further optimizes the solutions and delivers opportunities for potential high output.

Results:

Reduced temperatures – the cooling diffused film helps to reflect infrared radiation (IR) which effectively reduces temperatures inside greenhouse when compared to conventional film by an average of 2-5^{o} C in tropical climates. The new film also helps to provide consistent light transmission which allows better light diffusion (comfortably above 50% levels throughout the 24-month testing period) inside the greenhouse, giving excellent uniformity to crops in terms of shape, size, color, taste, as well as reducing leaf scorching.

Excellent aging performance – the new film helps reduce the risk of premature breakage, extending the growing season. It is compatible with functional additives and antioxidants to retain mechanical properties and high diffusivity (through haze), which are even more critical as the film ages. It also exhibits excellent aging

performance for long lasting, durable solutions, proving it can withstand the rigors of installation and extreme weather.

Mr. Montchai and Mrs. Pimwalan, owners of the organic watermelon farm, are very satisfied with the results after replacing the conventional film with the new cooling diffused film for two crop cycles. They said, "Our crop yield has increased after using this film. The average weight of our watermelons increased from 1-2 kg to 3-4 kg with one melon going up to 6 kg. The average harvest time has been reduced and we can now harvest watermelons in 45-50 days compared to 60-70 days previously. With all this, we are especially pleased that our average income per 13m x 30m greenhouse has increased by 35%."

"Ampacet and VSC have been valuable partners in this project," said Tan Wee Long, Head of Market Development, ExxonMobil Asia Pacific Pte Ltd. "VSC's insights of the Thai agricultural industry and their state - of - the - art processes and Ampacet's advanced portfolio of additives and extensive community outreach were critical to the success of the trial of this film formulation. Through each party's insight, we hope to improve farmers' livelihoods."

Benefits for other crops – The new cooling diffused greenhouse film provides the same benefits for capsicum, cannabis*, sweet pepper, tomato, chrysanthemum flower, and hemp.

Flint Group Evolution Launch Brings Recycling-Friendly Coatings to the Global Market

November 2023: Following its successful European launch during Labelexpo in Brussels, Flint Group's award-winning Evolution products are now available for narrow web printers worldwide. The latest innovation includes Food Contact Material (FCM) compliant technologies that enhance shrink sleeves and label recyclability.

Evolution products, aptly named because they enable packaging to be reused in ever-evolving forms, are designed to increase the yield of material reclaimed from the recycling process by enabling label material to be recycled at the same time as a PET bottle without risk of contamination. Using Evolution products, previously unrecyclable products can be reprocessed, potentially boosting reclaimed material yield by up to 10%.

Evolution Deinking Primer is applied to the substrate before the ink to provide strong ink adhesion throughout the life of the label. It enables the ink to be released (de-inked) into the recycling caustic wash and the substrate to be broken down into flakes allowing for more than 99% recyclability.

In contrast, **Evolution Varnish** ensures that inks remain on the label during the caustic wash used in the recycling process. The varnish application avoids contamination of the washing solution while not impacting the floatability of the label, and therefore, the resulting quality of the reclaimed material is significantly improved. The protected ink can then be skimmed off with the floating label and directed to an alternative waste stream.

The Evolution product range, previously launched in North America, has been recognised by the Association of Plastic Recyclers (APR) for compliance with critical guidance for PET packaging and recently won the Environmental Sustainability category at the 2022 Global Label Awards at Labelexpo Americas.

The European versions of these products are entirely FCM compliant, and the Deinking Primer has been shortlisted in the pre-commercialised category at the Packaging Europe Sustainability Awards 2023.

Pierre Dogliani, R&D Innovation Manager Narrow Web at Flint Group, said: "Labelexpo Europe brought together printers and converters worldwide where they discussed key trends throughout the narrow web industry. A significant observation was the increasing importance of recycling and circularity in packaging.

"Flint Group's Evolution range provides a way for businesses to actively contribute to a more sustainable future by supporting circular packaging in the label and flexible packaging industry. Furthermore, the European versions of Evolution products are designed for use with food packaging without compromising label quality as a true 'plug and play' solution. No changes are required to existing ink systems or curing processes, providing a seamless transition for new customers.

"With circularity continuing to dominate conversations around labels and packaging, Evolution Deinking Primer and Varnish are a technical breakthrough for the industry and will be key to printers and converters making better use of existing plastic resources."

Molkerei Forster and Lidl Schweiz are Launching Self - separating Packaging from Greiner Packaging

Molkerei Forster is among the first companies in Switzerland to use self-separating K3® cups from Greiner Packaging. The sustainable cardboard-plastic combinations are offered under the proprietary brand Milbona in Lidl Schweiz's retail branches.

- Molkerei Forster is using self-separating cardboard - plastic combinations for its Milbona brand 500 g natural yogurts.
- In the future, the yogurt packaging will enable recovery in separate recycling streams.
- With the conversion to this packaging innovation, Greiner Packaging, Lidl Schweiz and Molkerei Forster are once again emphasizing their focus on sustainability.

Kremsmünster, November. Companies wanting to package dairy products sustainably have been using cardboard - plastic combinations for many years. K3® packaging was first produced at the Swiss Greiner Packaging site in Diepoldsau over 40 years ago. The latest K3® innovation is now coming to the Swiss market: self-separating K3® r100. This innovative packaging is used for the Milbona brand natural yogurts sold by Swiss retailer Lidl Schweiz

The Foundation for Optimal Recycling Laid

For the first time, innovative K3® r100 packaging makes it possible for cardboard and plastic to separate from each other without human intervention. This innovation lays the foundation for future collection systems in Switzerland. If it is forgotten to separate the cardboard wrap from the cup, the two parts separate by mechanical pressure. Plastic cups and cardboard wraps can be identified, assigned to separate recycling streams and consequently recycled. Until this happens, however, both components must continue to be separated manually and sent to the respective (local) disposal system. Greiner Packaging, Lidl Schweiz and Molkerei Forster hope sorting flows will be harmonized in the future. By switching to K3® r100, Molkerei Forster and Lidl Schweiz are already well prepared for such a system and are assuming a pioneering role in future-proof packaging design

Partnerships Ensure Innovation

Greiner Packaging and Molkerei Forster have benefited from a partnership-based cooperation for many years and have already developed numerous innovation steps together. In 2021, for example, Molkerei Forster was one of the first companies in Switzerland to use the new Greiner Packaging design: a recess in the cardboard wrap allows easy separation from the plastic cup with just one movement. Close collaboration was required while developing the K3® r100. Numerous filling tests of the packaging innovation took place at Molkerei Forster. "Without good partners like Molkerei Forster, innovations such as our K3® r100 would not be possible. Before we brought the cup to market, we perfected it in numerous filling tests - including on Molkerei Forster's systems. Because having a good idea is one thing, checking it for marketability is another. This is only possible in collaboration with our customers," says Antonios Kampouris, Sales Director of Greiner Packaging Switzerland.

Three Companies, One Goal

Like Greiner Packaging, Molkerei Forster and retailer Lidl Schweiz are also committed to a sustainable future. "We have set ourselves the goal of focusing on sustainability. This begins with the raw materials used and continues through our production processes to product packaging and beyond. With K3® r100 we are taking another important step towards a sustainable future," company founder of Molkerei Forster, Markus Forster, says.

Kraft Heinz Introduces First Fully Recyclable Ketchup Cap with help from Berry Global

The launch by Kraft Heinz Company of its first fully recyclable cap for its famous

squeezy ketchup bottle demonstrates the collaborative achievement utilizing the innovative design and manufacturing capabilities of Berry Global in supporting retail brands with a move towards more sustainable packaging solutions.

Historically, Heinz sauce bottles used a flexible silicone valve to deliver a consistent portion of sauce per squeeze, but this was - often challenging to recycle. Together with Berry Global Heinz has now switched to a mono-material cap, manufactured in PP. This means it meets requirements for recyclability

Winners of the Sustainability Awards 2023 Announced!

The winners of the Sustainability Awards 2023 – the most prestigious global competition for sustainable packaging innovation – have been announced at the Sustainable Packaging Summit in Amsterdam, during an awards dinner filled to the brim with 400 industry leaders. For the first time in Sustainability Awards history, joint winners have taken home prizes in two of the categories!

Our **Overall Winner** was also the successful nominee under the **Machinery** category; **AMP Robotics** won both awards for AMP Vortex, its AI-powered automation system for film removal and recovery in recycling facilities. Vortex can identify film and flexible objects, at which point the material is captured and removed via an automated vacuum and deposited in a configurable location.

Vortex combines AI with recycling-specific automation in pursuit of a sorting mechanism designed specifically for the recycling industry – aiming to relieve recycling facilities of the responsibility to reduce contamination in waste streams and scale the recycling of film and flexible packaging.

Wiliot was also recognized for its Ambient IoT Visibility Platform. Its battery - free, stamp - sized connectors, or IoT Pixels, transmit information – e.g., location, temperature, humidity, and carbon footprint – at an item level and enable connection throughout the supply chain.

Applicable to shipping containers, fruits and vegetables, vaccine vials, and more, the solution connects to the internet and offers real - time data to businesses – enabling them to make informed decisions in their efforts to cut down on emissions.

The Best Practice award went to Pepsi in China. The company has streamlined recycling and cut down on the carbon footprint of its multipack PET bottles by removing their plastic labels and ceasing to print their caps.

Taking home the top prize for the Climate category, SIG's SIG Terra Alu - Free + Full Barrier packaging material does not require an aluminium layer to provide the same barrier properties as a foil - lined solution. It removes the mostcarbon - intensive component of an aseptic carton pack, features a high renewable share, and is designed for easy recycling.

The material can be used to package oxygen - sensitive and insensitive beverages, like fruit juices and plant - based drinks, and it set to cut down on food waste, even amidst more complex supply chains.

He winner of the Driving the Circular Economy category was Berry Global, whose Closed Loop Recycled Paint Containers constitute a circular partnership that combines paint and packaging recovery and recycling. The solution involves the removal and re - engineering of leftover paint from an empty container, resulting in clean, recycle - ready cans and new paint.

This process expects to cut down on pollution and carbon emissions by diverting both paint and packaging waste away from landfill or incineration.

