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The Official Journal of the Organization of Plastics Processors of India

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• Mumbai

• March 2024

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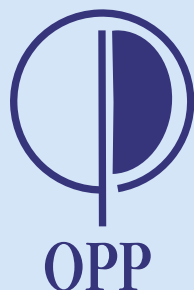
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FROM THE PRESIDENT'S DESK

Mr. Dilip Parekh



Dear Members,

Greetings from Organization of Plastics Processors of India!

We are at the end of the Financial Year 2023-2024.

Organization of Plastics Processors of India is now registered on Darpan Portal of Niti Aayog. In order to strengthen its commitment to the MSME Sector, OPPI has also taken registration of Ministry of MSMEs. OPPI has applied for International Cooperation Scheme of Ministry of MSMEs to provide MSMEs with opportunities to enter International Markets and integrate them to global value chains.

Financial assistance is provided to eligible / State / Central Government Organization, registered industries Association, Societies/Trusts involved in promotion and development of MSME sectors. The revised IC Scheme has three sub components namely (i) Market Development Assistance, (ii) Capacity Building of First Time MSE Exporters and (iii) Framework for International Market Intelligence Dissemination (IMID). Under the Market Development Assistance, financial assistance is provided for participation in International Exhibitions/Trade Fairs abroad and also to organize International Conferences/Seminars/ Workshops/Summits in India.

As and when we get approval for the IC Scheme for International Plastics Exhibitions promoted by OPPI, you will be informed regarding the same.

We propose to invite a Startup Founder as the Chief Guest for the Annual Meet, which may be held in July/August 2024. The Topic of the talk may be – “Ecosystem of Startups”. The other details will be informed to you in due course.

As informed to you we have tied up with Tibro for CHINAPLAS 2024 scheduled from 23rd to 26th April 2024 in Shanghai. CHINAPLAS 2024 is an important event on the Industry's calendar and the starting point for decisions that shape future products, processes and solutions. The Hotels chosen for CHINAPLAS 2024 are near the Exhibition Venue and are of good quality. All members proposing to go to CHINAPLAS 2024 may contact to OPPI Secretariat.

With Best Wishes,

Dilip Parekh
President

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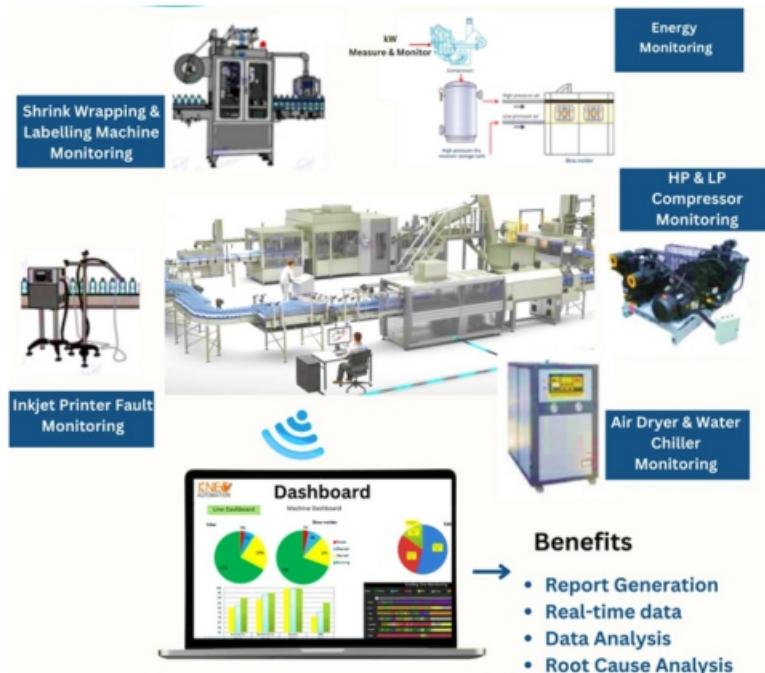
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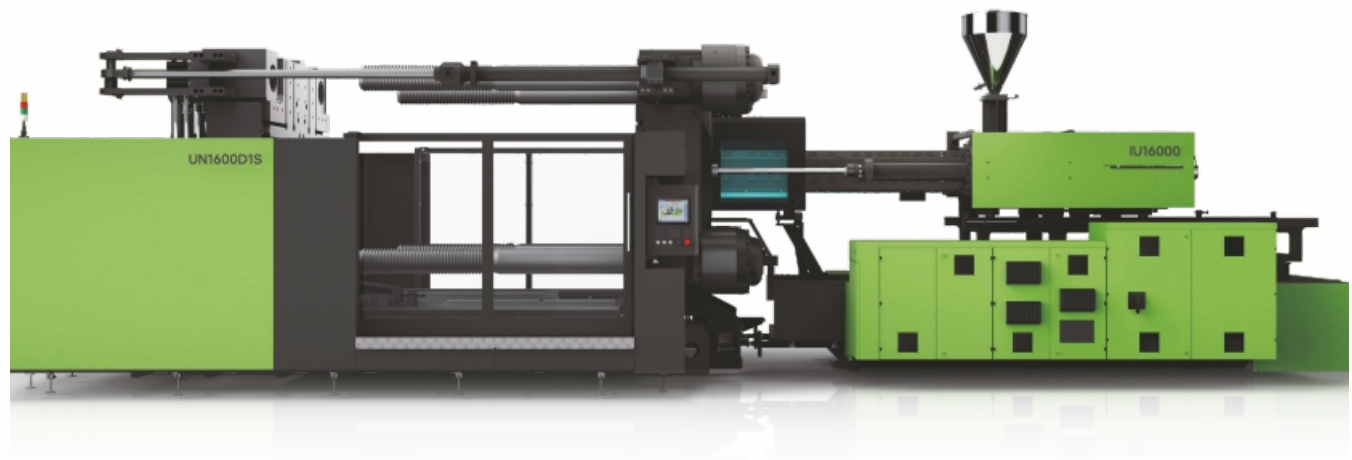
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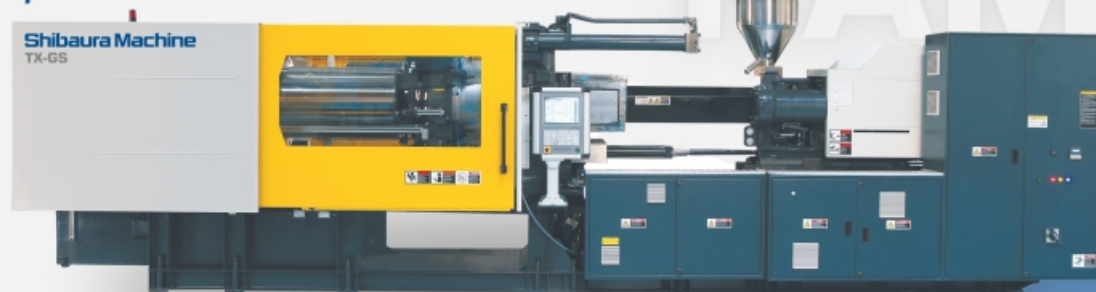
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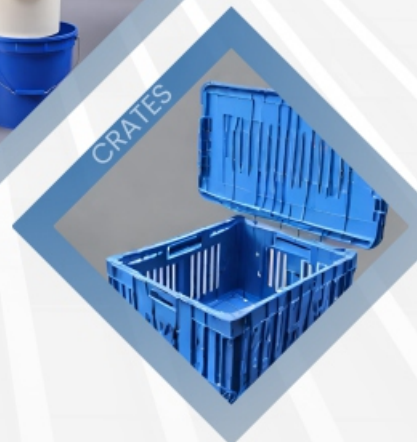
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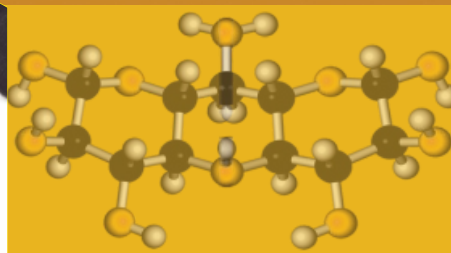
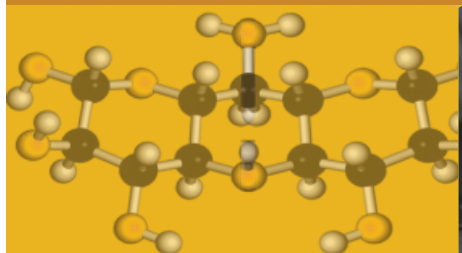
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Plastics, Packaging and Printing Industrial Fair

12th ~ 15th February, 2025

Venue: Int'l Convention City Bashundhara (ICCB)

Organizers: Yorkers Trade & Marketing Service Co., Ltd. Bangladesh Plastic Goods Manufacturers & Exporters Association

2024 KEY FIGURES

18,000 SQM / 800 BOOTHS / 354 EXHIBITORS / 18 COUNTRIES AND REGIONS / 25,974 INT'L BUYERS

- **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, Thermofforming Machines.
- **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.

PLASTIC

- ✓ Local annual sales is around TK28,000 crore (US\$3.25 billion)
- ✓ Export in the first 5 months of FY22 is 29.8% higher compared to the same period of FY21
- ✓ New investments focus on personal protective equipment, medical equipment and toys
- ✓ Government promotes industry-friendly policies to develop skilled manpower, attract foreign investment, ensure technological advancement and the overall development

PRINTING

- ✓ Printing market size in Bangladesh is around TK12,000 crore (US\$1.39 billion)
- ✓ Earnings from paper sector in the July - November period of FY22 is 15.3% higher than that of FY21
- ✓ Workplaces and educational institutions reopening after pandemic make the demand for paper and paper products increase
- ✓ The country's first printing industrial park will come into operation in 2024, expected to propose more new investments

PACKAGING

- ✓ Export surges bring in new possibilities for Bangladesh packaging market
- ✓ The budding e-commerce accelerates digital economic growth and supports corrugated packaging
- ✓ Packaging paper market revenue size is projected to grow at a CAGR of 5.2% during 2021-2027
- ✓ International leading packaging enterprises such as Tetra Pak and ALPLA plan to build factories in Bangladesh to seize market share and provide innovative packaging solutions in food & beverage, personal-care, and pharmaceuticals sectors

BOOTH PRICES

- ✓ **Corner fee: Surcharge 10 %**
- ✓ **The prices below do not include 5% VAT**

Shell Scheme: USD\$ 320/sqm,
 Min.9sqm=3m x 3m= 9 sqm =
 USD\$2880

9sqm including : carpeting, 3 folding chairs, 1 reception desk (with lock), 1 round table, 3 spot lights, 1 waste basket, wall partitions, fascia name, one 5-AMP power point

Bare Space
 USD\$ 290/sqm, Min. size 18sqm

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404/5, Golden Chambers, New Link Road, Andheri (W), Mumbai - 400 053 INDIA

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Organization Of Plastics Processors Of India

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.



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;

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VIETNAMPLAS 2024

22nd Vietnam International Plastic & Rubber Industry Exhibition

16th to 19th October 2024

Saigon Exhibition & Conference Center (SECC)

Ho Chi Minh City, Vietnam



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 2024 at Saigon
 Exhibition & Conference
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 Vietnam

● ● ● SHOW REPORT 2023

GROSS SPACE	23,000 M2
EXHIBITORS	625
BOOTHS	1,100
COUNTRIES & REGIONS	22
VISITOR	18,507
EXHIBITOR SATISFACTION	94%
VISITOR SATISFACTION	93%

● ● ● PARTICIPATION FEES:

- ✓ Shell Scheme (Minimum 9 sqm): USD 330
- ✓ Including Needle Punch Carpet:
Wall Partitions, Carpet, Company Fascia, 3
- ✓ Folding Chairs, 3 Spotlights, 1 Reception
Table, 1 Round table, 1 Dustbin, 1 Single
Phase 5 amp/ 220v Plug.
- ✓ Raw Space Only (Minimum 36 sqm):
USD 300/sqm

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

GET IN TOUCH Deepak Lawale, Secretary General, ORGANIZATION OF PLASTICS PROCESSORS OF INDIA



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Secretary General

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8th International Plastics, Rubber, Petrochemicals, Chemicals, Fertilizers,
Plastics Recycling, Printing and Packaging Industry Exhibition & Conference 2024



Venue:



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Business Enquiries in just 3 days!	USD 16.1 Million
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International Buyers from 51+ countries	350
Business Meetings	4,161 Business
Trade Visitors	7000
International Buyer participation	51 countries

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- Bare Scheme : INR 13,000 per sqm (Min 24 sqm)
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- Forge valuable partnerships and gain insights into global market trends.
- A strategic positioning to ensure global reach, access to key international markets.
- Unlock a world of opportunities for export growth and expansion.
- Foster collaboration and knowledge exchange. Connect, learn and thrive in the competitive global marketplace.

In the Application there is "Referred by" column. By clicking on this there will be a dropdown with names of Associations/Partners. Kindly select Organization of Plastics Processors of India (OPPI). The application form is attached here with. Kindly fill up the Application Form completely and mail it to us on secretarygeneral@oppindia.org

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Accelerate Your Business Growth In Southeast Asia	
Exhibition Venue	Diamond Island Convention & Exhibition Center (Koh Pich) (Tonle Bassac Commune, Chamkarmorn District, Diamond Island City, Phnom Penh, Cambodia)
Exhibition Date	2024.8/14-8/17
Organizer	Yorkers Trade & Marketing Service Co., Ltd.
Co-organizer	Ministry of Industry & Handicrafts, Cambodia Chamber of Commerce
Official Supporter	General Directorate of Trade Promotion, Ministry of Commerce (TPD)

★ The Largest Specialized Machinery Exhibition at Cambodia

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Participation Fees:

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❖ Raw Space _____ sqm x USD 210

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Organization of Plastics Processors of India Membership Directory 2023 is now available in Pen Drive Format.



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The 36th International Exhibition on Plastics and Rubber Industries

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Deepak Lawale, Secretary General,
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NEWS FROM INDIA

Praj Industries Set to Launch PLA Pilot Plant

Praj Industries has said that its pilot plant for polylactic acid (PLA) is nearing completion and will become operational by April 2024. The facility, which will manufacture bioplastics, is part of the company's R&D push to develop renewable chemicals such as biodegradable polymers using feedstocks, an official said.

The development comes on the back of the recent Union Budget which is contemplating a policy for bio - manufacturing and biofoundry.

“Our work to develop technologies for biopolymers and bioplastics are at the cusp of commercialisation and the government's focus on growing biomanufacturing is an excellent step which will boost the bioeconomy in the country. The move can provide a solution to the problem of plastic which can be replaced by biodegradable variant,” Pramod Chaudhari, founder chairman of the company said.

Biopolymers are produced from agricultural resources can be used as sustainable alternative to plastic. The company's technologies for PLA,

polyhydroxyalkanoates and polyhydroxybutyrate (PHB) are biopolymers.

Ladakh Leads in Plastic Waste Management, JK Lagging Behind

The Ladakh Union Territory has made notable progress in managing plastic waste, with 15 out of its 31 blocks equipped with Plastic Waste Management Units (PWMUs).

In contrast, Jammu and Kashmir lags behind, with only three out of its 285 blocks having PWMUs. The Parliament's Standing Committee on Water Resources said that only three out of JK's 285 blocks are equipped with such units, indicating a significant disparity between the two Union Territories.

The Committee's scrutiny underscores the urgency for JK to expedite the establishment of PWMUs, considering the grave environmental and public health risks posed by unchecked plastic waste.

Despite concerted efforts under the Swachh Bharat Mission (Grameen) Phase-II, the slow pace

of implementation in JK raises concerns about the efficacy of existing strategies and the need for enhanced intervention.

Conversely, Ladakh's success in plastic waste management reflects effective coordination and proactive measures undertaken by local authorities.

With a commendable 48 percent coverage of PWMUs across its blocks, Ladakh exemplifies the potential for efficient waste management systems within the Union Territories.

Plastics to Accelerate the Automobile Industry Towards Sustainability



Today, plastics account for up to 50% of a vehicle's volume, indicating a substantial shift away from traditional metal components.

In the last decade, the automotive industry has witnessed a remarkable shift towards using

plastics and composites. This transformative journey has been revolutionary, as we've observed an ever-increasing reliance on these materials in vehicle manufacturing. This shift's implications are far-reaching and set to redefine the future of the automotive landscape. Global Electric Vehicle Plastics market is expected to grow from \$3.7 billion in 2022 and is projected to reach \$12.6 billion in 2027, at a CAGR of 27.9% during the forecast period.

Application & Challenges of Plastics and Composites in Automotive

The data paints a compelling picture. The use of plastics in automotive applications is on the rise, with predictions suggesting that by 2030, there could be up to 17% more plastic used per vehicle. Today, plastics account for up to 50% of a vehicle's volume, indicating a substantial shift away from traditional metal components.

This transformative journey not only tackles challenges in e-mobility adoption but also shapes a future where these materials redefine automotive efficiency, safety, and sustainability. Embracing the shift toward electric mobility, the automotive industry encounters several challenges, each met with innovative solutions through the application of plastics and composites.

Weight constraints – It is a crucial concern for electric vehicles (EVs), which are effectively addressed as these materials offer a substantial reduction compared to traditional metals, enhancing overall efficiency and extending the range of EVs.

For electric vehicles, a 10% weight reduction typically equals a 13.7% increase in range.

Battery Weight and Range Anxiety – The weight of batteries, a major contributor to range anxiety, is mitigated by incorporating plastics and composites in battery enclosures.

Safety Standards and Flame Retardancy – Safety standards, particularly flame retardancy, are diligently met through the inherent properties of these materials, reducing the risk of thermal incidents in EVs.

Electrical Components and Heat Management – The need for efficient heat management in electrical components finds a solution in the superior thermal insulation properties of plastics and composites, ensuring optimal performance.

Environmental Sustainability and Recycling – As environmental consciousness grows, the industry grapples with concerns regarding the ecological impact and recycling of materials. Plastics and composites contribute to a more sustainable approach, with ongoing advancements in recycling technologies addressing the issue of plastic waste.

Design Freedom and Aesthetics – Yet the benefits of plastics and composites extend far beyond lightweight, electrical applications and batteries. These materials offer a world of design possibilities, enabling manufacturers to craft intricate forms for exteriors, interiors, and even powertrain components. They have also revolutionized lighting design and offer exceptional electrical and thermal insulation properties, along with corrosion resistance.

The Adoption Process

Core competence with engineers and designers at automotive OEMs, engineering service providers, and raw material manufacturers have developed methods to create applications using materials based on key engineering performance requirements, manufacturing process requirements, design attributes, and cost considerations.

Identifying Needs and Desires – For adoption of polymer composites follow a structured approach, beginning with the identification of needs and desires, driven by the desire to enhance product performance, productivity, or meet regulatory requirements.

Feasibility Studies – Conduct feasibility studies to determine the technical and economic viability of adopting plastics and composites for a specific application. This study should include an assessment of performance, cost, and the readiness of technology (TRL – Technology Readiness Level).

Developing a Comprehensive Plan – Based on the results of the feasibility study, a technology adoption plan is developed. This plan includes a timeline for implementation, resource requirements, and a budget.

Collaborative Efforts – Suppliers and collaborators are identified based on their capabilities, technical expertise, and experience in research and development.

Employee Training and Integration – Training and development of employees for the new technology, including design, manufacturing processes, and testing.

Ensuring Compliance and Safety – Integrating the technology with existing automotive systems and testing the integrated system for safety and performance compliance with regulations.

New Materials and Applications – Launching materials and their applications for systems while promoting their benefits to customers and stakeholders.

The automotive industry's embrace of plastics and composites marks a pivotal moment in its evolution. These materials drive innovation, offer design flexibility, durability, and eco - friendly properties, promoting sustainability. As we navigate towards a cleaner and more efficient automotive future, companies are moving ahead with 5R right weighting approach, stand at the forefront. This approach focuses on the Right Material, aligning with the industry's shift towards lightweighting and sustainable solutions. This will drive a positive change, with innovative solutions in the automotive industry benefiting both society and the environment.

By **Abhay Deshpande**

Plastic Industry Faces Closure as Companies Fail to Comply with EPR Norms

In a notice dated January 15, the Central Pollution Control Board (CPCB) has given these units a 10-day window to explain their failure to follow the Extended Producer Responsibility (EPR) rules.

Several Plastic Producers, Importers, and Brand Owners (PIBOs) face flak due to their non-compliance with environment protection rules.

Bengaluru: A whopping 687 Plastic Producers, Importers, and Brand Owners (PIBOs), including 22 in Karnataka, are on the brink of closure due to their non-compliance with environment protection rules. Despite being granted ample time for compliance, the units now face the prospect of punitive action.

Regulations prohibit PIBOs from operating without proper registration obtained through the centralised EPR portal. After securing clearance, they are required to file annual returns on plastic packaging waste as part of fulfilling their EPR obligations.

In October 2023, the CPCB extended the deadline for industries to submit their returns to November 30, warning that a penalty of Rs 5,000 per tonne would be imposed on non-compliant PIBOs.

The CPCB said the 687 units submitted applications under the PIBO category, but these were not approved as the pollution boards sought additional details. The notice states: "The EPR obligations for 2022-23 have not been fulfilled and the annual report not filed by your unit as the complete application for grant of registration is yet to be re - submitted... Continuing operations as PIBO and introducing plastic packaging in the economy without obtaining registration... Is in violation of the Plastic Waste Management Rules, 2016."

The CPCB has directed the 687 units to provide reasons why their operations should not be closed, and penalties imposed. "Your unit is hereby given an opportunity to submit a reply or take necessary action within 10 days of this notice, failing which appropriate action will be taken," CPCB chairman Tanmay Kumar said.

Efforts to obtain a response from Karnataka State Pollution Control Board (KSPCB) officials regarding actions against the violators were unsuccessful. The KSPCB had previously faced controversy when central authorities uncovered a case involving fake EPR certificates from an industry.

Perstorp Launches New State - of - the - art Penta Plant in India



Sweden-based specialty chemicals innovator Perstorp has built and commissioned a state-of-the-art, ISCC Plus certified, plant in western India to meet growing market demand for Penta chemicals. Located in Sayakha, Bharuch, in the state of Gujarat, the facility is officially inaugurated on Feb. 20.

"This is the largest investment in Asia so far, in Perstorp's history. It will further strengthen Perstorp's position as a sustainable and reliable partner in the region of Asia," noted Gorm Jensen, Perstorp's Executive Vice President Commercial & Innovation. "This

plant will increase the availability and reliability of products for current, as well as new customers, reducing lead times with about 50% for Asian customers. It is strategically located close to ports, rails and roadways. This will help to ensure that Perstorp can supply products effectively throughout India and across all of Asia. At the same time, the plant is well positioned to also export products globally.”

In Sayakha Perstorp will produce a Penta product mix including Perstorp's renewable based, ISCC PLUS-certified grade, Voxtar™, as well as offering Penta Mono and Calcium Formate. The plant will use renewably sourced raw materials as well as a hybrid source of electricity. Voxtar is a renewable based counterpart to Penta. Based on a traceable mass balance concept, Voxtar is designed to reduce the carbon footprint throughout the value chain and to support sourcing of renewable and recycled raw materials. As Voxtar is chemically identical to Penta, it provides customers with the same quality and performance as their fossil counterpart.

Perstorp already produces Penta in Sweden, Germany and the United States, but this investment will represent a significant expansion of its global production capacity. At the new site, Perstorp has the capacity to annually produce 40,000 metric tonnes of Pentaerythritol and 26,000 metric tonnes of calcium formate.

“This is a major investment that Perstorp has been projecting for several years and we are very excited to inaugurate this state-of-the-art plant and better serve our current and future customers”,

Vinod Tiwari, Managing Director and General Manager India concludes.

The site covers nearly 115,000 square meters (1.23 million square feet) and will employ about 120 people.

8 Sub-committees Reviewing Free Trade Agreement between India, Asean

“A total of eight sub-committees have been constituted under the AITIGA Joint Committee for undertaking negotiations on different policy areas related to the agreement,” the commerce ministry said.

The first two meetings of the joint committee were held in May and August last year.

In the meeting, the ministry said, the sub-committees reported the progress and outcome of their discussions related to market access, rules of origin and standards, technical regulations and conformity assessment procedures to the joint committee.

India-10-nation bloc ASEAN trade has grown to USD 131.58 billion in 2022-23.

Both sides are aiming to conclude the review in 2025.

The fourth meeting of AITIGA joint committee is planned to be held in Kuala Lumpur, Malaysia, in May.

The review of the AITIGA was a long-standing demand of Indian businesses.

India is asking for a review of the agreement with an aim to eliminate barriers and misuse of the trade pact.

Asean members include Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam.

M&M Signs Supply Agreement with Volkswagen Group for E-mobility Push

Indian automaker Mahindra & Mahindra has signed a supply agreement with Germany-based **Volkswagen Group** on components for M&M's **INGLO** platform, the company said in a stock exchange filing.

As a part of this agreement, M&M will equip certain range of its electric platform INGLO with electric components of Volkswagen's MEB and unified cells, the company said. Volkswagen plans to use this technology for 80 per cent of its battery cells, and has claimed that it will reduce costs by half.

M&M will become the first external partner to use Volkswagen's unified cell concept which is a core element of Volkswagen's battery strategy. Volkswagen's MEB platform is currently used by Audi, Skoda, SEAT/CUPRA, and Ford.

The supply deal will span a number of years and have a lifetime total volume of roughly 50 Gwh.

"With the agreement, Volkswagen and Mahindra are further deepening their collaboration which started with a partnering agreement and a term sheet in

2022. Both companies will continue to evaluate a potential expansion of the collaboration," it said in a statement.

Mahindra is looking to launch five all-electric SUVs in India through INGLO December 2024 onwards. While announcing the INGLO platform back in 2022, Chairman Anand Mahindra said it was a 'disruptive new electric platform'.

M&M's Q3 profit after tax saw an increase of 34 per cent on a year-on-year basis at Rs 2,658 crore while revenue rose 15 per cent to Rs 35,299 crore.