Flöter Verpackungs - Service GmbH and AirWave Packaging's PaperWave Box won the award under the E-commerce category. It is based on Amazon's Frustration - Free packaging concept, reducing the amount of cushioning material inside the box by 40% and packing time by 50-70%.

PaperWave is FSC - certified and made of 100% recyclable paper with a starch barrier. It is both recyclable at kerbside and compostable.

The box's clamshell effect is reinforced by the inflated PaperWave inlet, made for 100%

FSC recyclable and compostable material. Both can be printed with marketing and branding material.

The Recyclable Packaging award went to Kraft Heinz for its mono - material Balaton dispensing closure. It is designed to ensure the recyclability of the whole bottle, including the cap, and replace around 300 million non - recyclable silicone valves annually.

Reducing the number of components to two parts is expected to benefit production and logistics, while its design – easy to open and releasing the 'perfect' serving of ketchup when the bottle is squeezed – has proven popular with elderly consumers.

Procter & Gamble was our Renewable Materials winner with its ECOLIC Box for Ariel liquid laundry capsules. Containing 70% recycled content, the box brings together recyclability, safety, and a design geared towards an inclusive consumer experience, all while replacing the standard plastic container.

Our first set of double winners came under the Active and Intelligent category. Fyllar's mess - free smart refill solution is designed to facilitate a clean, efficient, and low - cost refill experience, cutting out the shortcomings of traditional refill methods and redefining the use and perception of packaging.

Its smart fill RFID tag recognizes different products and fills packaging accordingly. It also facilitates data - driven reward systems, streamlines processes, and optimizes inventory management.

In the Pre - Commercialized Active & Intelligent category, the National University of Malaysia came out on top with its starch - polyaniline biopolymer film. It is reinforced with cellulose nanocrystals extracted from agricultural waste.

Films made from this biopolymer are biodegradable and visibly change colour from green to blue to indicate when the food inside has spoiled. This packaging aims to cut down on plastic and fossil fuel consumption, keep waste out of the ocean, lower food wastage rates, and give a second life to agricultural waste streams.

Next up was ALPLA Group in the Pre - Commercialized Climate category. Its lightweight Canupak beauty packaging intends to optimize the carbon footprint of the entire packaging system, from its production using 100% renewable energy to its transportation, in a cradle-to - gate plus end - of - life approach.

Developed in line with design and recycling regulations, it can be integrated into a customer's portfolio at any time. The solution hopes to inspire businesses and the wider market to opt for carbon -optimized solutions.

The Pre - Commercialized Driving the Circular Economy award went to Nextek Ltd for COtooCLEAN – a technology that decontaminates post - consumer polyolefins using low-pressure super - critical Co2 and green co-solvents in a closed loop. This process removes oils, fats, and printing inks and restores flexible films to food - grade quality in line with EFSA food - grade standards.

Unlike other industry practices, the technology is free of water, caustic soda, and surfactants.

It is expected that COtooCLEAN will create a new waste stream to keep waste out of landfill and prevent downcycling. Additionally, it hopes to boost recycling rates for flexible films and lower the

Our second set of double winners emerged in the Pre - Commercialized Recyclable Packaging category. The Fully Recyclable Ready Polystyrene Yogurt FFS (form-fill-seal) pack developed by Citeo, Olga, Plastiques Venthenat, Amcor, Cedap, and Arcil-Synerlink was one of the winners.

The yoghurt cup constitutes 98.5% raw material polystyrene and enables French producers to market their packaging as fully recyclable in the new polystyrene recycling stream. As well as encouraging investment in new polystyrene recycling plants across Europe, it is expected to promote the creation of a circular packaging loop and optimize the efficiency of the whole recycling chain.

In turn, it hopes to drive down the utilization of fossil - based plastics and compel end users to sort their waste appropriately.

Bobst Mex, UPM Specialty Papers, and Michelman's OneBARRIER FibreCycle solution was the second winner. Its high-barrier, paper - based structures are lined with a thin primer and top coating on vacuum - coated layers; as such, they can be recycled in existing fibre waste streams.

OneBARRIER FibreCycle's end-to-end integration lowers the possibility of defective packaging substrates. It is expected to combat the plastic waste crisis with a product that offers high quality, optimal protection, productivity, market acceptance, and sustainability.

Cellulotech's scalable green chemistry process received the Pre-Commercialized Renewables award. It replaces coating processes with a solvent - free chemical reaction that attaches one-nanometre molecules around paper fibres.

This solution provides paper products with barrier properties to increase their durability and optimize their full potential whilst phasing out plastics, silicones, waxes, and other less sustainable materials. Compared to standard materials, it can lower costs by up to 90% in certain applications, while also cutting down on carbon footprints and enhancing the pack's recyclability.

You selected Lidl, Algramo, and Fyllar's automated refill station for liquid laundry detergent as the winner of our Readers' Award! This is the category that is decided by Packaging Europe subscribers, rather than the Sustainability Awards' expert judging panel.

The machine utilizes smart, refillable, 100% recyclable HDPE bottles and touchscreen machinery to save 59 grams of plastic – the weight of the equivalent single-use bottle – with every use. It recognizes a chip contained in the refill bottles to distinguish between first-time users and reused bottles, charging the consumer accordingly. It also ensures that each bottle is filled up to

And, last but by no means least, Gian De Belder from Procter & Gamble received an award from the Sustainability Awards panel for Outstanding Contribution. This is a new category celebrating an individual's work towards packaging sustainability rather than a project or product.

While perhaps best known for the leadership he has given to the HolyGrail digital watermarking project, Gian is also greatly esteemed by his peers for driving cross-industry collaboration with his own commitment and generosity, displayed in his work across countless Boards and Advisory Groups.

As this year's Sustainable Packaging Summit comes to a close, we'd like to thank everyone who attended the event and congratulate every finalist shortlisted for an award. We were impressed by every nominee and hope to see the hard, sustainability - minded work continue.

Take a look at all the finalist interviews from this year, and keep up to date with the latest news and updates about the Sustainability Awards under our dedicated tag. Submissions for next year's awards will open in January 2024. Find out more about the application

Polestar Vehicle Seat Integrates Bio - Attributed PVC

Made from renewable vinyl and recycled polyester textile, the bio-attributed MicroTech is a “vegan” alternative to leather and comes as standard equipment in the Polestar 3.

The recently launched Polestar 3 electric SUV is not only drivable without the need for fossil fuels — featured as standard is a seat-covering material made from renewable polyvinyl chloride (PVC) and recycled polyester textile. The bio - attributed component of MicroTech is derived from tall oil.

Polestar has printed the details of the source, carbon footprint, and percentage of recycled/renewable content on the surface of the upholstery. Optional materials include animal welfare – secured Nappa leather, and animal welfare–certified wool combined with 20% recycled polyester content.

Bio - attributed PVC suppliers include Ineos group company Inovyn with its Biovyn material, and Vynova with its bio-circular PVC portfolio. The materials are manufactured using ethylene derived from waste and residues of biological origin that do not

compete with the food chain. Tier I Continental has already started using Biovyn in the production of its technical and decorative surface materials for its automotive customers.

Polestar is also undertaking an ambitious project with multiple partners to decarbonize the complete production of its vehicles. The Polestar 0 project aims to enter its ultimate phase in 2027 to design and construct manufacturing sites and finalize a complete supply chain for high - volume production of climate-neutral vehicles targeted for the early summer of 2030.

The Polestar 0 team is currently looking to find more partners who deal with the most elementary building blocks of material development to join the project. This includes everything from raw material extraction to bio-based plastics and chemicals, electronic components, and other base materials. Current partners include auto interior component Tier I TMG Automotive, a manufacturer of dashboards, door panels and pillars, seat inserts and arm rests, and gear shift covers upholstered with PVC and thermoplastic elastomer.

Filtration System Helps Film Processor Manage Recycled Material Mandates

Global film processor RKW teams with Nordson to enable it to process blown film with high recycled content. In Europe, film processors are beginning to change the way they make products. Taxes on the use of virgin materials in packaging, part of

the European Green Deal, means processors must tweak their processes to accommodate a larger volume of recyclable materials unless they want to pay more by using all-virgin materials. In super-thin, high-speed blown film processing particularly, this has been known to create a wide range of technical challenges and processing headaches.

At what point do governments in the U.S. follow this Green Deal model? None so far, but virgin-material levies are certainly being bandied about nationally and locally. The message? Best be prepared.

Film processor RKW in Echte, Germany, was indeed prepared. In fact, "We have been using recyclables in our films for many years," explains Thomas Steffen, an application engineer at the company. "These films are subsequently used in products where quality standards can be met through recycled material"

Efficient filtration is crucial when using recyclates to maintain the quality of the end product. Melt filters have been utilized in blown film lines for many years, but for the most part these filters were mostly discontinuous, meaning the line needed to be shut down for a screen change. “In processes with clean virgin material, this is not a problem,” says Stefan Wöstmann, process engineer at Nordson BKG. “The filters here take on a purely protective function and ensure that no loose screws from the material feed or other transport contaminants get into the process. But the degree of contamination is so low that screen changes are rarely necessary.”

Adding more recycled material to the mix, however, means the process needs to accommodate an inconsistent material component that has more impact on the final product. “The quality of the recyclate containing dirt particles fluctuates significantly,” says Sven Pastrik, RKW's manager of extrusion at RKW in Echte. “So we cannot guarantee that the quality of the final product is always the same. We needed to be flexible to accommodate varying levels of contamination,”

RKW's first move was to install continuous-style screen changers. These filters enable operators to change screens without interrupting production, and to adjust screen fineness for different production batches based on quality requirements. “As a result, we have had significantly fewer machine downtimes, and the productivity of our lines has increased significantly," Pastrik reports. “We can compensate quality differences in the material very well and process high proportions of recyclate in, for example, in our form-film-seal (FFS) bag production.”

One such FFS bag is the RKW ProVent, commonly used in the construction and chemical industry for packaging powdery goods. For that application, the use of recycled material is becoming more prevalent and continues to increase. Explains Steffen, “Here, it is essential

that the protective and barrier properties are guaranteed and that no dust, dirt or moisture can penetrate. We inspect our films with optical systems before further processing."

Steffen adds, "But for us, finding defects is not a strategy; the goal is to prevent them altogether. We knew that the proportion of recycled material would keep increasing and that we would have to redefine the filtration process when designing a new five-layer line."