More Opportunities for Private Sector in Defense Indigenization: ENC Chief

The Eastern Naval Command chief Vice Admiral Rajesh Pendharkar said that to ensure that more industry partners join the journey of atma Nirbharta, The Navy has initiated 'Industry Yatras', where multidisciplinary teams visit various industrial corridors to match existing industrial capabilities with Navy's requirements.

While addressing the CII Southern Regional Council Meeting, he said that the Indian Navy has surged ahead in enhancing the indigenous content in ship and submarine design, construction material, machinery equipment, and systems over the years. This would not have been possible without the proactive and whole-hearted support of the Indian Industry, said the Vice Admiral Pendharkar.

"As we strive towards acquiring a force level of about 170 ships and submarines by 2025, our thrust remains steadfastly on indigenous design and construction, as also, as a progressive increase in the indigenous content of systems on board these platforms. Presently, 67 ships are under construction of which 65 are in Indian shipyards," he added.

A dedicated organization has been put in place in the Navy, to support atmanirbharta, where in the Directorate of Indigenisation (DoI) at NHQ, and Indigenization Units at the Command level steering a large number of Indigenization projects for import substitution, he added.

The DoI has linked 5629 items in inventory as import substitutes that have been indigenously developed. DoI is currently steering 107 projects amounting to Rs. 3218.5 crore. Of these, 52 contracts amounting to Rs. 680 Cr, have already been concluded, he further added.

The Navy is also progressing projects with more than 160 MSMEs, Startups, and large industries, and is at the forefront with 100 projects under the TDF Scheme, 37 projects under the MAKE Scheme, he said.

At the Eastern Naval Command, the authorities are continuously engaging with MSMEs at various levels. Discussions are in progress with firms located in Andhra Pradesh Medtech Zone AMTZ towards harnessing the expertise available in common fields of interest like 3D Printing and Scanning, he said.

Economic Momentum Set to Continue in FY25, GDP Growth Projected at 7% in Next Fiscal, Says RBI Governor Shaktikanta Das

Real GDP growth for 2024-25 is projected at 7.0 per cent with Q1 at 7.2 per cent; Q2 at 6.8 per cent; Q3 at 7.0 per cent; and Q4 at 6.9 per cent. "The risks are evenly balanced," said the RBI Governor.

The momentum of economic activity witnessed during 2023-24 is expected to continue in the next year (2024-25), said Reserve Bank of India Governor Shaktikanta Das in a statement published in RBI's February bulletin. "Domestic economic activity remains strong. The first advance estimates (FAE) placed the real gross domestic product (GDP) growth at 7.3 per cent for 2023-24, marking the third successive year of growth above 7 per cent," he said.

Agricultural activity, he added, is holding up well despite lower rainfall, lower reservoir levels and delayed sowing. Rabi sowing has surpassed last year's level as well as the normal acreage. The allied sector is also expected to provide major support to agriculture with continued momentum in horticulture and fisheries. Further, industrial activity is gaining steam on the back of improving the performance of manufacturing. The early results of corporates in the manufacturing sector remain upbeat, driven by higher profit margins. The purchasing managers' index (PMI) for manufacturing is displaying expansion along with strengthening of future activity index. Services sector activity, meanwhile, is expected to remain

resilient on the back of strong domestic demand and stable global prospects.

Further, talking about the investment cycle, the RBI governor stated that investment intentions of private corporations remain upbeat and both services and infrastructure firms are optimistic about overall business conditions. With all of these factors in consideration, real GDP growth for 2024-25 is projected at 7.0 per cent with Q1 at 7.2 per cent; Q2 at 6.8 per cent; Q3 at 7.0 per cent; and Q4 at 6.9 per cent. "The risks are evenly balanced," said the RBI Governor.

India must Focus on Exports to Achieve 10% Economic Growth: Arvind Panagariya

India must focus on exports to achieve 10 per cent economic growth, Arvind Panagariya, Chairman of the 16th Finance Commission, has said. Panagariya also said that the temptation of import - substituting industrial policy is not unique to India. "I have looked at successful countries such as...Singapore, Taiwan, South Korea, China, and India - these are the...high-growth examples.

"My conclusion is very clear - countries that have been open are the ones that have grown rapidly," he said in an interaction with 'Foundation For Economic Development'.

He added that the intellectual support for industrial policy and import substitution remains strong in India.

Panagariya also explained how the global export market was worth USD 32 trillion in 2022, almost ten times India's GDP.

He pointed out that China acquired a very large share of certain products which gave the country a huge boost.

"For 3-4 decades, it grew at 10 per cent a year," the economist said.

Confident of India's Growth at 6-8% for Next 10 Years: Ashwini Vaishnaw

The building blocks for this are already in place and the results are visible, Ashwini Vaishnaw said, outlining various initiatives taken by the government under Prime Minister Shri Narendra Modi.

Union Minister Ashwini Vaishnaw expressed confidence that India will continue to have 6-8 per cent consistent growth rate over the next 10 years, as he invited global players to innovate in the country for the domestic and world markets.

India is open to the world, and to new ideas, Vaishnaw, the Minister of Railways, Communications and IT, said while speaking at the Raisina Dialogue 2024. He nudged the global community to "come here, innovate here for India... for the world." "The Indian economy is growing at a consistent clip at a very good rate. In the next 10 years, India will continue to see a 6-8 per cent consistent growth rate... I can say that with a high level of confidence," Vaishnaw said.

Improvement in physical and digital infrastructure, education and skilling, as well as innovation and development, has bolstered the country's growth. The next five years will further lay the foundation for India to become a developed country by 2047, he said.

The focus over the next five years will be on the full spectrum of manufacturing, upliftment through education, and infusion of technology in the healthcare sector, among other priorities, according to him.

The Minister further said that in the current global geopolitical backdrop, many old structures are getting revised, and added it is time to reposition the country. The world is looking to India as a trusted geography and large talent pool.

Vaishnaw further said the government and private sector must work in unison and harmony, and termed digital payments as a "classic case" of a public-private partnership. The government, he said, is a firm believer of public - private partnership be it development of telecom stack, digital stack or semiconductors.

The Indian economy should be seen with the prism of reality, the Minister said noting that the public sector had played an important part creating an ecosystem after independence, as it stepped-in when private sector was not in a position to take big, bold risks, but noted that the initial phase of productivity went down in the following years.

However, in the last ten years, the public sector has transformed as the government's focus has been

on giving them more autonomy in decisions, and dividing risks between public and private sectors.

He cited Indian Railways – one of the largest rail networks in the world – as a prime example where the public sector empowered with independence in decision-making has yielded effective outcomes.

In the last 60 years, about 20,000 kms were electrified (track networks running on electrical locomotives instead of diesel locomotives), but in the last 10 years nearly 40,000 kms were electrified, he said.

Last year India added 5,200 km of new railway lines, which is akin to adding “a Switzerland” in India's railway network, he said, highlighting the fast pace of development.

Incremental changes can only do so much, and hence India's current position in the growth trajectory requires big calls and major efforts, the Minister said.

Next Innovation Wave to Emerge from Semiconductors, AI in India: Union Minister

The country has created a thriving startup innovation ecosystem in the past 2-3 years and the next wave will emerge from areas such as semiconductors, microelectronics, artificial intelligence (AI) and high-performance computing, Union Minister of State for Electronics and IT, Rajeev Chandrasekhar, said on Monday. The minister, who launched 'Investor Information and Analytics Platform' developed by IIT Madras, said this platform

will address the gap in “our visibility of the innovation ecosystem”.

A key feature of this platform is 'StartupGPT' which is an AI-based conversational platform whose function is to help ease information access for those who are navigating exhaustive data. “I view this as a valuable resource for researchers who will study and utilise it to comprehend the growth within the ecosystem. This understanding can also help public policymakers in crafting responses and initiatives aligned with these dynamics,” said Chandrasekhar.

He said that this “holistic approach is crucial for comprehensively researching the innovation ecosystem, particularly to understand that we have created a thriving startup innovation ecosystem in the past 2-3 years”.

The platform will act as a one-stop shop for startups to seamlessly access venture capitalists (VCs) and investor's networks, government schemes and several other components of the startup landscape for all stakeholders. The free-of-cost platform has been developed by researchers at the Centre for Research on Start-ups and Risk Financing (CREST) of IIT Madras.

The platform has information on more than 200,000 start-ups, close to 11,000 angel investors and 5,000 VCs, about 1,000 incubators, more than 100 government agencies that fund start-ups, and about 550 banks that have supported the start-ups.

“As India progresses towards a 'Viksit Bharat' on the back of a strong innovation driven economy,

platforms such as these would play an important role in democratising access to information and capital that can accelerate the commercialisation of innovation,” said Professor Thillai Rajan A, Head, CREST, IIT Madras. “The biggest beneficiaries would be the hundreds and thousands of young entrepreneurs who would be able to easily identify the experts, investors and mentors most appropriate for their ventures,” added Rajan, also a faculty in the department of management studies.

Cabinet Approves Rs 75,000 Crore Rooftop Solar Scheme for 10 Million Households

The Union Cabinet approved a scheme to install rooftop solar power in homes for an outlay of Rs 75,021 crore, taking up a plan Prime Minister Shri Narendra Modi announced earlier in February. The PM-Surya Ghar: Muft Bijli Yojana will use central financial assistance (CFA) to put up systems that will provide free electricity of up to 300 units every month to 10 million households. “The scheme provides a CFA of 60 per cent of system cost for 2 kw (kilowatt) systems and 40 percent of additional system cost for systems between 2 to 3 kw capacity. The CFA will be capped at 3 kw. At current benchmark prices, this will mean Rs 30,000 subsidy for 1 kw system, Rs 60,000 for 2 kw systems and Rs 78,000 for 3 kw systems or higher,” said a government statement.


Households can apply for subsidy at a national portal where they can select a vendor for installing

rooftop solar. The portal will assist households in their decision by providing information such as system sizes, benefits calculator and vendor rating, said the statement. "Households will be able to access collateral-free low-interest loan products of around 7 per cent at present for the installation of residential RTS [rooftop solar] systems up to 3 kw," it said. The portal, backed by state-owned financier REC Ltd, has 20 banks and non-banking financial institutions that will lend to households seeking solar rooftop systems, 'Business Standard' recently. Eight public sector utilities, under the aegis of the power ministry, will support the scheme in several states.

The Cabinet also approved setting up model villages in all districts of the country for the adoption of rooftop solar. "The proposed scheme will result in the addition of 30 GW of solar capacity through rooftop solar in the residential sector, generating 1000 BUs (billion units) of electricity and resulting in a reduction of 720 million tonnes of CO2 equivalent emissions over the 25-year lifetime of rooftop systems," said the government's statement.

The scheme will serve people who consume less than 300 units of electricity, typically lower and lower - middle - class households in urban areas. "For this economic stratum, taking a

loan for solar or setting up solar on their rooftop is difficult. So, we are increasing the loan component and we are designating our PSUs to implement it," power ministry officials said earlier this month. Rooftop solar has been lagging as compared to the grid - connected ground-mounted solar power projects. Out of the total installed solar power generation capacity of 73 gigawatts (gw) in the country, ground - mounted (large - scale solar power generating units) is 56.9 gw, while grid - connected rooftop solar is 11 gw and off-grid is 2.75 gw. Power ministry officials said there are some 675,000 household rooftop solar systems in the country.



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PLASTIC PRODUCTS AND NEW TECHNOLOGIES

Cosmo First Launches Metalised Capacitor Grade BOPP Films

Cosmo Films, a global leader in specialty films for packaging, labeling, synthetic paper, and lamination applications recently launched metalized electrical grade BOPP films for capacitor application. These are used for capacitor manufacturing of various types of AC and DC capacitors. These capacitors have diverse applications ranging from electronics appliances, industrial applications, power electronics, automobiles, electric vehicles, renewable power systems, etc.

The metalized capacitor - grade films will be manufactured under clean room conditions with micro-slitting capability and thickness ranging from 2.5 microns to 12 microns. Speaking on the launch, Kulbhushan Mallik, global business head, Cosmo Films, said, "We, at Cosmo First, have proudly pioneered industry - first solutions for the past four decades. This strategic move aligns perfectly with Cosmo Film's vision of strengthening our global leadership in specialty films through innovative and sustainable solutions."

Presently, there is a substantial reliance on imports of electrical-grade capacitor films, primarily sourced from countries like China. Given the increasing demand for high - quality capacitor - grade films, there exists substantial potential for these films in both domestic and export markets. The current annual installed capacity for these metalized films stands at approximately 750 metric tons. Cosmo Films aims to enhance and expand its capabilities in this product category to meet the growing demand and contribute to the self - reliance goals outlined by the government.

Advanced Biobased Materials Company PlantSwitch Gets Support for Commercialization

With participation from venture investment firm NexPoint Capital, PlantSwitch closes its \$8M bridge financing round. Bioplastics startup PlantSwitch has raised its financial investment by \$8 million with participation of large institutional investment firm NexPoint Capital to proceed with its first commercial manufacturing facility in North Carolina and expand its team.

The plant began producing material in December 2023. Expected to reach capacity in 2025, the 52,000 ft² facility will have a capacity of 10 million lb/yr. The company developed what it calls a 'revolutionary' bioplastic technology that converts cellulosic agricultural waste streams into a low - cost, compostable plastic resin alternative, with the aim of replacing conventional single - use plastics.



The company sees itself uniquely positioned to provide a compostable, cost - effective alternative to conventional plastic that is both sustainable and scalable. The company currently has 12 employees, primarily chemical engineers and polymer scientists that have made significant contributions to the field of sustainable materials. PlantSwitch compounds have been shown in labs to degrade like PHA, breaking down

completely in countertop compost machines within eight hours and within three months in commercial compost conditions. The company says its compounds perform like PHA, which breaks down in more settings and ranks higher in performance than forerunner PLA, but they say they can make their compounds at lower cost. Field testing in commercial composting facilities is underway. Meanwhile, the manufacturing process incorporates agricultural byproducts such as rice husks, wheat straw, and other cellulose-rich products, which are blended with other biopolymers to lower the cost.

Says PlantSwitch CEO Dillon Baxter, “Major corporations have made commitments to lower their plastic consumption and the toxic waste it produces, but the proper infrastructure to deliver a viable alternative hasn’t existed. This \$8 million raise, in partnership with NexPoint, is being invested in building out this infrastructure, which will drive the alternative plastics market forward. We believe the infrastructure for compostable bioplastics is critical to the future of our economy, our health and our planet. That’s why we are on a mission to build it in a way that is scalable and cost competitive.” PlantSwitch is now gearing up for its 2024 Series A fundraise, which will be used to expand capacity with additional manufacturing facilities.

Shape - Shifting Plastic - Just what the Astronauts Need.



From left, Nicholas Boynton, Shrayesh Patel and Stuart Rowan of the University of Chicago, with a new type of plastic with properties that can be set with heat and then locked in with rapid cooling, a process known as tempering. Unlike classic plastics, the material retains this stiffness when returned to room temperature.

With restrictions on space and weight, what would you bring if you were going to Mars? An ideal option might be a single material that can shift shapes into any object you imagine.

In the morning, you could mold that material into utensils for eating. When breakfast is done, you could transform your fork and knife into a spade to tend to your Martian garden. And then when it's happy hour on the red planet, that spade could become a cup for your Martian beer.

What sounds like science fiction is, perhaps, one step closer to reality. Researchers at the University Of Chicago Pritzker School Of Molecular Engineering have created a new type of plastic with properties that can be set with heat and then

locked in with rapid cooling, a process known as tempering. Unlike classic plastics, the material retains this stiffness when returned to room temperature. The findings, published in the journal Science, could someday change how astronauts pack for space.

“Rather than taking all the different plastics with you, you take this one plastic with you and then just give it the properties you need as you require,” said Stuart Rowan, a chemist at the University of Chicago and an author of the new study.

But space isn't the only place the material could be useful. Rowan's team also sees its potential in other environments where resources are scarce — like at sea or on the battlefield. It could also be used to make soft robots and to improve plastics recycling.

“We all depend on plastics in our day - to - day lives,” said Shrayesh Patel, a chemical engineer at the University of Chicago and an author of the new study. But foam cups, trash bags and eyeglass lenses, for example, all require plastics with different properties.

A single material that can be fashioned to different needs, on the other hand, “simplifies how you make plastics,” Patel said. It also would make plastic more sustainable because items could all be processed together when recycling. That plastic must be sorted when recycling contributes to only a small fraction being reused, he explained.

Lena Lighting Uses High - Performance Optics Made from PLEXIGLAS® Optical HT From Röhm in Energy - Efficient LED Street Lights



- Polish specialist for LED technology manufactures multi-lens arrays from Röhm's PMMA molding compound
- Special molding compound PLEXIGLAS® Optical HT offers excellent optical quality even at high continuous thermal loads
- Durable material helps give modern LED street lights a long lifespan and sustainable design

The electricity used for street lighting is one of the greatest cost factors for municipalities, often making up between 30 and 50 percent of their total electricity costs. As a result, many towns and cities have begun replacing outdated public lighting with efficient LED lights featuring smart light control. This modernization saves energy and therefore money, while also playing a key role in environmental and climate protection.

“LEDs are the simplest way to lower the electricity bill because they are highly energy - efficient.

Compared to traditional illuminants in street lights, LED modules enable potential savings of 30 to 70 percent,” the street lighting department at Lena Lighting points out. The Polish-based company specializes in LED lighting systems and develops street lights with high technological, design and sustainability standards. Lena Lighting also manufactures the lenses itself using an injection molding process.

PLEXIGLAS® Optical HT for high - performance lenses

Lena Lighting uses PLEXIGLAS® Optical HT from Röhm – a PMMA molding compound with an especially attractive property profile for the lighting industry – for the precision lenses of many models, including the Tiara LED Pro range for street and area lighting. In addition to the first-class optical quality typical of PMMA, the developers at Röhm have significantly improved the heat deflection temperature of this special molding compound. As a result, PLEXIGLAS® Optical HT can be used in applications that involve increased long-term service temperatures.

Rafał Czoków, Senior Business Manager at Röhm GmbH's Molding Compounds business unit, explains why this combination is so important for street lights such as the Tiara range: “Polymethyl methacrylate has outstanding optical properties. However, the high-performance lenses of an LED street light have to withstand very high temperatures, and standard PMMA is not always suitable. Our special molding compound PLEXIGLAS® Optical HT is the ideal material for this,

offering the proven optical parameters and longevity of PMMA for applications in a higher temperature range, too.”

Multi - lens arrays with maximum precision

With Tiara LED Pro, Lena Lighting has designed a street and area light that illuminates everything from highways and extensive industrial sites to urban streets, cycle paths and parks. The design of the lenses contributes to their efficiency. “We use directional multi-lens arrays made from PLEXIGLAS® Optical HT for the Tiara product family. Because every lens has the same optics, the light properties remain constant over time. High-quality components from renowned manufacturers and high-power LEDs contribute to the very high luminous efficacy achieved at the output of the luminaire, reaching 170 lm/W,” as Lena Lighting's experts explain.

The high-performance LEDs and the flat and compact design of the luminaire head with a relatively small area for the multi-lens array mean that the material is subjected to a high thermal load. PLEXIGLAS® Optical HT withstands this load without compromising on optical qualities such as transparency, light transmittance, or UV and weather resistance. Rafał Czoków from Röhm elaborates: “With a certified UL RTI value of 105°C, the material is documented as being resistant to thermal aging. This means that its high luminous efficacy can be maintained constantly over a very long period of time.”

Long - lasting material for sustainable product design

Thanks to its combination of properties, PLEXIGLAS® Optical HT supports the sustainable design of street lights from Lena Lighting. PMMA and LEDs are generally a proven combination in the lighting industry, as the consistently high optical quality of PLEXIGLAS® lenses and the average of 100,000 operating hours offered by an LED in this application both contribute to a long lifespan and sustainable lights.

Moreover, the European Union's Ecodesign Directive calls for low - maintenance and repairable products made from long-lasting and recyclable materials. Lena Lighting put this into action when designing the Tiara LED Pro: The two - chamber design separates the optical chamber with the waterproof multi - lens array from the electrical equipment chamber, which can be opened without tools. This makes it easier to maintain and replace components without damaging the sensitive lens. The components or materials can be removed individually and returned to the circular economy. As a result, the PLEXIGLAS® lens array can even be fully recycled to create new PMMA at the end of its service life.

Five Ways to Increase Productivity for Injection Molders

Faster setups, automation tools and proper training and support can go a long way.

We are all under pressure to do more with less every year. In essence this is what makes a business successful in the long term. This is true for any business and for any activity – getting better and more efficient in what we do.



In plastics injection molding, productivity is gauged by how many good, saleable parts you can produce using the equipment, materials and people you have in your manufacturing plant or plants. Adding people or equipment without trying to do more with less isn't a winning business proposition.

For injection molders in today's highly competitive plastics market, the key to increasing productivity lies in getting more good parts using the machines, the materials and the people you have available to you. Let's look at five ways Arburg can help you do that.

Set up Faster

Setting up an injection molding machine and getting it to the point where it is reliably producing good parts at the

highest possible rate is a complex process that is made more difficult by time pressures, tight quality requirements and a general lack of skilled workers. This last factor is key because there is a certain level of experience and process knowledge needed to set initial pressures, speeds, temperatures, etc., to get the mold running, and even more to “dial it in” for best quality, cycle time and overall efficiency.

Fortunately, a lot of that knowledge and experience has been captured in so - called "expert" programs like the aXw Control FillAssist built into the Gestica controller. Starting from a 3D part model, this intelligent control function simulates mold filling as a function of the screw stroke and determines process parameters – injection speeds for example – that are appropriate for the machine and the process. FillAssist animates the filling process in 3D graphics on the operator interface screen so the user can view the filling level of the part in relationship to screw position in real time.

Parameters, such as cylinder temperatures and mold - clamping force, can be transferred directly to the mold - setting data record. This benefits even experienced operators since they can transfer the parameters to production level with a single click while concentrating on optimizing the cycle.



PLASTIC RAW MATERIALS

Join the ColorStream Revolution from Plastrac



The Plastrac ColorStream system is designed with safety and ease of use in mind.

In blending, ColorStream changes everything. It increases safety. It slashes overhead. It saves on time, labor and energy. It simplifies color changes. Plastrac's patented, modular, virtually maintenance - free system moves blending and color - changing to ground level. No more catwalks, scissor lifts, ladders, or climbing to swap out heavy canisters or perform maintenance. Additionally, because it is cart - based, ColorStream can move easily between multiple machines. ColorStream works with extruders, injection molding machines and injection blow molding machines of all sizes.

Each cart can support up to four additive feeders. The blend is conveyed to the machine feed throat via high - pressure compressed air from the factory central system.

SÜDPACK Develops and Produces Thermoplastic Compounds for Special Applications in its Competence Center for Compounding



SÜDPACK develops and produces **thermoplastic compounds** for special applications in its Competence Center for compounding. The high - quality compounds made from conventional and bio - based raw materials are perfectly designed to meet the individual needs of customers. The compounds feature high media resistance, surface quality and scratch resistance and can include added ecyclate. Since the beginning of this year, the special compounds,

which are used in a wide variety of industries, have been marketed under the **StarBlend®** brand name. Whether tooth brushes, plastic fittings for vehicles, household appliances, wire insulation, cosmetic packaging, gaskets, window profiles, furniture or packaging – SÜDPACK compounds can be used in a broad range of industries and for technically demanding applications in particular thanks to their outstanding mechanical properties and optimal processability. They are the perfect combination of modern application technology and unparalleled expertise in polymers, additives and fillers.

StarBlend® – standard meets individuality

The SÜDPACK portfolio of high - end compounds covers thermoplastic, non - filled and mineral or glass - fiber - filled granulates that are equally suited for injection molding, extrusion and filaments.

“The base is formed by our standard compounds, which we customize to meet the required properties of the end product for each customer. This regularly allows us to significantly reduce the development process and

time - to - market for our customers,” explained Dr. Kylie König, Business Development Manager for compounds at SÜDPACK.

Sustainable compounds? StarBlend®!

As a responsible family business that focuses on sustainability, the use of recycle allows SÜDPACK to also offer its customers solutions that can reduce the carbon footprints of their products. Just some of the materials that are used are recyclables from the company's own film production as well as re - granulated materials from customers with the aim to use them as feedstock for new compounds whenever possible. “We're very flexible in terms of input material and are able to use not only thermoplastic by-products, but also post - consumer recyclates and bio - based polymers,” emphasized König.

Decisions such as whether bio-based or conventional polymers should be used or how much recycle should be in a compound are made by the customer. "In principle, it is even possible to realize material solutions made of 100% recycle, which means there is no upper limit in this regard," highlighted König. To give customers the facts they need to select the most sustainable solution, SÜDPACK performs life cycle assessments for its StarBlend compounds that take the entire life cycle of the materials into account. Moreover, the seamless traceability of all of the raw materials used along the entire supply chain ensures that the specific compounds are

available in consistently high quality and in the necessary quantities at all times.

Contract compounding – an added service

SÜDPACK is also a strong partner for customers who have developed their own compound formula, who need assistance in formula optimization or who require additional compounding and production capacities. As a compounding contractor, the experts produce not only each compound based on its specified formula, but also support their customers with an offer ranging from raw materials procurement to prototype development to industrial production – with excellent all-round service.

SÜDPACK compounds at your fingertips

As a member of the “Positive Plastics Initiative,” SÜDPACK supplied its “StarBlend PP 004 - 01 R T20 N” compound with 70% PP - recycle for the sample “Kit 3.” The initiative compiles kits with polymers that are suitable for injection molding and extrusion and have a reduced environmental footprint, which means they contribute to creating a functional circular economy. The special shape of the samples showcases all of the significant mechanical and optical properties of a material for designers and product managers and demonstrates how a final product might look when made of that material.

At the IKV's 32nd International Plastics Technology Colloquium, which will be held on February 28 and 29, 2024, in Aachen, SÜDPACK will be at booth 1 to

provide information about its entire StarBlend portfolio in addition to all of its services in the field of compounding.