The goal was a system in which high - quality films could be produced in a continuous, automated process. "We needed a line concept with fast setup and changeover times, Steffen says. "We don't want to deal with screen changes and thus line downtimes often and for a long time, but rather ensure an extrusion process that is as uninterrupted as possible."

RKW had a positive experience with Nordson BKG screen changers, leading them to approach the filter manufacturer again. Their new five-layer line, a Varex II from Windmoeller & Hoelscher, is now equipped with continuous BKG screen changers and has been running successfully since 2021. "We are very satisfied with the performance of the system. Thanks to continuous filtration, we produce high-quality films with high recycled content in an uninterrupted process and can cover a wide application window," Pastrik says.

At RKW and Nordson, they were certain the development must go further. "The use of recyclates will continue to increase in the future," Wöstmann explains. "The EU's Green Deal and national packaging laws are massively increasing the pressure and forcing system — and component manufacturers — to act."

Next Step: An Innovative Backflush Screen Changer

The need to expand the application window and process higher proportions of recyclate and prospectively even highly contaminated materials led RKW to specify a screen changer with backflush function. "We are already seeing that the backflush technology enables the use of PCR," Pastrik explains.

Melt filters without a backflush function reach their limits when processing recycled material. "The degree of contamination is high and the screens become clogged quickly," Wöstmann explains. "Screens are expensive, and changing them is time-consuming. Backflushing repeatedly clears the screens of contaminants and deposits, so manufacturers need fewer filter elements, and operators have to change screens less often."

RKW technical experts explain that because the film bubble is sensitive to changes in temperature, viscosity and pressure, even minor deviations can negatively impact the final product. Adding recyclates to the process can make it even more challenging. Pressure fluctuations during screen changes, backflushing and deaeration can significantly reduce film quality or cause downtime.

Sso, Nordson collaborated with W&H to develop the Nordson BKG HiCon K-SWE-HD/RS backflush recycling filter. This new filter is specially designed for blown film lines and has a compact design suitable for tight spaces

Maintaining constant pressure is crucial for a successful operation of a blown film line. Any material withdrawal for screen changes or backflushing can result in a balancing act in this area of tension. That makes it imperative to avoid pressure fluctuations through intelligent solutions in the high-pressure range. "Our goal is to increase the proportion of recycled material used, depending on the specification, and also incorporate PCR material."

Each screen change in the filtration process is a sensitive step because the empty cavity must be refilled with melt after the change. If this is done too quickly, it can lead to pressure fluctuations and quality issues. "This is a major problem with blown film lines, as the film is usually very thin and sensitive to such changes," Wöstmann explains.

"The BKG HiCon K-SWE-HD/RS is equipped with the patented melt pressure-controlled venting start, which fully automates the filling of the screen cavity after the screen change and thus ensures maximum pressure consistency, Wöstmann adds. "In addition, filling is so sensitive that no air pockets endanger the process or the end product. Manufacturers can rely on a stable process and high blown film quality."

The new BKG HiCon K-SWE-HD/RS was provided to RKW as part of a user test and installed in a three-layer line. "The startup was a complete success. We installed the screen changer and produced

film successfully immediately; our machine operators were thrilled," Pastrik reports.

Adds Detlef Nolte, machine operator, "The handling of the screen changer is simple, and due to the high degree of automation, we only have to intervene minimally in the process. The fact that a newly developed machine was installed in one of our lines without any complications and then works so well directly is quite remarkable. In addition, it is immediately apparent that the experience gained from the initial joint project has been directly incorporated into the new screen changer."

Future Collaborations

RKW and Nordson plan to continue working together long term to meet future challenges. "The shift from virgin material only to recycled material is huge. With the BKG HiCon K-SWE-HD/RS, we offer blown film producers an efficient tool to achieve this goal," says Christian Schröder, global segment manager recycling at Nordson. "With this machine, we are helping to make plastic packaging more sustainable. We are proud of that."

RKW also made a strong commitment to sustainability. Recycling is considered a crucial component of this commitment. Each site has recycling facilities that process internal and external production waste into high - quality recyclates. The company is dedicated to investing in new technologies to further this effort. Pastrik explains, "Our goal is to increase the proportion of recycled material used, depending on the specification, and also incorporate PCR material. We are fortunate to have filtration experts on our team to help achieve this goal."

Additive Masterbatch for Permanent Etching on Black and Dark Plastics Products

Ampacet's new ColorMark reveals color in dark plastic surfaces exposed to laser light

A new additive masterbatch technology from Ampacet enables processors to create permanent lettering and designs in intricate detail on black and dark plastics surfaces. Moreover, ColorMark is compatible with PP, PS, ABS, PC, nylons and other engineered resins used in injection molding, thermoforming and sheet applications. Said to be the "first of its kind", this masterbatch reportedly provides high levels of contrast and shading and achieves superior precision on dark plastics that have been historically difficult to mark. As such, ColorMark is said to be ideally suited for adding permanent color logos, intricate designs, serial numbers, QR codes and bar codes for applications such as consumer electronics, automotive interiors, eyewear, housewares, appliances and accessories.

Ampacet's unique technology reveals color in black and dark plastic surfaces exposed to laser light. It has been shown to produces permanent and weather-resistant color marking in six popular colors: red, orange, yellow, green, blue and purple. Custom colors are also available. Designed for thermal chemical surface reactions, ColorMark formulations are suited for fiber, YAG and vanadate lasers operating at a wavelength of 1060-1070 nm. Formulation chemistries and laser configurations can be customized for desired marking contrast and functionality. ColorMark is also available in FDA and NIR-sortable formulations.

Avoiding Common Cosmetic Defects in Molded Parts

Identify familiar flaws and then work to eliminate them with these mold and part design tips, and process considerations.

Today's consumers expect a certain level of finish in the products they purchase. Increasingly, style has become an important and deciding factor when comparing products. So, it's important to understand how a part is manufactured to ensure that even basic design issues don't become bigger problems for consumers or affect part functionality.

Injection molding comes with a specialized set of design guidelines, and design engineers who understand the best practices will increase their chances of catching these issues early and developing structurally sound and cosmetically appealing parts and products.

There are a number of common issues that we see in injection-molded parts at Protolabs. Here are some ideas on how to avoid them in the first place.

Injection-molded part aesthetics start with draft. Sufficient draft is an important part of any mold design, even with quick-turn tooling. Vertical walls, meaning those part surfaces parallel to the direction of mold operation, should have a minimum draft angle of a 1/2 degree, though 2 degrees is even better. Heavily textured surfaces may require 5 degrees or more. Without proper draft, part ejection becomes difficult if not impossible, and unattractive drag or scrape lines may occur.

Avoid Sink in Molded Parts

As its name implies, sink appears as a dimple or shallow depression on the surface of a molded part. It's caused by thicker than normal cross sections, non-uniform part design or improper gate placement — the doorway through which hot plastic first enters the mold cavity. Polypropylene and acetal are very susceptible to sink, while fiber - and glass - filled materials are less prone to sink. We recommend assigning a recommended wall thickness to each material and advise that the minimum wall thickness be no less than 40 to 60% of a workpiece's thickest section. Material flow within the mold should travel from thick to thin whenever possible, which might mean reorienting the mold cavity or placing the gate in an area originally reserved for a cosmetic surface

A Brief Warp Tour

If you design a part with walls that are too thin for the target material, it's likely to curl up like a potato chip. Warp, as this phenomenon is known, is easily avoided by following the same rules used with sink, namely staying within the general wall-thickness guidelines. Ironically, the glass-filled materials that work well with sink-prone parts are more susceptible to warp. That's because, as the part cools, the glass fibers tend to line up in the same direction, creating internal stresses. You can improve your parts with internal support structures (such as gussets) to support thin walls or ribbing of large, flat surfaces

Fleshing Out Flash

Look closely at a rubber O-ring and you'll see a thin line of material at its outermost periphery. That's a parting line, the seam where the two halves of the mold come together. If you're working with free - flowing materials such as Santoprene or unfilled nylon, a small amount of flash can sometimes ooze into the seam and typically requires trimming once the part has cooled for improved aesthetics. On a donut shape such as this, there's little choice about the parting line location, but many orthogonal parts have sharp corners, which make a clean, crisp junction that's a perfect place for the mold to separate. Flash or no, you should expect a parting line on most molded products. Digital manufacturers like Protolabs are able to identify the parting line location during the quoting process and may suggest ways of modifying the part geometry to avoid one.

Avoid Swirling in Injection Molding

From honey beige to cornflower blue, manufacturers stock a variety of colorants. These are mixed with natural resin pellets just before the molding run and are usually quite close to the target color. Still, the final product color may vary due to the polymer being used; texture and polish of the tool; and swirling during the mixing process. If you want an identical color match on your parts, it would be best to purchase color-matched pre-compounded resin from an external vendor

Knit Lines and How to Solve Them

Worried about those fine lines that look like hairline cracks in your injection-molded part? Don't be. Those are knit lines, formed when two opposing flows of material join together in the mold cavity. Commonly seen at the edge of a hole or other cored feature, as a rule, knit lines are purely cosmetic but may create a physical failure point if present in an area of the part that receives substantial stress, such as the head of a screw. In this case, designing a strengthening boss feature around the hole is a good precaution, or just skip the hole entirely and drill it afterward.

Surface Imperfections and Finishing Options

If you select a PM-F0 noncosmetic finish on a tool, the finished part will likely show small, circular, end-mill marks and tool transition lines. If you need a surface finish that's more cosmetically appealing, it's generally a simple, if more expensive, matter to manually polish the tool. A PM-F1 finish removes most tool marks, while an SPI-A2 will be smoother than a fresh jar of peanut butter.

Texturing via bead blasting is another option that generally leaves a uniform matte finish (except in thicker areas) around

knit lines and in darker materials. Bear in mind that deep slots and cavities are difficult to reach for polishing and texturing, and that fine finishes may affect turnaround time because of the additional effort needed for polishing. Suppliers sometimes offer multiple surface finish options to choose from (like pad printing and laser engraving) as well as finishing options (like mold texturing and part marking).