SABIC's Resin Enables Complex Optical Carrier Design for Blickfeld's LiDAR



- Blickfeld has launched Qb2, the first smart LiDAR sensor that can both capture and process 3D data on a single device.
- SABIC's ULTEM resin facilitated the highly complex design of the optical carrier at lower material costs and easier and faster production scale up versus aluminium.
- Blickfeld selected ULTEM resin as the ideal engineering thermoplastic resin capable of meeting all the critical specification criteria of the highly complex Qb2 optical carrier.

SABIC, an innovator in the chemical industry, has announced that its ULTEM resin has helped Blickfeld, an innovator in LiDAR technology, develop its recently launched Qb2 device. Blickfeld's new Qb2 is the first smart LiDAR sensor that can both capture and process 3D data on a single

device. LiDAR (light detection and ranging) is an optical sensing technique that uses lasers to produce highly accurate 3-dimensional measurements of any environment or object.

The highly complex and miniaturised optical carrier required for this new device is moulded in ULTEM resin. The choice of ULTEM resin helped to reduce total system cost with a lower material cost combined with easier and faster production scale up compared to aluminium.

Dr. David Elvers, PhD, business development manager at SABIC Specialties, mentioned: "ULTEM resin offered a clear solution to Blickfeld's desire of replacing aluminium in their new compact optical carrier. LiDAR is a growing market, and we are proud that our advanced material and design support has once again proven to help customers like Blickfeld solve the design challenges of structural applications in opto-electronics."

Blickfeld develops LiDAR solutions for application spaces such as security, crowd analytics and the monitoring of material volumes in harsh environments. Within the fast-growing LiDAR market, the manufacturer identified the opportunity to develop a compact and smartly integrated solution to further boost growth. The end-users of Blickfeld LiDAR solutions such as security companies for public venues, industrial manufacturing sites, and even farming welcome the benefit of a much easier, plug-and-play setup without the need for additional computing hardware

During the design phase of the Qb2, Blickfeld faced the challenge to miniaturise the design of the optical carrier while retaining its performance. Besides facilitating installation, compact and lightweight LiDAR designs are also important for unobtrusive security applications and crowd analytics. The Munich-based start-up needed a cost-effective material solution to reduce the part size through design integration. After extensive investigation and evaluation together with SABIC, Blickfeld selected ULTEM resin as the ideal engineering thermoplastic resin capable of meeting all the critical specification criteria of the highly complex Qb2 optical carrier.

The optical carrier is one of the most challenging parts of the LiDAR device as it holds its key optics and micro-electronics. The demanding material requirements for this newly developed part included:

- Reliable retention of dimensional tolerances in all directions over a broad range of temperatures to support the high optical performance of the LiDAR in different environments
- Low creep behavior to deliver the functionality of snap fits and other features throughout the lifetime of the device
- Lower material costs and easier production scale up compared to aluminium

Terje Noevig, chief operating officer at Blickfeld, stated: "We were very pleased about the technical design and simulation support provided by SABIC's team during the entire Qb2

development process. Their capabilities and commitment enabled us to add a new chapter to the evolution of our 3D LiDAR technology. Together with the high quality of the selected ULTEM resin, this allowed us to achieve a distinct competitive advantage in our market space."

Resin Moisture & Drying



The 'DryerGenie' marries drying technology and input moisture measurement with a goal of putting an end to drying based on time.

Novatec is moving to redefine resin drying with new, economically priced technology that detects moisture levels in the material before it hits the dryer and then adjusts the drying parameters accordingly. Called the DryerGenie, Novatec debuted the system at the 2023 Plastics Technology Expo.

The DryerGenie consists of two sensors: one that's installed near the bottom of the suction probe or lance, which is typically used by molders to pull resin from gaylords to the dryer to prepare the material for processing; the second is mounted to the lance handle to measure ambient conditions. Both rely on capacitance or near-infrared technology to measure moisture in the resin on a parts/million (ppm) basis long before it's drawn into the dryer.



DryerGenie sensor (lower left) communicates real-time moisture levels and triggers changes to dryer setpoints. Photos/Charts: Novatec

The sensor constantly communicates with the dryer controller and automatically adjusts drying residence time, airflow and temperature to account for the moisture reading. The system is retrofittable to Novatec dryers purchased since 2016. At its laboratory in Baltimore, Novatec has run the DryerGenie on various nylons, PC, PC/ABC, acrylic and TPUs.

As Novatec explains, the patent-pending sensor apparatus also includes accelerometers, pressure sensors, temperature / humidity sensors and a gyroscope to assist in reliable inline moisture measurements. Since moisture presents a very high dielectric constant compared with the low dielectric constant of plastics, the presence of moisture can very reliably be detected, and then instructions are coordinated with the connected dryer to change drying parameters and residence time according to the moisture levels — by the time the material reaches the drying hopper. "We're changing the paradigm of resin drying and at the same time challenging some long-held beliefs," notes Novatec CEO Conrad Bessemer. "The first is drying to the resin supplier's

recommendations that appear on the data sheet. These recommendations are usually very wide: 2 - 4 hr or 4 - 6 hr. That's because by the time the resin reaches the processor, the moisture levels in it may have changed dramatically from when it was shipped and is highly dependent on seasonality."

"Most processors think drying performance is all about dewpoint. That's a fallacy." Mark Haynie, Novatec's drying product manager, concurs: "Most drying times from resin data sheets include significant safety factors, which result in overdrying, wasted time and wasted power. In most cases, the starting moisture point is unknown. Even two gaylords received the same day can have dramatically different starting moisture points. To that point, we recently received two gaylords of nylon 66 from the same supplier on the same day. One came in at nearly 3950 ppm, the other at 1750 ppm. But the supplier's recommendation for drying time and temperature were the same."

- **Read [Plastics Technology's Coverage: New Technology Enables 'Smart Drying' Based on Resin Moisture](#)**

100% Renewable Carbon Based Plasticizers from Perstorp

Leading specialty chemicals innovator Perstorp has launched Pevalen™ Pro 100, marking a new era in PVC plasticizing technology. The new grade of Pevalen features 100% renewable carbon content based on mass balance, applying

chemical and physical traceability. By factoring in the biogenic CO₂ uptake* from its renewable raw materials, Pevalen Pro 100 offers a product carbon footprint reduction of approximately 80% relative to its fossil-based equivalent from cradle to Perstorp gate.

Pevalen™ Pro 100 is a significant advancement in non-phthalate plasticizers, merging high performance with sustainable sourcing. It sets a new benchmark in the industry of flexible PVC by offering a solution that is not only 100% renewable-based but also does not compromise on performance or safety. Pevalen™ Pro 100's development is a testament to Perstorp's dedication in materials chemistry and proactive approach to environmental stewardship, ensuring superior performance in a wide range of PVC applications.

Key features of Pevalen™ Pro 100 are:

Fully based on mass-balanced ISCC PLUS - certified raw materials. Low carbon footprint to reduce CO₂ emissions throughout the value chain. Drop-in replacement for easy adoption in formulations. True non-phthalate plasticizer. High plasticizing efficiency enabling faster processing and requiring less material and energy.

Linda Zellner, Innovation Director at Perstorp, comments: "We know that PVC can be a valuable resource, if it is made, used and disposed of thoughtfully. Flexible PVC is incredibly useful and would be hard to replace. Plus, it's a material that already

offers excellent recyclability if produced in the right manner and with the right ingredients. The launch of Pevalen™ Pro 100 is a big milestone to contribute to this journey. It delivers greater durability using less material, lasts longer and also offers a significantly better environmental profile.”

At the core of Pevalen™ Pro 100's development is its innovative chemical composition, designed to deliver high performance without the use of phthalates. The product's high plasticizing efficiency and low volatility makes it an ideal choice for manufacturers seeking environmental responsibility and technical excellence in their PVC products.

“When Pevalen™ was first launched in 2014 as a premium performance alternative to phthalates, we already had intentions to continue developing the product and add grades with better environmental credentials,” says Martin Hansson, Business Manager Plasticizers at Perstorp. “This became reality in 2019 when Pevalen™ Pro 36 was launched. Now we are proud to lay out the last piece of the puzzle and complete the product range with Pevalen™ Pro 100.”

Pevalen™ Pro 100, along with Perstorp's other Pro - Environment products, is ISCC PLUS certified. This certification provides companies, brand owners and consumers with the assurance that high sustainability requirements are met. It means that all renewable and recycled raw materials used are ISCC certified in all parts of the value chain all the way back to the point of origin. Every customer

of Pro - Environment products receives information about the product carbon footprint.

The launch of Pevalen™ Pro 100 responds to the increasing demand for sustainable materials that offer both a low carbon footprint, as well as an improved eco - toxicity profile and safer handling. It reflects Perstorp's continuous drive to lead the chemical industry toward more sustainable solutions without compromising quality or performance. Pevalen™ Pro 100 represents a significant step forward in our journey toward delivering sustainable, high - performance chemical solutions.

Black Swan Graphene Ties-up with Thomas Swan for Graphene Based Masterbatches

Black Swan Graphene Inc. ("**Black Swan**") (or the "**Company**") (TSXV: SWAN) (OTCQB: **BSWGF**) (Frankfurt: R96) is pleased to announce the establishment of a Distribution and Sales Agreement (the "**Agreement**") with Thomas Swan & Co. Ltd. ("**Thomas Swan**"), effective as of January 23, 2024. This Agreement leverages the existing strategic partnership and positions Thomas Swan as a value - added non - exclusive distributor and reseller of Black Swan's innovative Graphene Enhanced Masterbatch ("**GEM**") products in the polymer additive market.

Black Swan's recently achieved groundbreaking advancement in polymer composites using GEMs (see press release dated January 17, 2024). Thomas Swan will now distribute and significantly

broaden the market presence of these GEM products through its Polymer Performance Solutions division where it possesses proven expertise in delivering value - add solutions to both the rubber and polymer markets, in addition to its chemical formulation expertise. The Agreement outlines the terms and conditions of the partnership, fostering collaboration and growth in the global market whilst embracing Black Swan's approach to avoid supply chain disruption.

Harry Swan, Chief Executive Officer of Thomas Swan and Chairman of Black Swan, commented: "Our journey in graphene commenced over a decade ago. After dedicated years of investing in graphene processing development, we established Black Swan to champion commercialization and downstream ventures. The efforts invested by Black Swan from its inception have now culminated in the creation of products ready for immediate commercial deployment, where they can be adopted without any supply chain disruption. Armed with this achievement, I am genuinely thrilled that Thomas Swan is now poised to harness its distribution channels and market access."

Kraft (nano) Lignin as Reactive Additive in Epoxy Polymer Bio - Composites

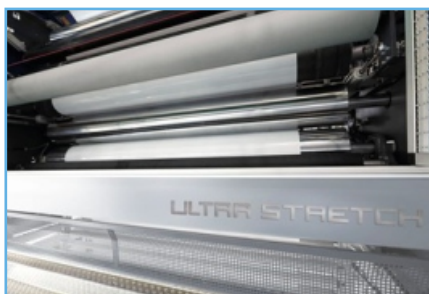
The demand for high - performance bio - based materials towards achieving more sustainable manufacturing and circular economy models is growing significantly. Kraft lignin

(KL) is an abundant and highly functional aromatic / phenolic biopolymer, being the main side product of the pulp and paper industry, as well as of the more recent 2nd generation biorefineries. In this study, KL was incorporated into a glassy epoxy system based on the diglycidyl ether of bisphenol A (DGEBA) and an amine curing agent (Jeffamine D-230), being utilized as partial replacement of the curing agent and the DGEBA prepolymer or as a reactive additive. A D-230 replacement by pristine (unmodified) KL of up to 14 wt. % was achieved while KL-epoxy composites with up to 30 wt. % KL exhibited similar thermo - mechanical properties and substantially enhanced antioxidant properties compared to the neat epoxy polymer.

Additionally, the effect of the KL particle size was investigated. Ball - milled kraft lignin (BMKL, 10 μm) and nano - lignin (NLH, 220 nm) were, respectively, obtained after ball milling and ultrasonication and were studied as additives in the same epoxy system. Significantly improved dispersion and thermo - mechanical properties were obtained, mainly with nano - lignin, which exhibited fully transparent lignin - epoxy composites with higher tensile strength, storage modulus and glass transition temperature, even at 30 wt. % loadings. Lastly, KL lignin was glycidylized (GKL) and utilized as a bio - based epoxy prepolymer, achieving up to 38 wt. % replacement of fossil - based DGEBA. The GKL composites exhibited improved thermo - mechanical properties and transparency. All lignins were

extensively characterized using NMR, TGA, GPC, and DLS techniques to correlate and justify the epoxy polymer characterization results.

The Fundamentals of Polyethylene – Part 1: the Basics



You would think we'd know all there is to know about a material that was commercialized 80 years ago. Not so for polyethylene. Let's start by brushing up on the basics.

Polyethylene (PE) has been commercially available for 80 years. With all that time to gain experience, you might expect that we would have learned everything there is to know about this material family. However, judging by the conversations I have with people about selecting the correct PE for an application, the industry has a lot to learn.

Polyethylene is considered a "commodity" material, a designation that gives the impression that not much thought needs to go into picking the correct grade of material. But PE can be remarkably complicated simply because it is the only polymer that is available across a wide range of densities.

Continuous developments in PE have allowed processors to engineer films thinner and stronger than ever. (Source: Reifenhäuser)

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Polyethylene is considered a "commodity" material, a designation that gives the impression that not much thought needs to go into picking the correct grade of material. But PE can be remarkably complicated simply because it is the only polymer that is available across a wide range of densities.

Understanding polymers and how they behave during processing is one thing that separates elite processors from the rest. Mike Sepe has been helping processors do just that for more than 45 years.

Sepe has authored more than 25 ANTEC papers and more than 250 articles illustrating the importance of this interdisciplinary approach. Download this collection to learn more about strain - rate, molecular weight, the effects of temperature, and drying conditions to improve processing performance.

Density and PE

Density is usually an inherent property. All polycarbonates have a density of 1.19-1.20 g/cm³, all polypropylenes cover a very narrow range from 0.898-0.905 g/cm³, and the density of PBT polyester is 1.31 g/cm³. It is possible to alter the density of any material, but these adjustments involve changes in composition. The addition of plasticizers will reduce the density of PVC, most impact modifiers will reduce the density of the base resin to which they are added, and fillers and reinforcement will typically increase the density of a material.

Selecting the right grade of PE has always been more difficult than selecting other resins, precisely because of the unusual versatility of the polymer. But PE can be made to densities that cover a range of 0.86 - 0.97 g/cm³ without altering the molecular composition one bit. And across this range the polymer can present a wide range of properties.

History of PE

It wasn't always this way. Polyethylene, like many polymers that we rely on commercially today, was created by accident. Researchers experimenting with gases under high pressure discovered that when they conducted experiments with ethylene gas, they obtained a solid compound that was the result of polymerization of the ethylene molecule. It took about six years to commercialize the material, and by today's standards the polymerization process was crude and produced

a very narrow range of products. Today we call these materials low - density polyethylene (LDPE). But this nomenclature did not exist at the time because there was no such thing as high - density polyethylene and no understanding that such a material might even be possible. We have understood for some time that LDPE is made of up of chains that contain a significant amount of branching. The long branches prevent the chain backbones from packing closely together. This limits the ability of the material to crystallize and reduces the intermolecular attractions that are responsible for providing load - bearing properties such as strength and stiffness.

The initial use of PE was as insulation for wire and cable, so the flexibility of LDPE was a positive attribute. However, if we were to try to make a product such as 5 - gal pail out of LDPE, fill it with 40 - 60 lb of contents, and then stack the full containers three or four high, they would quickly collapse. So understandably, PE applications were somewhat limited through the 1940s and into the mid - 1950s.

Enter Karl Ziegler and Giulio Natta. In 1954, working independently and somewhat competitively, they discovered catalysts that allowed the polymerization of ethylene to take place without the extreme temperatures and pressures needed previously. More importantly, the resulting molecule was largely free of the branches that characterized the results of the high - pressure processes. These linear molecules

could pack closer together creating a very different set of properties. High - density polyethylene (HDPE) was stronger, stiffer, and harder, all consequences of the higher degree of crystallinity that arose from the more regular arrangement of the linear polymer chains. It was also less impact resistant, especially at cold temperatures. But the enhanced strength and rigidity of the material made products like those 5 - gal pails possible.

Without identifying the density, the property profile of PE cannot be known. Two researchers at Phillips Petroleum had discovered a similar process about a year before Ziegler and Natta, and this system for polymerizing PE is still known today as the Phillips process. However, the technical accomplishment became of subject of long, drawn - out litigation that was not settled until the 1980's, and by that time the Ziegler - Natta designation had firmly taken root and they shared the Nobel Prize in Chemistry in 1963 for their accomplishment.

Once these transition - metal catalysts became known, the world of polyethylene expanded rapidly. A wide range of densities from 0.91-0.97 g/cm³ could be manufactured with a corresponding wide range of properties. Additional advances produced linear low - density polyethylene (LLDPE) in the late 1970s. This material introduced branching in a more controlled manner than was possible in traditional LDPE.

At about this same time a new revolution in catalysts was just getting started that would

have far-reaching consequences for polyethylene. In 1977, Walter Kaminsky at the University of Hamburg demonstrated the utility of metallocene catalysts in polymerizing PE. It has been a long, winding road of development for these materials, but through the late 1990s and into the first two decades of the new millennium, PEs made with these new catalyst systems added forms of the material that were previously impossible.

Metallocene - catalyzed LLDPE is more difficult to process than Ziegler - Natta LLDPE, just as the early versions of LLDPE were more challenging than traditional LDPE. But as processors caught up with these materials, the improvements in performance became evident. Films could be downgauged substantially while producing structures with equivalent performance. Clarity, dart impact resistance, and tear strength were all improved.

The increased level of control over polymerization afforded by these catalysts led to a new set of polyethylene materials with densities as low as 0.86 g/cm³. Low levels of crystallinity produced a family of materials referred to as plastomers: flexible, tough materials that could duplicate the properties of materials like ethylene - vinyl acetate (EVA) copolymer at much lower densities and with improved levels of thermal stability in the melt.

Selecting the Right PE

With all this development, the task of selecting the right PE for an application has become increasingly complicated.

Selecting the right grade of PE has always been more difficult than selecting other resins, precisely because of the unusual versatility of the polymer. In most polymer families, unfilled and unmodified grades are distinguished primarily by their molecular weight. Higher - molecular - weight grades perform better but are more difficult to process because of their higher melt viscosities. In general, the molecular weight of PE is captured in the melt flow rate or melt index specification.

But with PE there is another property that must be considered when defining the performance of the material: the density. The ability to specify two properties instead of one provides greater variety, but it also makes it more difficult to arrive at an appropriate selection. The person selecting the material must understand how properties change as a function of both molecular weight and density. (Molecular - weight distribution is yet another factor that must be considered, but we will deal with that later).

In our next column we will define the interaction between molecular weight and density and then go on to illustrate the importance of knowing how to select grades of PE based on these two interrelated but ultimately independent parameters.

What is the Future for Plastics?

Despite broad public sentiment that plastic is harmful to the environment, it is proving hard

for the global economy to quit producing new plastic products. Unlike other ecologically friendly practices, attempts to eliminate plastics have not been directly helpful to the bottom line of many consumer companies. S&P Global Ratings forecast that plastic packaging is unlikely to be replaced in the near future for many of its current uses, as plastic holds advantages over some alternative packaging options like paper or glass. Changes to plastic production are more likely, including a possible increase in the amount of recycled plastic over time.

Many major corporations — including American food giants like Coca - Cola, Walmart, Starbucks, and McDonald's, and major European companies like Danone, Nestlé, and Pernod Ricard — have pledged to reduce the amount of single-use plastics in their products in response to consumer preferences and new legislation. These companies hope that environmentally conscious consumers will feel more comfortable purchasing their products when the offerings have a smaller environmental footprint. Some companies plan to switch to recyclable materials when they cannot entirely eliminate plastics and others have adopted new plastic policies, like eliminating plastic bags entirely, as they simultaneously make other changes to their products or supply chains.

Hotel conglomerates have also tried to reduce their reliance on single-use plastics. MGM China, the Macau - based hotel and casino operator, announced intentions to replace all single-use plastics in its restaurants by the end of 2019.



PLASTIC MACHINERY

Haitian UK Launches 5th Generation of Injection Moulding Machinery



- Haitian UK announces the launch of its 5th Generation of Injection Moulding Machinery.
- Using AI algorithms and the latest sensor technology, the company is achieving intelligent optimisation of production processes and giving its machines the ability to self-recognise, self - adapt, self-decide, and self-reconstruct.
- The Generation 5 range is equipped with a wide range of flexible integration functions as standard.

This new series of machines from Haitian and Zhafir, combines numerous high quality software and hardware innovations, paving the way for an age of intelligent, connected manufacturing. The inclusion of electric charging, on all machines, as standard, raises the bar still higher.

Smart Machine Technology

Generation 5 intelligence, marks a new level of excellence. Using AI algorithms and the latest sensor technology, the company is achieving intelligent optimisation of production processes and giving its machines the ability to self-recognise, self-adapt, self-decide, and self-reconstruct.

Smart features are included as standard options, with no additional charges or subscriptions.

- **HT Inject:** Enables improved product weight variance
- **HT Energy:** Intelligent Energy Management. Display and management refinement of energy consumption. Establishment of an energy-saving ecosystem.
- **HT Clamp:** Intelligent opening and closing as standard. Self-learning algorithm for precise mould movements.
- **HT Lubricate:** Intelligent lubrication as standard. Multi-data algorithm for intelligent lubrication control and intelligent setting of lubrication parameters.

- **HT Analysis:** Intelligent diagnostics and support. 2D code alarm and online help.

The Generation 5 range is also equipped with a wide range of flexible integration functions as standard. Open interfaces support efficient connection with peripherals, automation units, etc.

Stäubli's Advances in Magnetic Mould Clamping Maximise Productivity and Safety



- Stäubli's latest generation QMC123 magnetic mould clamping solutions are designed to provide injection moulders with impressive levels of flexibility, by simplifying the mould change process.
- QMC123 offers many advantages during quick mould change operations through new features such as active safety, improved interaction with the operator, and the exact measurement of the clamping force.

- Stäubli's IMAG-Editor software calculates the clamping force required for each mould in advance. This information means that any problems can be anticipated ahead of production.

Stäubli's QMC123 is the latest generation magnetic mould clamping system with offers users many advantages during quick mould change operations through a range of new features.

The plastics injection moulding sector is fast paced, and manufacturers are continually seeking opportunities to secure a competitive advantage. In today's climate, with energy costs at an all-time high, raw material costs increasing, the need to address environmental challenges, and in certain markets, a trend towards higher mix and lower volume JIT (just in time) production, achieving the highest levels of machine up-time and productivity are key factors in maintaining a viable and profitable business.

Exchanging mould tools within the injection moulding machine, especially where traditional manual methods using bolts and mechanical clamps are employed, can account for a significant amount of non-productive time. The issue of downtime is further exacerbated in a high product mix environment, where multiple mould changes may be required.

Just in time production (JIT) therefore was one of the catalysts behind the development of alternative mould clamping solutions. Whilst several different approaches have been used and evaluated by moulders over the years, magnetic clamping

technology has been confirmed as the most efficient and reliable solution. Magnetic clamping technology is suitable for virtually all injection presses and mould sizes and does not require any modification of existing mould tools.

Based upon long established, successful, and field proven principles, Stäubli's latest generation QMC123 magnetic mould clamping solutions are designed to provide injection moulders with impressive levels of flexibility, whilst maintaining the highest levels of productivity, by simplifying the mould change process. In addition, QMC123 offers many advantages during quick mould change operations through new features such as active safety, improved interaction with the operator, and the exact measurement of the clamping force, all made possible by Stäubli's IMAG technology.

By integrating a number of features which make it possible to anticipate malfunctions, QMC123 reduces machine downtime. An interactive control panel enables the validation of each safety point during mould changing operations. A mould movement anticipation function helps to avoid the potential of moulds falling during the changeover process.

Stäubli's IMAG-Editor software calculates the clamping force required for each mould in advance, depending on the press on which it will be used. This information means that any problems can be anticipated ahead of production, and thanks to IMAG technology, the operator will be alerted if the system is in error or if the clamping force being exerted on the mould is insufficient.

Users can select from two variants of this innovative mould clamping solution. QMC123 Essential provides a level of safety configured for repetitive operations with a lower level of diversity in the moulds, in terms of their size and weight, and simple push button operation. The QMC123 Premium variant on the other hand offers the safest magnetic clamping solution on the market today. In addition, the versatility of the Premium option makes it compliant with a high diversity of mould variants, and an intuitive and ergonomic hand pendant provides enhanced functionality through integration with the machine HMI.

The QMC123 Magnetic Clamping Solution also plays a key role as part of a SMED (Single Minute Exchange of Die) strategy, by minimising the time between the last good part and the first good new part. In addition, with its data acquisition capabilities, this new generation technology is also compatible with the principles of Industry 4.0. Stäubli's QMC 123 solution was launched following an extensive period of product development, followed by field testing to evaluate performance and reliability across multiple production environments. With the QMC123 solution compatible with moulding machines ranging 50T to upwards of 4,000T, this latest generation technology is already establishing itself as the benchmark in the plastics sector.

All of Stäubli's products are supported worldwide through the company's global network. Technical support, service, installation, and operator training is available from dedicated teams in all locations.

Make Every Shot Count: Mold Simulation Maximizes Functional Parts from Printed Tooling



If a printed tool only has a finite number of shots in it, why waste any of them on process development?

Injection molding simulation software has long been used to optimize a mold design prior to its fabrication. Now Moldex3D is working with additive manufacturing technology supplier Fortify to optimize the process that will be run on the printed tooling, maximizing its limited production run.

This is particularly useful when rapidly printed tooling is being used to expedite product design, and getting high quality parts in your hands quickly is the primary objective. As Moldex3D frames the situation: “For short-run quantities where defect-free parts are more important than a perfectly centered process, these starting parameters may be all you need.”