Vestiges in Molding

Gate vestige is that small ugly spot at one end of the part left by removal of the gate after molding, usually with a side cutter or razor knife. It's an unavoidable fact of injection molding. For the most part, the only thing that can be done to avoid it is to orient the part in the mold such that cosmetic surfaces are unaffected. For example, when molding a Statue of Liberty replica, the gate should be placed on the soles of Lady Liberty's feet. When submitting a design to an outsourced manufacturer like Protolabs, always be sure to speak to an applications engineer to ensure surfaces that require a vestige-free appearance can be accommodated. There may be options to change a gate style depending on the material and part geometry. It is much easier to do this during the review stages rather than after the mold design stages have begun.

Jets, Orange Peels and Other Molding Issues

There are several other problems that can crop up with injection molding, some of which can be tied back to wall thicknesses that exceed general recommendations:

- Drag Marks, usually caused by insufficient draft, are when the part drags along the mold wall during mold ejection, marring the surface of the part.
- Jetting, a wormlike swirl that appears near very thick gate areas, is caused by temperature variations within the material flow.
- A surface that looks like an orange peel can be caused by flow variations in the mold cavity, usually in thicker sections of the part.
- Silvery streaks and material flaking are known as splay and can occur as a result of moist or degraded resin. It can also be caused by material shear due to higher than normal screw speeds.
- Blush, a cloudy discoloration normally found near gate areas, is often caused by improper fill speeds, but proper part geometry and gate placement also play a factor.
- Thankfully, most of these issues can be resolved through slight modifications to part design and/or selecting a different material. Difficult part geometries often require fine-tuning of the molding temperature, injection speed, hold times or all three. Material selection also plays a big part with cosmetics. Two examples of this are polypropylene and HDPE, which tend to sink more than polybutylene or acetal, but flow better into small part details. It is possible to test different materials using the same mold, but unfortunately shrink factors may prevent parts from having dimensions that match the CAD. In some cases, after testing multiple materials, a new mold may be required for further testing or production parts.
- About the Author: Rob Young is the senior global product leader for injection molding at Protolabs. Young has nearly a decade of experience in digital manufacturing and specializes in on-demand production and supply chain optimization for Industry 4.0. He came to Protolabs after working with early stage startups at the Ina Mae Rude Entrepreneur Center and Center for Innovation Tech Incubator in Grand Forks, North Dakota. Young holds a B.B.A. in Entrepreneurship from the University of North Dakota. Contact: 877-479-3680; rob.young@protolabs.com; protolabs.com

What You Should Know About Injection Mold Safety Straps

Every mold should have one in order to be safe and OSHA compliant.

While the function of a safety strap is to prevent a mold from accidentally coming apart during transportation and handling, its purpose is to protect people — not the mold or the machine.

The most common cause of mold halves separating is when a setup person uses only one eyebolt to lift a mold that doesn't have a safety strap or a lifting bar. It doesn't matter whether the eyebolt is in the ejection half or the injection half. When the hoist lifts the mold up, it is going to tilt in one

direction or the other because an eyebolt hole is rarely at the mold's exact center of gravity. Various factors, such as the clearance and lubrication between the leader pins and their bushings, and the angle and direction that the mold tilts, will determine whether half the mold will disengage and fall to the ground.

Another way a mold can come apart is when one side slaps up against a platen during setup. The conservation of energy and momentum can send the other side of the mold sailing toward the opposing platen, like the steel balls on the ends of Newton's Cradle Pendulum. I'm sure many of you know some less common ways a mold can come apart, such as a racking system that's difficult to maneuver, a mold cart with a wobbly wheel, an inferior wooden skid or an inexperienced forklift operator and a tight turn.

The Importance of Safety Straps

Every mold should have a safety strap — especially small molds, such as MUD inserts. When personnel are handling a large mold, they do so with extreme caution, because they know if something goes wrong, it's probably going to be, at the very least, loud. Small molds and MUD inserts are much less intimidating. They are often considered relatively harmless. This misconception is one reason people can get hurt.

Let's say you have a small MUD insert for an 08/09 UF 321 frame, with a 1 7/8-inch laminated A-plate. The injection half of this particular MUD insert weighs about 32 pounds. If it ever disengages from the ejection half, say from a height of 34 inches — the standard height of several mold carts — it will hit the ground in 0.4 seconds. That's less time than it takes to yell, “Look out!” and it is definitely less time than it takes to comprehend the situation and move safely out of the way. Due to gravitational acceleration, this 32-pound block of steel will hit the ground with a force of more than 90 foot-pounds. That's more than enough to send a person to the hospital, and OSHA will probably want to know why.

The majority of the molds I have seen have their safety straps painted red. Despite this being the predominant color in our industry, it is not the correct color to use. OSHA has very specific color standards and they specify red for dangerous situations, “where an immediate hazard presents a threat of death or serious injury to employees.” The color yellow, which stands for caution, is more appropriate. It's used, according to OSHA, for “minor hazard situations where a non-immediate or potential hazard or unsafe practice presents a lesser threat of employee injury.” However, employers are allowed to comply with the most current consensus standards applicable to their operations, rather than with the OSHA standard, when the employer's action provides equal or greater employee protection.

In other words, red is acceptable. However, since employees must be trained as to the meaning of the various OSHA colors used throughout the workplace, these colors should be used consistently. Even though the purpose and use of a safety strap is not “out of the ordinary, unexpected or not readily apparent,” it is still important to train all relevant employees on the proper use of safety straps, the special precautions they should take and the potentially hazardous conditions associated with any misuse or abuse.

Safety straps should be located on the operator side of the mold. If they are located on any other side, there's a good chance the setup man will not see them and attempt to open the mold while they are still engaged. Keep in mind that what the mold designer thinks is the operator side, and what the actual orientation of the mold is out on the production floor, may be two different things. In a case such as this, it is a good idea to put a placard on the other side of the mold, saying something to the effect of, “Remove safety strap.”

How many of you have mold safety straps scattered around your shop, or perhaps an assortment stacked in a lost-and-found box? One way to control the number of straps that have lost their homes is to paint, stamp or engrave its corresponding mold number on the outer face. Ideally, you should use a mold strap design that does not require removing it from the mold at all — but there are not many of those commercially available to choose from. Whatever strap design you choose, if it's face mounted on the side of the mold, you are most likely going to get dents in your tiebars. If a mold barely fits between the tiebars, you must remove the strap in order to hang it in the machine. That defeats the purpose of the strap and can be a definite safety concern. For these reasons, safety straps should be installed in a pocket — flush mounted with the operator of the mold.

On occasion, a mold may have multiple safety straps — one or more on either side. You see this from time to time on large molds, or molds that have spring-loaded plates, which cause the mold to be partially open when sitting on the bench. Some companies' mold design guidelines specify installing straps on opposing sides of the mold. As long as you use an appropriately sized strap and mounting bolts, there is no need to use more than one, regardless of how large the mold is, or whether it has spring-loaded plates. In fact, multiple safety straps can be detrimental during the setup procedure, especially when they are out of sight. Once again, there is an exception to every rule. If the mold has multiple parting lines, such as three-plate, stripper plate or molds with a floating core plate, either a long safety strap, or multiple short straps are required — but all of them mounted on the operator side.

Choosing the Right Safety Strap

There are many different types of mold safety straps readily available from molding supply companies. Some are made from plastic, typically recycled glass-filled nylon. Others are made of steel. In my opinion, the existing plastic mold straps are too weak and have some inherent design flaws. They are supposed to be strong enough to keep the mold halves together, but weak enough to break if someone opens the mold in the press without removing them first. That sounds all well and good, but these nylon straps have multiple, glass-oriented knit lines in critical locations.

There's also a strong likelihood that these exposed plastic straps will get damaged over time in a production environment. They are available in two different lengths but are not available in different amounts of holding power. The basic premise of a plastic safety strap makes a lot of sense; it's the design and engineering of those currently available that I have a problem with. Since there is an exception to every rule, plastic wire ties as seen in Figure 1, wrapped around water fittings on both the injection and ejection halves of a small MUD insert, work very well at protecting personnel.

The metallic types of safety straps come in a wide variety of designs and construction. Some are cast iron, while others are machined carbon steel. Some look like dog bones. Others rotate or swivel. One unique design automatically unlocks when the mold is mounted in the machine, and locks back up when the mold is removed. Some of these straps incorporate shoulder bolts in their design, but most use standard alloy-steel socket-head cap screws (SHCS). Screws are used primarily in applications where they are in tension — fastening one object to another. In a safety strap application, they are subjected to shear, which is perpendicular to the fastener's axis. The shear strength of a bolt is considerably less than its tensile strength.

If someone attempts to open a mold with a safety strap still engaged, every strap I have ever seen will break before any other damage occurs — and that's a good thing. It protects the machine and the mold, without being a safety risk to personnel. One mold component supplier has the disclaimer, “To ensure adequate protection, use mold straps of sufficient size and quantity.” But how does the mold designer know what the sufficient size and quantity is?

Ideally, a safety strap should be strong enough to prevent the mold from opening under various unforeseen circumstances, but always less than the holding power of the mold clamps and the machine's mold opening force. The mold opening force varies widely depending on the type and size of the molding machine. It can range from about five tons to more than 100 tons. It is typically about 10% of the clamp tonnage, no matter whether it's a hydraulic or electric machine.

Some safety straps have strength ratings of 2,000, 3,000 or 5,000 pounds. That is a static load rating. Dynamic loads are the bigger concern. Unfortunately, there is no way to accurately measure or predict how much dynamic load a mold will be subjected to under every circumstance. Assuming the strap is stronger than its mounting bolts, I would select the bolt size based on the mold opening force of the machine — with a large safety factor. For example, for a 100-ton machine with a 10-ton mold opening force, I might use 5/16-inch ASTM A574 alloy-steel bolts (not SAE-grade 8 bolts). From the accompanying table in Figure 2, a 5/16-inch bolt has a single shear strength rating of 4.4 tons. In this example, that is slightly less than half the mold opening force, and yet a very significant amount of holding force in the event of an accident.

PLASTIC RAW MATERIALS

Borealis, TotalEnergies Start Up Baystar PE Joint Venture

New unit brings Borealis' proprietary Borstar PE technology to North America and completed the partners' integrated petrochemicals venture.

Borealis and TotalEnergies recently brought on stream their ambitious Baystar joint venture's new 1.3-billion lb/yr (625,000 m.t.) in Pasadena, Texas, which brings to North America Borealis' proprietary Borstar 3G technology and more than doubles the current production capacity at Baystar's site.

Referred to as Bay 3, the unit completes the partners' integrated petrochemicals venture, which includes the expanded Bayport PE facility, including two existing legacy PE units producing 881.8 million lb/yr, and the 2.2- billion lb/yr ethane cracker at the TotalEnergies Platform in Port Arthur, Texas, brought on stream in mid - 2022.

Borstar technology has been shown to produce advanced value - added polymers with enhanced sustainability by enabling light - weighting and the incorporation of greater amounts of post - consumer recycled materials in a variety of end products, serving the energy, infrastructure and consumer products industries.

According to Baystar president, Diane Chamberlain, "Borstar technology enables our technical, production, and sales teams to collaborate in the creation of the highly customized products our customers require to remain competitive and meet consumer demands" She notes that these PFAS - free materials, enable more than 50% post - consumer recycled material in some end products. Also, due to their broad molecular weight distribution, Borstar PE offers superior physical properties with no need for process aids or additives.

Said Borealis CEO Thomas Gangl, "The arrival of Borealis' proprietary Borstar technology in North America by way of Baystar marks, in line with our owners' strategies, a crucial step for us in becoming a global leader in advanced and sustainable chemicals and material solutions," Expanding and deepening our footprint through Baystar enables us to better serve customers and partners by offering improved access to Borstar based products produced right here in North America."

Resin Price Report: Demand Remains Strong, Despite High Interest Rates.

Processors bought material for short - term needs and to restock inventories, although relatively high interest rates kept some from adding to on - hand resin stocks.

Spot resin trading ticked up last week, but it still fell short of the fervent pace seen during the first half of October, reports the PlasticsExhange in its Market Update. Material availability improved a little and some special month - end opportunities were sufficient to trim back prices at the PlasticsExchange trading desk by as much as a penny for some polyethylene (PE) and polypropylene (PP) grades.

Demand has been robust throughout October, as processors procured material for short - term needs and to selectively restock their drawn-down inventories. However, some still comment that relatively high interest rates are keeping a lid on their onhand resin stocks. Export requests continued to flow into the PlasticsExchange trading desk — the highest volumes went to Europe, Mexico, and South America. Most PE resins drop half - cent

The PE market saw an uptick in activity, as the flow of railcar offers increased, including some nicely discounted material into the end of the month. Film grades led the way last week, and linear - low - density PE edged out low - density PE in terms of transacted volume. Most PE resins were steady to a half - cent lower, relieving a little of the recent price advances, while high - molecular - weight film grade slid a full cent as supplies improved, said the PlasticsExchange.

International PE prices lost some of their upward momentum when crude oil prices declined earlier in the month, although solid offshore demand remains for US resin. The PlasticsExchange said it has not seen much of an accumulation of unsold export inventories, as sellers have been relaxing prices to meet bids and keep material moving. Producers have reiterated their intent to enforce their current $0.03/lb PE increase on October contracts; to maintain upward pressure, some have nominated another increase for November.

PP had another solid trading week. While supplies were not overly abundant, material was consistently found to meet customer demand.

While propane dehydrogenation (PDH) production disruptions have impacted the polymer - grade propylene (PGP) market, PP has also seen its fair share of issues. Total is on track to restart one of its copolymer PP lines in Texas next week, but the P66 plant in Bayway, NJ, continues to face a monomer feedstock shortage. For the second straight month, PP contracts are increasing along with PGP monomer costs.

While October contracts have yet to settle, the cost - push hike should be something close to the $0.045/lb seen in September, which would leave more upside for November, as well. Although processor demand has been consistent, there has been some resistance to advancing prices. As such, average PP prices eased a half - cent this past week, as supplier desire for resin sales overshadowed the need to secure every last bit of margin.

Low - Smoke, Non - Halogen Polyolefinic Compound for Armored Cables

Avient's latest addition to its ECCOH portfolio is designed to prevent environmental stress cracking in low - and medium - voltage cable sheathing.

A new grade recently added to the ECCOH Low Smoke and Fume Non - Halogen Formulations portfolio from Avient Corp. is designed to help prevent environmental stress cracking in low - and medium - voltage armored power cables, protecting power supply and avoiding costly damage. Currently manufactured in Europe, the new ECCOH 5983 Formulation is commercially available globally.

Avient confirms that cable sheathing produced with its ECCOH 5983 compound is based on different polyolefinic systems. It has been shown to help prevent stress cracking in armored cables installed in environments with high - temperature variations by offering high tear strength and elongation at break over a temperature range from - 13 F/25 C to 194 F/90 C. The new formulation surpasses all specifications associated with the BS 7655-6.1:1997 standard, including the most stringent LTS 1 classification, even for complex designs and armored cables.

The Advantages of Using Masterbatch in the Polymer Industry

Polymer masterbatches are a concentrated mixture of pigments, additives, and other fillers used in the plastic industry to improve the physical and aesthetic properties of plastic products while undergoing production. They usually come in the shape of pellets or granules. Since its invention in the 60s, it has become a staple in the plastic industry where it is used to provide added strength, durability, and processability in the finished product with ease. Modern manufacturing industriesrely on masterbatches to improve the quality of the end product so they can make their presence felt in the market while also expanding the capabilities of their offerings. Here are five advantages of using polymer masterbatches:

- Colour consistency – Error! Hyperlink reference not valid. are mainly used to impart colour to plastic products. Manufacturers can achieve consistent colour throughout the entire product without any fading or uneven dispersion. The masterbatch is mixed with polymer resin which ensures that the pigment is dispersed evenly, minimising the problem of unwanted colour variation. This feature is particularly important in industries where aesthetics play a crucial role in building their brand and driving their sales.

- Cost efficient – Masterbatches offer an easier and much more economical means of application compared to older practices such as using individual pigments or additives. Masterbatch products have high concentration, only a little is required to achieve the desired outcome. This, in turn, reduces the need for raw materials and also simplifies the overall process. Less labour-intensive task and more focus on efficiency is the key.

- Expanded functionalities – The use of masterbatches can improve the processing properties of the polymer considerably. Better melt flow, reduced cycle times, easy mould or extrude, flame retardancy, UV stability, and antistatic property are some of the properties associated with plastic products based on the requirement. This results in improved productivity and efficiency while manufacturing the final product.

- Sustainable – The products made with the usage of polymer masterbatches can be reused, minimising the need for new raw materials. Additionally, these products retain much of their inherent properties, allowing the manufacturers to use them in any way they see fit based on their properties. Additionally, newly manufactured polymer products can be made biodegradable, helping manufacturers to minimise the impact on the environment.

- Customisation – Polymer masterbatches are highly versatile and can be customised easily. Manufacturers can choose from a vast range of masterbatch types to achieve the required outcome. This feature allows manufacturers to create unique products which are tailored to specific market demands.

To conclude, polymer masterbatches are an important part of the plastic industry due to their ability to provide a range of benefits while also contributing towards environmental sustainability. They are a valuable asset for manufacturers to create high-quality, cost - effective, and customisable plastic products.

Source: Blend Colours

Stronger, Stretchier, Self-Healing Plastic

An innovative plastic, stronger and stretchier than the current standard type and which can be healed with heat, remembers its shape and partially biodegradable, has been developed by researchers at the University of Tokyo. They created it by adding the molecule polyrotaxane to an epoxy resin vitrimer, a type of plastic. Named VPR, the material can hold its form and has strong internal chemical bonds at low temperatures. However, at temperatures above 150 degrees Celsius, those bonds recombine and the material can be reformed into different shapes. Applying heat and a solvent breaks VPR down into its raw components. Submerging it in seawater for 30 days also resulted in 25% biodegradation, with the polyrotaxane breaking down into a food source for marine life. This new material could have wide - reaching applications for a more circular economy to recirculate resources and reduce waste, from engineering and manufacturing, to medicine and sustainable fashion.

Milacron and FANUC Drive to Deliver Best - in - class all - Electric Injection Molding Solutions

The product of a decades - long partnership with Milacron, the Fanuc Roboshot offers the most available injection unit sizes on a single frame found in the injection molding industry. The machine takes state - of - the - art CNC precision technology and applies it to injection molding. The results are greater acceleration, ultimate precision of movement, extremely short cycle times and the ability to produce the most consistent and highest quality parts.

An all-electric, plastics processing workhorse, the Roboshot is engineered for greater rigidity, versatility, and reliability. Backed by Milacron's commitment to service, safety and quality, processors spanning from medical and electrical to automotive rely on this high-precision machine to perform on their shop floors 24/7, year after year.

Milacron's Roboshot customers are often loyal to the Cincinnati-based OEM, as the machine is known worldwide for best - in - class reliability. Elite Biomedical Solutions, a Milacron customer for more than a decade, produces replacement components for infusion and telemetry assets for hospital biomed departments across the United States. Being in healthcare, Elite requires a machine solution that consistently produces with precision, day-in - and - day - out.

“Typically we run low volumes, but very tight tolerances, and that's healthcare,” explained Elite CEO and Founder, Jeff Smith. “As a result of that, with the Roboshot solution, we're guaranteed that process to be consistent with every part we make, and we make thousands and thousands of parts weekly.”

Applications Ranging From Medical Parts to Powdered Metal

Showcasing the largest range of injection unit sizes on the market, Milacron's Roboshot machines are capable of exerting clamping forces from 17 to 550 US tons. Each model has anywhere from five to nine different screw/barrel capacity choices.

Several Roboshot models are available with “micro” injection units making it ideal for medical and electronics, where the molds are large but require unusually small screw diameters. In 2023, three new clamp / injection unit combinations were released to meet the needs of these industries. Wide platen and tie bar spacing allow for larger mold sizes, increasing the Roboshot's flexibility. The machine also comes standard with an advanced rigid toggle mechanism that is ideal for faster cycles, lower maintenance, and improved component life.

“Fanuc's automation expertise executed in the assembly and quality control process for all of their products is impressive,” explains Kent Royer, Roboshot Sr. Product Manager. “The result is the highest level of manufacturing efficiency and quality in any industry. The Roboshot's design provides the customer with the widest range of applications on the market.”

The industry standard - setting technology found in the latest Roboshot model, the Alpha-SiB-

series, is a direct result of decades of insight between Milacron and Fanuc. The Alpha Si-B series iHPro controller features next-generation technology that delivers greater capabilities and standard features not found on most or are optional on other brands. Extensive focus has been made to create an operating system in the Roboshot that offers seamless operation and integration with auxiliary support equipment. The controller is designed to minimize human error by using OPC UA communications and I/O links that prevent production without the full system's confirmed ready status.