Moldex3D and Fortify acknowledge that under certain conditions hundreds and possibly thousands of parts could be molded from a printed tool, but it is much more common to mold 50 to 200 components from such a mold. The challenge of using a printed tool then becomes the fact that molding process development alone can take 10-20 shots

before good parts come off the press. “When process development for a tool that is estimated to last 50 shots takes 20 shots to get a defect-free part, you are nearly 50% through the mold's life before you have a representative part,” Moldex3D says.

To showcase the potential benefits of utilizing Moldex3D to apply simulation for the optimization of a tool design and process creation, the company created a test part design along with Fortify.

The companies settled on a complex part that could lead to defects if a good process was not utilized. The part design applied featured through-holes and ribs, with varying wall thicknesses — design aspects that can make defects such as weld lines, sink and hesitation highly possible.

Once the part design was finalized, the participants needed to choose the parting line, gate locations and orientations. To up the challenge for Moldex3D in creating a robust process for the part, the parting line was placed around the base edge of the part, while the gate was located in the bottom corner, leaving the largest boss a relatively long distance from the start of flow — a scenario that can often result in sinks.

Fortify notes that the molding tenets typically applied to its molds call for low injection pressure and velocity, challenging the simulation software to completely fill the part without sinks or visible weld lines while remaining within the recommended process parameters.

Moldex3D's Scott Sazin says that once the design was finalized, the mold files, molding resin (Vydyne 47HT nylon 6/6) and the machine parameters for the 30-ton Nissei NEX-IV were all sent to Moldex3D to perform its benchmark simulation. Moldex3D also considered the thermal properties of Fortify's DT tooling resin, as well as the 30-second air blast to cool the face of the tools which is part of Fortify's molding process. Moldex3D ran four different processes with varying fill times, choosing the one with shortest fill time and lowest residual stress, automatically generating a report for Fortify prior to it running the tool in the real world.

The simulation's proposed processing parameters included injection pressure, cooling time, fill time, pack pressure and packing time, all of which was compiled into a process sheet.

Prior to simulation, this same part had been molded in ResMart POM 27 and required about 2 hours of process development time. Applying Moldex3D process settings, Fortify achieved a full part without any visual defects in the second shot. Ultimately, the simulation saved nearly 25 shots on the lifetime of the mold and almost 2 hours of process development time.

“Fortify advises all of our customers on the value of pairing Moldex3D with Fortify's printed molds,” Fortify's Ben MacDonald says. “Any contract molder that is using Fortify's printed molds should also be using Moldex3D to extract the most value out of each mold tool.”

Midsize Electric Shuttle Blow Molder Balances Flexibility, Compactness



NPE2024: New Magic EBM model is loaded with features for the U.S. market.

Magic North America is a branch of an Italian firm that builds only all-electric blow molders, including continuous - extrusion shuttles, injection-blow and stretch-blow units, and a new line of accumulator head presses. The star of its NPE2024 exhibit is the new Model ME T14-600-D, a double-sided shuttle designed for compactness plus flexibility to run up to 10+10 cavities with 50-mm center distance or 1+1 cavities for 2.5-gallon F-type containers.

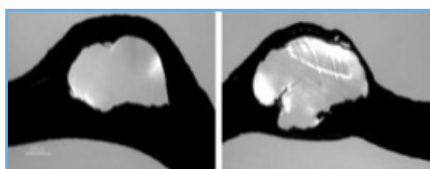
This midsize machine has 15.4-ton clamp, 600-mm carriage stroke, and 2×230-mm head. Designed specifically for the U.S. market, the new model boasts several new features:

- Automatic deflashing inside the machine with scrap conveyor
- Bottle conveyor belt on rear side of the machine
- Internal pick-and-place system to place bottles on conveyor (40% smaller footprint than previous generation)
- Motorized height adjustment of extruder/head assembly

- Quick-connect plugs for extruder head zones
- 15-in. display screen on telescoping arm
- Remote connectivity for service support
- System to read and display water flow and temperature.
- Ability to accommodate heads with maximum c/d values of 2 × 270 mm, 3 × 180 mm, 4 × 130 mm, 5 × 105 mm or 6 × 85 mm.
- T-slots for mounting blow pin holders, and on the mask holder and slotting up/down control.
- Hopper level indicator and indicator for an additional sensor.
- Melt-temperature monitor with onscreen display.

Another new capability of this machine is full integration with an added inline downstream system (such as palletizer, bagger, weigh scale, machine vision and more) from the company's new Magic Robotics division.

How Polymer Melts in Single - Screw Extruders



Understanding how polymer melts in a single-screw extruder could help you optimize your screw design to eliminate defect-causing solid polymer fragments. The

melting (or devitrification) process can be a rate-limiting process for some single-screw extruders. For these situations, the extruder drive train, extrudate temperature and downstream equipment are not rate limiting.

As the screw speed and rate are increased, a maximum rate will occur where the extrudate is completely molten and free of solid polymer fragments. At slightly higher screw speeds, solid polymer fragments start to appear in the extrudate, causing defects in the product. If fresh resin and masterbatch resins or color concentrates are fed to the extruder, the defects will be solid polymer fragments from one of the resins.

But since the fresh resin is added at the highest level, statistically the defects are likely to be from the fresh resin. If the drive train is not limiting, this defect can be eliminated via screw design.

Solid polymer fragments are likely to be discharged from the extruder at high screw speeds because of the processes governing solid conveying, melting, and the metering sections. For example, if the screw speed is doubled the pumping capacity of solids conveying and the metering sections will also double.

The melting flux, however, will only increase by a factor of about 1.4 times. The melting flux has units of kg/ (hr m²) where the unit area term is the area of the barrel wall where melting is occurring. The melting capacity is defined as a melting flux times the barrel area available for melting. As the screw speed is increased and because the melting flux does not increase at the same rate as solids

conveying and metering, additional area at the barrel wall is needed for melting. Thus, the solid bed is forced downstream such that more area at the barrel wall will be used to melt the additional resin. Because of limited barrel surface area, eventually some solids will not be melted and will instead discharge with the extrudate.

A photograph of a black-tinted HDPE thin-wall pipe cross section is shown in Fig. 1. Here the large white areas do not contain pigment because they were discharged from the extruder as a solid fragment. The fragments exited the extruder because the rate was higher than the melting capacity of the machine. Short term, the only solution to mitigate these fragments is to decrease the extrusion rate.

High-Output Drum Machine Boasts Fast Cooling, Color Change



NPE2024: Graham Engineering's new 40-lb accumulator press has adjustable - height extruder platform.

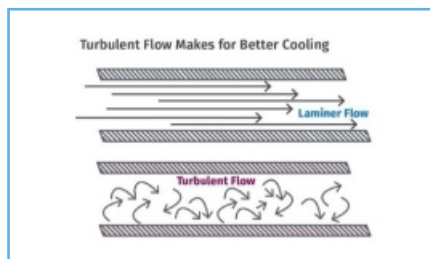
Graham Engineering is now quoting its new Model S40 6060 Drum Machine. Source: Graham Engineering

It's not on view, but Graham Engineering is talking up a new high-output drum machine that uses shell-mold cooling for an

estimated 15-20% shorter cycle time. The S40 6060 Drum Machine also boasts a proprietary head design that's said to permit one-hour color changes.

This machine has a 40-lb accumulator head, a 150-mm extruder capable of 2200 lb/hr, 60 × 60 in. roll-out press, and adjustable extruder platform to move the head up and down to enable a mold shim change while in the machine. This enables the bottom blow assembly to remain fixed. Also provided is a PWDS wall-thickness distribution system.

Maximize the Cooling Capacity of Your Extrusion Line



Maximizing output in extrusion requires a thorough understanding of not only the cooling requirements of the extruder but of the extrudate as well.

Throughout my career, I have been frequently involved in projects focused on improving the output and consistency of extruders. Yet, interestingly, there have been relatively few inquiries over this time about how to optimize the cooling of the parts being extruded.

Recently, though, I have gotten some inquiries about ways to increase overall extrusion line output where the limits turned out to be more related to cooling after extrusion than the extruder itself.

This seems to be more typical where the processor cobbles lines together from various sources, or tries to upgrade the extrusion capacity without in-depth knowledge of the available cooling capacity.

The cooling capacity must be matched closely to the extrusion capacity to benefit from any improved extrusion techniques and equipment. Most extruded products are cooled by some type of polymer-to-water heat transfer method. Simple water immersion is typically used for products like pipe, tubing, cable, strand, filament and most profiles, while sheet is cooled on chill rolls with internal water flow.

Know the Heat Load

In every case, to get the results you want, you must have a complete knowledge of the "heat load" before you can determine if enough cooling capacity is available. An approximate heat load is relatively easy to determine: multiply the specific heat of the particular polymer by the desired output and the required temperature change to properly handle the extrudate after cooling. That will give you an accurate enough estimate of the total heat load for evaluating all the components of the cooling system.

There are some lesser factors to be considered if extreme accuracy is required. Because all polymers have different specific heats and different line exit temperatures to reach proper handling temperature, almost every extrusion operation is a different case.

Cooling capacity must be matched closely to the extrusion capacity to benefit from any improved extrusion techniques and equipment.

For example, with this simple calculation I estimated that a cooling system that could adequately cool 2,000 lbs/hr of HIPS would only be able to cool about 650-750 lbs/hr of HDPE. I recently worked with a processor who compared different polymer line rates just based on output. He was quite disappointed. Again, that's because he did not take into account the broad differences in polymer thermal and physical properties. So it's necessary to make the heat load comparison in all cases, because even different processes with the same polymer may have different heat loads due to differing melt temperature or required handling temperature.

Water (or air) cooling is much more effective with turbulent flow than laminar flow. In laminar flow, a thin boundary layer of the fluid tends to stay stationary on the surface of the extrudate, serving to insulate the extrudate from the main coolant flow. Turbulence breaks that layer up to expose the extrudate to the main coolant temperature.

Source: J. Frankland

All - Electric Shuttle and Stretch - Blow Machines

NPE2024: Meccanoplastica shows off a double-sided shuttle for containers up to 5 L and a reheat stretch - blow molder for up to 2.5 L PET containers with four cavities — both all - electric.



All-electric, four-cavity, linear two-stage stretch-blow MIPET 4P from Meccanoplastica.

Meccanoplastica of Italy is highlighting its MIPE 4P all-electric, four-cavity, linear two-stage stretch-blow machine for PET bottles up to 2-2.5 L. One of these units was sold last year to a molder in Florida. Introduced in 2019, it's designed especially for unconventional bottle shapes; preferential heating is optional. Newer features include a more robust chassis. The machine at the show has a demonstration mold for a 750-ml trigger-spray bottle and can produce up to 1,400 bph per cavity.

Also on display, running only dry cycle, is an all-electric shuttle extrusion blow molder, model HE480D, introduced in 2018. One of the smaller models in the series, it has a 12-metric-ton clamp, 480-mm carriage stroke and 90-mm extruder. This double-station machine can run up to six parisons and mold bottles up to 5 L. The unit on display has a 3+3 parison head with 140-mm center distance.

Source: Meccanoplastica

How to Start a Hot-Runner Mold that has No Tip Insulators

Here's a method to assist with efficient dark-to-light color changes on hot-runner systems that are hot-tipped.



Here's a method to assist with efficient dark - to - light color changes on hot-runner systems that are hot-tipped.

Dark-to-light color changes on hot-runner systems can be time-consuming and costly for molders. Excessive downtime and scrap during color changes cut into processors' profit margins and can make them less competitive. Thermal-gate (hot-tip) designs in hot-runner systems are common and can be unusually difficult to clean, depending on the tip design. Here I'll discuss methods to assist with efficient dark-to-light color changes on hot-runner systems that are hot-tipped.

An injection molder's top priority is to achieve the highest possible productivity while utilizing the least amount of capital. Dark-to-light color changes can be problematic because of the possibility that the dark color could contaminate the lighter colored part (see Fig. 1). In many situations the streaking's origin is in the hot-runner system. That system is a complicated piece of tooling that on occasion allows for dead spots where color hangs up. The goal for injection molders is to be able to clean these dead spots quickly and efficiently.

Thermal gating or hot-tip gating generally represents a more economical mold investment than valve gating. The thermal gate (see Fig. 2) forms a small, solidified plastic slug (or bubble) inside the

gate bore during the cooling time of the plastic part. This cold slug remains in the gate during the mold-open step, part ejection, and mold-close motion. With the next injection, the pressurized melt flushes the cold slug into the melt stream that fills the empty cavity. While all molding parameters (pressure, temperature, and time) are focused on producing a high-quality plastic part, they are also responsible for the formation of the cold slug at every cycle to avoid drooling and stringing at the gate.

The issue with purging a thermal-gate system is removing the color from the bubble at the gate of the hot-runner system. The larger the bubble, the more difficult it is to clean. The color in a smaller bubble may be removed by raising the hot-runner tip temperatures by 100° F and using a commercial purging compound to clean the machine. However, if the bubble is large, it will be impossible to remove the color without further action.

One way to counter large bubbles in the gate is to install thermoset inserts in the gate area. The inserts will reduce the size of the bubble, making it easier for the purging compound to remove the dark color. Raising the temperature of the hot-runner tip will also assist with the removal of the color. Most hot-runner manufacturers offer thermoset inserts as an option to their customers.