The Roboshot design is very well suited for the production of almost anything from thick wall camera lenses to micro medical products. Common applications include drug delivery systems (such as the telemetry and infusion assets produced by Elite), COVID test kits, self-injectors, vials, catheters, pipettes, contact lenses, electrical connectors, and computer chip production.

In addition, thanks to a wide range of Milacron - engineered options, even standard Roboshots can produce specialized items like MuCell, Thermoset, liquid silicone rubber, powdered metal (PIM), and ceramic (CIM) parts.

Roboshot retrofit packages are offered through Milacron so that customers can easily switch applications in minutes.

Celebrating a 40-Year Legacy of Innovation

Milacron, today known as a global leader in plastics processing solutions, was first an industry leader in CNC machinery and tooling for more than 100 years. In 1968, the Ohio - based company fully transitioned into the plastics industry.

A half a world away from Milacron, Fanuc Corporation was founded in 1956 in Japan. The company's journey focused on the development of servo motors and CNC controls back then. In 1982, Fanuc brought its technology to the U.S. in the form of industrial robots.

In October of 2023, Milacron President, Mac Jones, traveled to the Fanuc global headquarters at the base of Mt. Fuji in Yamanashi, Japan to commemorate the four decades of successful collaboration shared among the two companies. The leaders celebrated their successes and discussed ways they can continue to evolve in the all - electric injection molding space.

“Milacron has relied on Fanuc's invaluable partnership to deliver world-class, all-electric solutions, technology, and service to our North American-based customers for decades. We look forward to continuing the advancement of critical innovations across the plastics processing industry with Fanuc,” Jones said.

Partner with Possibility: Elite Biomedical

The medical plastics market is an industry that relies on comprehensive manufacturing solutions to meet precise production requirements. Milacron's cutting-edge Roboshot solutions are designed to meet these high demands with clean - room - ready machines and processes that produce consistent part quality.

The Roboshot's gold - standard features, like configurable core sequence, flexible I/O, unmatched pressure control, and industry-leading artificial intelligence (AI) keep processors in the medical industry running with tight tolerances and precision year after year.

ARBURG offers a Suitable Solution for Everyone

At Formnext 2023 ARBURG additive demonstrated its comprehensive competence in additive manufacturing with six machine exhibits, extensive consultations, including on digital products and solutions, as well as numerous component samples. One highlight was the new high - temperature freeformer 750-3X by ARBURGadditive, which was producing air distributors from genuine Ultem granulate. Soft TPE hearts with a sponge structure are a unique product that can only be manufactured additively in Arburg plastic freeforming (APF) and which turned out to be a popular give-away. APF parts made from PA with 25 percent glass fibres were on show for the first time and were also met with huge resonance from trade fair visitors.

"At the leading global trade fair Formnext 2023, we presented ourselves as a globally active solution provider whose open systems provide the perfect answer for the widest range of requirements in additive manufacturing," concludes Dr. Victor Roman, Managing

Director at ARBURGadditive, of this extraordinarily successful trade fair show. "Our freeformers and 3D printers process a wide range of plastic granules, filaments and liquid silicones into functioning and high - quality components using reliable processes such as in medicine technology or aerospace. In addition we offer digital products and services such as the arburgXworld customer portal, the ProcessLog app for process documentation and smart software solutions. I have no doubt that, with our technologies and know-how, we will exploit this huge potential in the future. The outlook from out perspective is outstanding."

Machine Manufacturer with 100-year Success Story

"Few other companies in the AM world can look back on a 100-year history of success and have acquired as much experience in machine construction and software development for plastics processing during this time as Arburg has," adds Dr. Christoph Schumacher, Director of Global Marketing at the Arburg parent company. "At the trade fair booth, it was quite literally easy to grasp how great the advantages are of being able to offer, with the freeformers and 3D printers of the TiQ and LiQ series, a suitable solution for virtually every challenge – whether this be soft and cuddly or hard as nails, and at the same time being able to rely on enormous know - how and a global infrastructure."

Numerous Innovations and Further Developments

Since autumn 2023 a freeformer 750-3X has been available in a high-temperature version, the build chamber of which can be tempered to 200 degrees Celsius; with plastification of the plastic granules taking place at up to 450 degrees Celsius. The manufacture of geometrically intricate ventilation ducts for aerospace manufactured from original Ultem 9085 was demonstrated as a typical application. Another new development that the ARBURG Plastic Freeforming team is currently working on is the processing of fibre-glass reinforced thermoplastics. As an example, initial first results were introduced using technical parts made from PA with 25 percent fibre-glass.

Equally interesting were personalised multi-material shoe insoles made from flexible TPE and a hard area made from PP, on a standard freeformer 750-3X. This extra soft ARBURG Plastic Freeforming product was manufactured by a freeformer 200-3X from TPE with a sponge structure. At Formnext, 15 small and highly popular hearts, were manufactured in around 90 minutes build time. In the specific customer application, this material is used for personalised breast prostheses.

3d Printers from Innovatiq Round off an Extensive Range

Also of interest was an application made from liquid silicone: A 3D printer LiQ 5 processed the certified standard - LSR KEG-2003H-50A/B by Shin-Etsu for the first time, which for instance can be used to manufacture individual orthopaedic accessories or products for the food and drinks industry. InnovatiQ has also developed a new slicer software LAM technology (Liquid Additive Manufacturing) specially for this. The filament printer TiQ 5 Pro offers new features such as an integrated material dryer, active build chamber tempering and software-optimised material discharge meaning that polycarbonate can now also be processed reliably and reproducibly for instance. A sophisticated example of a part was a high-speed water scooter board made of individual carbon-fibre reinforced elements that had been laminated and combined to create a finished board and proved a real attraction. By way of contrast there was also the filament printer TiQ 2, which enables economical entry into additive manufacturing, for instance for the manufacture of robot grippers and operating resources.

ENGEL E-Mac Range

Electric and Efficient

If you have a small production area, the ENGEL small e-mac injection moulding machine could be perfect for your company. Combining great flexibility in machine configuration with minimal floor space requirements along with our application expertise it will fulfil all your requirements from a single source.

Take a Look at the Advantages of The all - electric E-mac:

Clean production thanks to encapsulated toggle lever - requires less lubricant and increases the service life. Oil leakage at the toggle joints is avoided and enables clean production for products from the food and medical technology

sectors. The significantly lower cleaning requirement also reduces downtimes.

Compact on the outside and big on the inside - A short clamping unit with maximum very large opening stroke. The footprint on the non operator side is also reduced. An extended tie bar distance creates space for larger moulds.

The right unit for every application - The "Standard" variant for the economical production of near-standard injection - moulded parts. The "High" variant for high injection speeds ensures smooth production of thin-walled technical parts. With the "Heavy Duty" powerhouse, you achieve perfect results with thick - walled components thanks to high and lasting holding pressure.

Fast availability thanks to stock machine programme - Thanks to a well thought - out logistics concept, you will receive your compact, small injection moulding machine soon after we receive your order. You can adapt your e-mac stock machine to your specific requirements by choosing from a wide range of options. Combination with robots is also possible.

Saving costs. High energy efficiency saves cash – Thanks to consistent use of all-electric drive technology with best - in class efficiency, the ENGEL e-mac is a genuine energy saving champion. This high energy efficiency saves you cash. Shot for shot. This helps you keep your ongoing operative costs down to an amazingly low level. Our complimentary products and services for our all-electric range include Digital solutions to support you through the whole product life cycle, expertise in injection moulding automation at all levels as well as service support from the installation of your machine right through to the end of its service life.

Most Read Stories of 2023 - Number 2: Case Study: ENGEL and Intercable

As published by ENGEL, this case study examines how ENGEL's injection moulding simulation aimed to create a smoother process for its client Intercable.

Why Does Intercable Need a Data Interface Like Sim Link for Simulating Injection Moulding?

Every injection moulder faces challenges in achieving its production targets. The most important factor in the development of new products is a short time to market. At the same time, the costs for the development and the optimisation of the moulds must be kept low.

ENGEL says experimental methods such as filling studies are often not sufficient and analytical methods lead to better results. however, the problem often arises of establishing a smooth data exchange between software and production. ENGEL claims sim link makes problem - free data exchange between simulation and the injection moulding machine possible. This, in theory saves time consuming co - ordination loops between mould development and production.

These iterations during pilot sampling were also the decisive point why Intercable chose sim link.

How have the challenges for Intercable been solved by sim link?

ENGEL claims by using sim link, the number of repetitions could be significantly reduced. The quality of the simulation has also improved and become more accurate. Difficulties in the coordination could thus be successfully overcome.

Some successes have been achieved with sim link:

- Potential problems are eliminated before the mould is even built
- Reduced risk of delayed production start - up
- Project costs remain within budget

Simulate Injection Moulding: what do ENGEL Claim are the Advantages of Sim Link?

Higher Quality of the Simulation

The individual machine dynamics are taken into account and the simulation can be carried out more realistically. The measured production data can be fed back into the simulation very easily. This improves the quality of the simulation.

CIRCULAR ECONOMY/ BIO-PLASTICS/ RECYCLING

AI Shows Plastic Pollution can be almost Eliminated by 2040

A new AI-powered digital tool, which is available for anyone to access, gives users the ability to see how much pollution can be avoided if different measures were to be taken globally.

If no action is taken, the data underpinning the AI tool states that plastic pollution will jump 62% between 2024 and 2050. However, an ambitious treaty, incorporating a mix of policies, could see plastic pollution almost eliminated in 2040, with mismanaged waste reduced by 89% - to about 10 million metric tons per year, which the researchers say is 'manageable'.

The tool, which has been developed by researchers at UC Berkeley and UC Santa Barbara, takes into account five specific actions, namely:

A minimum recycled content commitment,

A cap on production of virgin plastic,

Investment in plastic waste management infrastructure,

similar investments in new recycling capacity,

a small tax on plastic packaging (e.g., items like plastic bags).

The tool uses machine learning to combine information about population growth and economic trends to forecast the future of virgin plastic production, pollution and trade.

“Finally solving the plastics crisis means a win for the environment, a win in our fight against climate change, and a healthier and more just future for all people,” said Dr. Douglas McCauley, Professor UC Santa Barbara, Adjunct Professor UC Berkeley. “A weak treaty would be worse than no treaty at all. But I was so thrilled to see scientific proof that a strong treaty could virtually end the problem of plastic waste forever. Nothing makes me happier than knowing that my generation could be the last generation to live with the cancer of plastic pollution. I can only hope the nations meeting in Nairobi next week pay attention to these findings.”

“I confess that when I first saw these nations promising to end plastic pollution by 2040 - that this would be impossible,” said Dr. McCauley. “But I was blown away to discover a pathway to near - zero in this research.” It has been released just as UN member state policymakers are due to head to Nairobi, Kenya, for the third of five negotiation sessions for a Global Plastics Treaty next week. The treaty is a proposed, legally binding measure to end plastic pollution, which more than 175 nations have agreed to jointly develop and sign.

"The tool is unique in that it allows real - time interactive prediction for UN negotiators,” said Sam Pottinger, a Senior Research Data Scientist at UC Berkeley. “They can quickly simulate outcomes of different policy scenarios which they can make both by selecting policies built into the tool and by creating their own. Bringing their expertise into conversation with the modeling, this gives them the opportunity to use the AI and engine to explore scenarios that maybe we didn't even consider.

This freedom and speed lets the tool keep up with conversations as they evolve and ultimately enables nations to align on an ambitious informed suite of treaty policies to reduce mismanaged waste."

One part of the analysis found that establishing a minimum recycled content rate of 30%, as has been adopted in the UK for plastic packaging, would slash annual mismanaged waste by about 31% by 2024. The data also projects that using the funds from taxes and Extended Producer Responsibility schemes to invest in waste management, (e.g. collection services) would go further than if they were used to invest in recycling plants. This funding would go further still, according to the researchers, if those waste management schemes were concentrated in the Global South.

"We cannot recycle our way out of this," said Dr. Nivedita Biyani, a researcher on global plastic modeling at the Benioff Ocean Science Laboratory at the University of California Santa Barbara. "We need countries and companies to come on board to help limit the amount of plastics going into our oceans and larger environment. Especially fast-moving - consumer goods companies can make a marked difference here, by rethinking their packaging choices they make on behalf of their consumers.

"The developing countries house much more of the world population than NAFTA and EU combined.

"If they start using plastics at the rates that NAFTA and EU are, we will be in much more trouble. That said, there is a way out of this mess. By including all the policies outlined, we can reach a near-zero mismanaged waste scenario. I hope world leaders in NAFTA and the EU will commit to a high ambition treaty to help other countries leap - frog their way out of this."

Source: InterPlas Insights

World's Largest Plastic Recycling Plant Opens

Grand opening of Site Zero in Sweden, which can sort up to 12 types of plastic including four types of flexibles at a 95% success rate, is the most efficient recycling plant in Europe.

The world's biggest plant for sorting plastic packaging opened for business . Site Zero in Motala, Sweden, doubles plastic recycling compared to the previous benchmark plant, which was already one of the most efficient in Europe. Up to 95% of all packaging received can be recycled.

Svensk Plaståtervinning (Swedish Plastic Recycling) invested one billion Swedish Krona (about $95 million) in the facility.

"The conditions now exist to actually make plastics part of the circular economy," says Mattias Philipsson, CEO of Svensk Plaståtervinning. Minister for Climate and Environment Romina Pourmokhtari and more than 350 guests from Sweden and Europe attended the opening ceremony.

The key to successful plastic recycling is retaining the value of the material, which requires efficient sorting and recycling of each individual plastic type. This is where Site Zero is pioneering: The plant can sort as many as 12 types of plastic, which corresponds to almost all types of plastic on the Swedish packaging market, compared to three or four at comparable plants in Europe.

Among those are two types of flexible packaging polymers. Site Zero has now been tested for a period prior to opening, and the results show record figures for sorting efficiency. As much as 95% of the packaging arriving at the plant can be sorted out for recycling in the next step.

"This means a doubling of plastic recycling compared to our previous plant, which was already one of the most efficient in Europe," says Mattias Philipsson, CEO of Svensk Plaståtervinning. "The results from the test period show that plastic can now become part of the circular economy.

"With Site Zero, we have set a new path for plastic recycling and the rest of Europe. The world needs to follow, to reduce emissions from incineration and the need for primary raw material. It is no longer justifiable to incinerate as much plastic as we do or melt it down into low-quality products that cannot be recycled again."

Site Zero will be the world's biggest sorting plant and can process 200,000 tons of plastic packaging.

This is approximately equivalent to the total volume in Sweden. About half of this plastic packaging is collected by the Swedes, and until more plastic reaches the recycling system, Svensk Plaståtervinning has offered capacity to other countries. Starting in 2024, Site Zero will receive most of Finland's household plastics. Site Zero can handle 1,000 mixed plastic packages per second, including several types of flexibles. | Svensk Plaståtervinning

Impressive statistics of the Site Zero recycling facility. Size: 60,000 square meters (645,835 sq ft); previous plant 15,000 sqm (161,458) sq ft. Sorting capacity: 12 types of plastic vs three to four types at comparable plants.

Polymers sorted: rigid polypropylene (PP); rigid high-density PP; flexible PP; flexible low-density polyethylene (LDPE); transparent PET trays; transparent PET bottles; colored PET bottles; polystyrene (PS); expanded PS (EPS); polyvinyl chloride (PVC); two grades of mixed polyolefin laminates; and metal and non-plastic rejects.

Sorting efficiency: Up to 95% of the received plastics can be sorted out and recycled in the next step. Sorting sensors: 60 near-infrared (NIR) sensors; comparable plants have an average of 5 NIR sensors and the previous plant had 19 sensors.

Advanced control system: fully automated process, real - time optimization, artificial intelligence. The different parts of the plant influence and talk to each other, optimizing the sorting process. Reception capacity: 200,000 tons per year of mixed plastic packaging from households (previous plant, 100,000 tons per year). Sorting speed: 1,000 packages per second, 42 tons per hour.

Source: Plastics Today

Trio Tackles Cold - Seal Film Recycling

American Packaging, Bostik, and Charter Next Generation create a breakthrough new cold-seal film compatible with store drop-off recycling. Three complementary plastics and packaging companies have collaboratively engineered a polyethylene (PE) cold-seal film that passed the Association of Plastic Recyclers (APR) test protocol for PE flexible packaging to make it eligible for the How2Recycle Store Drop-off label.

The collaborators are film converter American Packaging Corp., adhesive manufacturer Bostik, and PE film producer Charter Next Generation (CNG).

Brand owners will benefit from the companies' work, as it ensures that packaging made from the new film meets recognized recyclability standards, is non-damaging to the recycling stream, and is easy for consumers to recycle.

The impetus for the partnership was How2Recycle's concern about how cold-seal adhesives affect the recycling stream, an issue that surfaced when the group conducted its most recent guideline review of flexible PE recycling streams.

At that time, How2Recycle requested testing of cold-seal materials using APR's Critical Guidance Testing for PE Film and Plastic Packaging, a lab evaluation to assess the compatibility of PE-based flexible packaging with reclamation systems that accept films from store drop - off locations.

Cold Seal Welcomed for at-Store Recycling.

Furthermore, How2Recycle stated that brand owners with cold seal in their PE packaging had one year to validate that the packaging met APR's recyclability standards. Without validation, the brand owners would no longer be allowed to display the How2Recycle Store Drop - off label on their packaging. Many brand owners rely on cold-seal packaging, particularly for confections and other dry foods, so it became urgent to determine, definitively, how cold seal affects recycling. In response to How2Recycle's announcement and request for testing, American Packaging, Bostik, and CNG jointly developed a cold - seal film structure and submitted it for testing at Plastics Forming Enterprises, an APR-approved lab.

Testing proved that the new film does not adversely affect recycling steams. Consequently, How2Recycle granted the collaborators a prequalification letter for the structure. Brand owners will use the letter when submitting their packaging to obtain How2Recycle Store Drop-off certification.

In this exclusive Q&A, Courtney McLachlan, North America marketing manager at Bostik, answers PlasticsToday's questions about the new film.

Tell us about the PE cold-seal film that the partner companies submitted to the APR-approved lab for testing.

McLachlan: It was a newly engineered structure, as a result of the collaboration. The companies worked together to determine film grade, cold-seal grade, and cold-seal coat disposition for the structure.

Each chosen component was intentionally designed to make it hard for the finished structure to pass the test. Please refer to our case study for more information about the structure that was created.

The companies theorized that if challenging components could pass, then less challenging ones would be likely to, as well. Additionally, this approach would help truly reveal the extent to which the chosen cold-seal adhesive may be impacting the recycling stream.

The companies then submitted the new structure, as well as a control structure, for testing. In addition to the new structure passing the test, the companies learned that the new structure offered even better performance than alternatives in some cases.

What film characteristics did you evaluate when deciding on a structure to submit for testing?

McLachlan: The structure characteristics the companies evaluated were pigmented vs. clear PE, cold-seal grade, and cold - seal pattern / deposition.

Overall, we chose a pigmented PE because the pigment was an additional hurdle the structure would need to pass, and many films in the market are pigmented.

For cold-seal grade, Bostik chose the formulation that was most likely to gel during the blown film portion of the APR test, and the cold-seal deposition was maximized to mimic small-format packages that contain the highest coverage or percentage cold seal in a package — about 60% cold-seal coverage.

For what types of packaging can the new film structure be used?

McLachlan: Cold seal is primarily used in flow-wrap packaging, so we would expect this structure to be used primarily on horizontal form-fill-seal packaging lines. However, it also could be used for other package formats in which fast packaging line speeds are needed.

For what package sizes can the film be used? And for what product types?

McLachlan: Packages as small as "mini" portions — think Halloween-sized candy — up to large-format bars; that is, it covers all existing cold-seal package format sizes in the market today.

It can be used with any dry foods, which include confectionary, salty snack, nutritional bars, bakery, ice cream, sticky media candy, etc.

Are any brand owners using the film structure commercially?

McLachlan: This information is proprietary to each company and cannot be disclosed. However, this is a commercially available structure.

Source: Plastics Today

Coveris Launches Recyclable Thermoforming Film for Medical Products

Formpeel P reportedly achieves the same level of functionality and safety as conventional medical packaging materials in a more sustainable profile. Flexible packaging specialist Coveris has launched a recyclable thermoforming film suited for medical device applications. The Vienna-based company introduced Formpeel P at the Compamed trade show currently underway in Düsseldorf, Germany.

Formpeel P joins Coveris' portfolio of sustainable materials, which also includes Formpeel T, Flexopeel T, and Cleerpeel. It provides the same functionality and safety as traditional materials, while minimizing packaging and product waste, said the company. Co-extruded puncture - resistant Formpeel P film is available on a peelable polyethylene (PE) or polyolefin (PO) base. Combined with a sustainable lidding film, the thermoformable polyamide - free bottom films comprise a sustainable packaging alternative for medical products. The materials withstand ethylene oxide, plasma, and gamma sterilization. Together with Cleerpeel, a transparent pouch based on oriented PE/ PE film, both solutions allow for the sterile extraction of medical products, optimum protection. and ease of use using sustainable resources, said Coveris.

Sustainability is a core value at Coveris, according to Jan-Willem Bruijsten, who is the medical segment director. “At Coveris we have built our entire strategy around a vision of No Waste because we believe that fighting waste in all its forms is the driving force behind a more sustainable future.

Coperion Starts up Test Center for Optimizing Plastics Recycling

Coperion has successfully launched the operation of its Recycling Innovation Center in Niederbiegen, Germany. The test center will be able to host testing of every recycling process step — from material handling and feeding to extrusion, compounding, pelletizing, material postprocessing and deodorization. Extensively equipped recycling systems are available that can be modified in myriad ways, depending upon the specific requirements of the recyclate to be produced.

The new Coperion Recycling Center will complement the Herbold Meckesheim Test Center, where customers can simulate and test the mechanical pretreatment of plastic. Herbold Meckesheim has been part of Coperion's Recycling Business Unit since 2022.

The new center is located directly adjacent to Coperions' Bulk Solids Handling Test Center. First tests have been performed for customers, in which new products and recycling processes have been developed and tested. Coperion process engineers can modify the available recycling technologies such that the recompounds are manufactured with the highest efficiency possible while maintaining the level of product quality. The results achieved can then be scaled up to production level because of the constant base parameters of all Coperion technologies. Coperion's technological developments in plastics recycling have been integrated into the Recycling Innovation Center's machinery and can be tested there. Examples include Coperion's Fluidlift flash drying, Mix-a-lot solid mixing and ZS-B Megafeed side feeding solutions. “The new Recycling Innovation Center shows how important it is for us to advance technology that helps our customers work toward more sustainability solutions and a functioning circular economy. The Recycling Innovation Center offers the ideal environment, both for our own research and development projects as well as for our customers, to master the challenges of plastics recycling,” says Frank Lechner, general manager of process technology and research & development at Coperion.

Source: Plastics Technology

PlantSwitch Completes Early Growth Funding Round

Bioplastic Manufacturing Company PlantSwitch Completes Early Growth Funding Round

Nextpoint announced a $2 million investment, part of a $7.7 million raise for PlantSwitch, which uses agricultural waste to manufacture plastic

The investment firm NexPoint announced its investment of nearly $2 million in the early growth funding round of PlantSwitch, a bioplastics manufacturing company with a carbon negative production process that recycles agricultural waste to produce biodegradable and compostable resins for single-use products. The investment is part of a total $7.7 million raise in this early fundraising round, to which other institutional investors, along with NexPoint, subscribed.

PlantSwitch has stated its mission is “to replace all petroleum-based, single-use plastic with plants” by manufacturing and distributing its compostable bioplastic resin. PlantSwitch's manufacturing process utilizes agricultural waste products such as rice husks, wheat straw and other cellulose-rich byproducts in combination with a polymer to make sustainable bioplastics while upcycling agricultural waste.

In addition to being carbon negative, PlantSwitch says its bioplastics are cheaper to produce and more compostable than other bioplastics. PlantSwitch, which was founded in 2020, has also recently closed on a 52,000-square-foot manufacturing facility

in Sanford, North Carolina, which will increase its production capacity.

NexPoint's investment, and this round generally, will help PlantSwitch scale its production capacity, increase its marketing capabilities and deliver products to existing and future customers.

PlantSwitch recently entered framework contracts with several restaurant and grocery store chains which it will begin supplying as early as next month. As PlantSwitch scales, its founders expect to increase its full-time workforce to more than 50 employees by the end of 2024, and anticipate needing additional manufacturing space in the next few years.

"Some studies forecast bioplastic demand increasing from 4.9 billion pounds in 2022 to almost 13.9 billion pounds in 2027," says Dillon Baxter, co-founder and CEO at PlantSwitch. "With that kind of demand increase, PlantSwitch's biggest priority is sustainable growth. We are confident that our product, our supporters like NexPoint, and our distinguished board can help PlantSwitch scale in a deliberate way that allows us to take advantage of demand conditions."

Reports from the Nova Institute in Germany corroborate the trend, continuing to forecast growth for bioplastic production.

Source: Plastics Technology

Is this Sorting Facility Ready to Sort our Recycling Woes?

Sweden opens state-of-the-art plant for sorting plastics for recycling

Thanks to cutting-edge technology, the Site Zero plant in the central city of Motala can sort up to 200,000 tons of plastic packaging a year, according to Sweden Plastic Recycling, a non-profit company co-owned by Swedish plastics, food and trade industry groups. The company says that's more than any other sorting facility in the world.

A unique feature of Site Zero is that it can separate up to 12 different types of plastic.

An old plant at the same location could only sort 5 types of plastic, which meant that only 47% of the material was sent on for recycling and the rest was incinerated, said Mattias Philipsson, CEO of Sweden Plastic Recycling.

The new plant will be able to send up to 95% of the packaging for recycling, minimizing the amount that is incinerated. Burning plastic has a climate impact by adding greenhouse gasses to the atmosphere.

The world produces more than 430 million tons of plastic annually, two-thirds of which are short-lived products that soon become waste, filling the ocean and, often, working their way into the human food chain, the U.N. Environment Program said in an April report.

Plastic waste produced globally is set to triple by 2060, with about half ending up in landfill and under one-fifth recycled.

Efforts to create a landmark treaty to end global plastic pollution are taking place in Kenya's capital, Nairobi, where nations, petrochemical companies, environmentalists and others affected by the pollution are gathered for U.N. - backed negotiations.

At Site Zero, the roar of the machines is deafening as conveyor belts carry 40 tons per hour of mixed plastic waste through the entrails of the factory. Gradually, as the chocolate wrappers, plastic bags, yogurt containers or white polystyrene progress across the 60,000 square-meter complex, it's broken down, separated by size and sorted in a fully automated process reliant on infrared cameras.

“It's a game changer,” said Åsa Stenmarck, of the Swedish Environment Protection Agency. “Not just the sorting itself, but that they actually believe there is finally a market” for all 12 types of plastic sorted by the plant.

Robert Blasiak, a researcher at the Stockholm Resilience Center, said Sweden is “ahead of the curve” when it comes to plastics recycling, and that waste management in many other parts of the world has a long way to go.

“A closed loop for plastics has to be the end goal, really, not just for corporations and governments, but

for this U.N. plastics treaty that's being negotiated now," he said. "And that means that every stage along the plastic lifecycle, basically the emissions moving through these life stages need to be reduced to zero." Once sorted, plastic can be recycled in the conventional, mechanical way or via a chemical recycling method, which typically uses heat or chemical solvents to break down plastics into liquid and gas to produce an oil-like mixture or basic chemicals.

Industry leaders say that mixture can be made back into plastic pellets to make new products. But environmental groups say that chemical, or advanced, recycling is a distraction from real solutions like producing and using less plastic. Philipsson said that even though the more efficient sorting facility will help raise the amount of plastic being recycled in Sweden, it will also depend on households properly separating their waste.

"Most plastics are still incinerated because they haven't been sorted by households," he said.

Neglected Industrial Plastic Shows its Economic Value

In a new study led by the Universities of Portsmouth and Ghent, research revealed that larger scale recycling collections of overlooked plastic types can deliver economic viability. Focusing on non-household plastic waste, such as polyethylene terephthalate (PET) trays and low - density polyethylene (LDPE) wrapping film, the cost-benefit study has the potential to reshape how local authorities handle these materials. Typically used for packaging fruits, vegetables, and prevalent in industrial applications, these plastics often end up as non-household end - use plastic waste generated by commercial, industrial and institutional activities. Researchers from the Universities of Portsmouth and Ghent have found that increasing the scale of recycling for these plastic types, makes them more economically viable.

The study is part of the Plasticity project - which aims to develop strategies and solutions that could increase recycling rates in EU urban environments from the current levels of 20-30 per cent to over 50 per cent. The study established a crucial benchmark, revealing that companies must collect and properly recycle a minimum of 10,500 tonnes per year of this waste to achieve a positive net economic balance. This amount is comparable to what a medium-sized city like Ghent and its surrounding municipalities might generate. The implications of this research extend beyond a scientific breakthrough. It offers a profound opportunity to revolutionise plastic recycling practices, especially in commercial and industrial sectors across Europe. With Europe standing as the world's second-largest plastic polluter, these findings are timely, holding the potential to aid in achieving recycling targets and reducing the carbon footprint. This interdisciplinary study shows that well - designed waste management systems can drive new products and services for the green economy. It demonstrates how place-based investment in new waste management infrastructure - combined with innovative recycling technologies and new logistics to collect 'lost plastics' -can boost sustainable regional development and support recycling hubs.

Professor Diego Vazquez-Brust , University of Portsmouth

Professor Diego Vazquez-Brust from the University of Portsmouth explains the broader impact of the research. He says: "This interdisciplinary study shows that well-designed waste management systems can drive new products and services for the green economy. It demonstrates how place-based investment in new waste management infrastructure - combined with innovative recycling technologies and new logistics to collect 'lost plastics' -can boost sustainable regional development and support recycling hubs.

"The Plasticity project's overarching results indicate that technical solutions and regulatory pressures alone are insufficient for substantial economic growth and environmental benefits. Instead, the implementation of regional waste management systems that add value to the economy requires radical changes in the behaviours and practices of various stakeholders." The study specifically explores the selective collection and mechanical recycling of non-household and end-use plastic film waste, a sector often overlooked in waste management.