Molders that have thermal-gate hot runners but no tip insulators will have to use a different approach for cleaning and maintaining the hot-runner system. The best solution for this scenario is to purge the machine and then remove the cavity plate.

After that plate is removed, and time has been allowed for the tips to cool, each plastic bubble will have to be removed manually (Fig. 3). After all the bubbles are removed, the cavity plate may be replaced and then natural-color resin is run through the machine.

As a result, the bubble will become natural resin and make color changes easier because no dark color will be present in the gate. Using the purging compound after this task has been complete will be sufficient for dark-to-light color changes.

Using Automation to Reduce COGS and Stay Globally Competitive



Decade-long, multiphase automation investments lower operating costs and maintain technology lead in an increasingly competitive global market.

To ensure it remains globally competitive now and in the future, Cavalier Tool & Manufacturing Ltd. has partnered with Hermle AG and made a decade-long commitment to increase automation to reduce setups, machine faster, improve unattended machining and increase throughput. Photo Credit: Hermle AG

Founded in 1975, moldmaker Cavalier Tool & Manufacturing Ltd. of Windsor, Ontario, produces

more than 160 medium-to-large-size injection and compression molds per year with a team of 200 in three facilities in the Windsor area and three additional facilities in India, that provide design, purchasing, estimating and accounting services. The company not only designs and builds molds but also conducts feasibility studies, designs parts, makes mold modifications/repairs, and offers tryouts and small production runs for customers in the ground transportation (automotive, commercial truck, agricultural equipment, recreational vehicle), industrial (materials handling, fluid handling) and medical markets.

Paradigm Shift Affects Product Mix, Investments

Recently, the types and quantity of molds Cavalier produces have shifted, owing to several trends. While it actually produced fewer molds in 2023 — down from over 200 two years ago — the molds the company now builds are larger and more complex thanks to significant growth in the heavy truck segment. During Q4 2023, the company produced not one but two \$1 million tools. Rapid growth in the truck segment, whose parts tend to be very large, has also meant that Cavalier is producing more compression molds these days.

Additionally, since the pandemic, Cavalier has reshored complex tool components it used to produce in China. Principally, this was done to address supply shortages and shipping delays that plagued most of the industry during 2020-2022. However, that meant a larger portion of its tools was being produced in a country with high labor costs and an industry requiring high capital investments.

To remain globally competitive today and tomorrow, Cavalier management took a hard look at ways to drive down its cost of goods sold (COGS). They concluded that the best way to do this was to increase automation.

“This is really a matter of our survival — not just now but into the future,” Doug Brockman, Cavalier general manager, explains. “We tell our people that if we don't make this investment in automation, they won't have a job in 10 years because the only way to stay competitive in a global market is to invest in sophisticated equipment and to automate. To remain successful, we can't afford to do things manually.”

Cavalier management and shop leaders worked together to develop an ambitious, multiphase program to increase automation and manufacturing efficiency and set distinct goals at each level. The company already had a good working relationship with CNC machinery OEM Hermle AG, who agreed to work closely with the moldmaker to design and outfit manufacturing cells to meet the company's needs. Since Cavalier also had significant investments in workpiece holding systems from Erowa Ltd., used for smaller workpieces, and FCS System Srl., used for larger workpieces, they wanted to incorporate them in the new manufacturing cells.

Before moving to a new phase of implementation, the team agreed to assess how equipment ran and review best practices and lessons learned to determine what, if anything, to change before setting new goals and beginning the next phase of automation.

At the start of Phase 1 of its automation program, the Cavalier team had three goals: cut faster, reduce setups and reduce chip-to-chip time (defined as the time between the end of one job and the start of the next on the same machine).

The first two goals were addressed by purchasing a Hermle C42 U five-axis CNC machine — Cavalier's first five-axis mill for steel — which was selected for its stability and accuracy while running at high spindle speeds, and its ability to drill and both rough and finish mill. This meant that all work except EDM could be performed without moving a workpiece, thereby reducing setup steps and time.

The third objective was addressed by purchasing five Hermle PW850 pallets and a pallet changer / shuttle that loaded/unloaded pallets from the CNC. At any given time, up to four pallets loaded with workpieces were in the manufacturing cell: one in the CNC being machined, two to the side in ready stations and a fourth in the robot's second arm. As soon as one job finished, the shuttle removed it and loaded the next from the ready station. Since multiple jobs (and programming) were preloaded into the manufacturing cell ahead of time, downtime between jobs was reduced. If problems arose while in the CNC, the job was terminated, the pallet/workpiece removed, and another loaded into the machine, enabling more unattended run time.

The proprietary Hermle pallets were what the pallet shuttle was designed to pick up/move, and the CNC was designed to accept them. The team's workaround

was to mount either a 500 × 500-millimeter/20 × 20-inch FCS pallet on top of each Hermle pallet or a set of Erowa 148 chucks and collets, which enabled them to have multiple stations ready to machine workpieces held by Cavalier's preferred workholding systems. After machining, it eliminated the need to depalletize workpieces and then repalletize them before moving to EDM. However, if the Hermle pallet coming off the CNC was loaded with an FCS pallet and the team needed to mount a smaller workpiece held by an Erowa system, then they either had to disassemble the FCS system and reassemble the Erowa before loading the workpiece, or they had to sequence jobs in such a way as to fit on whatever pallet was available next.

At the end of Phase 1, the team evaluated approaches they'd tried and how well each had worked. They found that the high-speed, five-axis Hermle CNC cut faster and more accurately and reduced setups. They also found that the multi-palletted workholding system shortened setups and contributed to faster removal and transport to the next machine.

HASCO's 100 - Year Journey in Mould making Excellence



- HASCO reflects on its 100-year journey within the mould making industry, from its humble beginnings in 1924 to present day.

- Rolf Hasenclever led HASCO's early strides in mould making innovation which set the stage for its success today, laying the groundwork for transformative industry standards.
- CEO Christoph Ehrlich guided the company into the digital era, in which its international footprint grew and international footprint grew, as well and its advancements in CAD technology.

HASCO has carved a remarkable journey over the past century, establishing itself as a pioneer in the mould making industry. From its humble beginnings in 1924, the company has thrived on innovation and an unwavering commitment to excellence. This story delves into HASCO's evolution, highlighting its role as an early adopter and innovator, shaping not just its own destiny but also setting benchmarks for the industry at large.

The inception of HASCO under Hugo Hasenclever's vision in 1924 marked the beginning of a revolutionary journey in mouldmaking. Starting as a small craft operation, the company's early foray into innovation was spearheaded by Hugo's son, Rolf Hasenclever, who recognised the potential for transformative change. This period was characterised by efforts that laid the groundwork for the company's future, with a focus on quality, efficiency, and the nascent idea of standardisation that would later define HASCO's contributions to the industry.

It may not have been until 1957 that Rolf took over the family business, but he was always something of a protégé. As a youngster Rolf, would creep into

his father's workshop at night to help; to finish projects, projects like a roly-poly toy - a notoriously difficult engineering project, in the mid-20th century, it had to be perfectly engineered so it would wobble but not fall down... This kind of ingenuity meant his father had full faith in Rolf's ability to propel HASCO.

The year 1960 was a watershed moment for HASCO, with the patenting of the modular standard mould system, a game-changer that significantly reduced production times and costs, heralding a new era in mouldmaking. This innovation was followed by a series of advancements, including the adoption of cutting-edge machinery and the development of unique technologies that further solidified HASCO's leadership in the industry. These breakthroughs not only enhanced HASCO's product offerings but also redefined industry standards, showcasing the company's commitment to pioneering new solutions.

HASCO's journey through the latter half of the 20th century and into the 21st was marked by significant expansion and modernisation. The company's international footprint grew, with a strategic focus on global markets that necessitated a modern approach to production and operations. Advancements in CAD technology were swiftly adopted, enabling HASCO to enhance design precision and efficiency. These steps were part of a broader strategy to not only meet the growing demand for high-quality moulds but also to stay ahead in a rapidly evolving industry.

In 2007, HASCO underwent a significant leadership transition, setting the stage for a new chapter in its storied history. This period saw the company doubling down on modernisation efforts, including infrastructure upgrades and the introduction of innovative tools like HASCO SET. The new management's strategic vision was clear: to maintain HASCO's tradition of innovation while steering the company towards a future filled with possibilities, ready to adapt and lead in an ever-changing industry landscape.

HASCO's journey into the digital era, guided by CEO Christoph Ehrlich's foresight, reflects a proactive embrace of digital processes and tools to streamline operations and enhance customer experiences. This digital transformation, rooted in HASCO's foundational principles of innovation, global outreach, customer focus, and teamwork, underscores the company's resilience and adaptability.

In a press conference to celebrate the centenary Christoph Ehrlich pointed to the fact that the company's approach that necessity is the mother of invention. "Everything we innovate is about making things easier. There are always consultants who coin terms like "Digitalisation" but in the end, it's companies like HASCO that must design and implement the processes. That's what we do and always have done throughout our history."

HASCO's 100-year narrative is a testament to its spirit, with a consistent focus on innovation, customer satisfaction, and a forward-thinking approach. The company's readiness to lead the mouldmaking industry into the

future is evident in its historical achievements and ongoing commitment to excellence and innovation.

“An incredible journey of 100 years lies behind us,” stated Ehrlich. “Even a world war and several economic crises could not stop. This journey will continue, and we will always have our innovative strength as a constant companion.”

New Dual - Head Accumulator Machines and Electric Clamp Options



NPE2024: ST Blowmoulding highlights new dual - head accumulator machines, energy-saving electric clamps and other innovations. New dual - head accumulator machines from ST Blowmoulding are available with optional electric clamping systems. Industrial blow molding machine specialist ST Blowmoulding of Italy will showcase its latest developments in accumulator - head and continuous-extrusion technologies. At center stage is its new line of dual-head accumulator machines with new controls, optimized material usage and what are said to be "the lowest energy consumption in the market and the highest possible OEE (Overall Equipment Efficiency)." The upper platform of a dual-head machine will be on display (photo). Also new are energy-saving electric clamping units (introduced at K 2022),

optional on dual-head and other machines. These are paired with the company's adiabatic extruders for high energy efficiency. The company says its large machines exceed the top level of energy efficiency under Euomap 46.1: class 10 or <0.13 kWh/lb of material processed. In continuous-extrusion technology, ST Blowmoulding is presenting new concepts for high-output molding of L-ring drums and IBCs. The company also offers multilayer technologies for both continuous-extrusion and accumulator-head machines. For accumulators, a new design of the flow channels is said to significantly improve the balance of the layers, suitable for two or three layers, as well as the ability to provide an additional outer coating layer with a separate accumulator chamber. Other focuses of its display include foaming technology for material savings; the company's work on hydrogen liners for composite pressure vessels; and suction blow molding for automotive applications such as coolant lines of EVs.

Source: ST Blowmoulding SA

Storopack's Mini Touch Machine Suitable for Diverse Film Types



• Storopack's new AIRplus Mini Touch machine is a versatile air pillow system capable of processing different types of

film up to 400 mm in width, providing flexibility in packaging applications.

- The AIRplus Mini Touch features a user-friendly touch display that can be positioned on the front or back of the machine.
- The intuitive interface allows users to configure the machine quickly, offering three modes to choose from: manual, length-dependent, and automatic.

Storopack's new AIRplus Mini Touch machine is suitable for different types of film and offers fast, intuitive operation thanks to its touch display, which can be positioned on the front or back. Storopack's AIRplus Mini Touch is an all-around system and can process different types of film up to 400 mm in width. The air pillow system comes with a touch display, which can be positioned on the front or back of the machine. Thanks to the display's intuitive user interface, users can configure the machine with ease in no time. There are three modes to choose from: manual, lengthdependent, and automatic. The machine also has a preinstalled library, allowing users to choose parameters for individual film types.

AIRplus Mini Touch is compatible with all COMFORT. PROTECT modules from Storopack. Convenient AIRplus Mini Touch offers a touch display with adjustable position, which is a benefit when it comes to machine configuration and servicing. Even if the machine is integrated and less accessible on all sides, the display can be positioned for easy access.

CIRCULAR ECONOMY/ BIO-PLASTICS/ RECYCLING

Unilever CEO Urges Global Plastic Treaty, Backed by World Economic Forum

As UN member states begin preparing for the fourth round of treaty talks in April, the World Economic Forum annual meeting offers a platform to further the discussion. Read the thoughts of Unilever CEO Hein Schumacher in this blog, first posted on WEF's website.

Urgent steps to end plastic pollution are required. The current plastic life cycle remains primarily linear – take, make, dispose – and the statistics from the OECD are telling: from 2000 to 2019, plastic production and plastic waste have more than doubled, while only 9% of plastic ultimately gets recycled.

OECD data also shows that the amount of plastic waste produced is on track to almost triple by 2060, with around half ending up in landfill and less than a fifth recycled. Greenhouse gas emissions from the plastic system could further increase by 63% by 2040, a trajectory that is incompatible with the goals of the Paris Climate Agreement. Packaging represents around

one-third of global plastics use. Unilever recognises that it is part of the problem. Too much of our plastic packaging ends up in the environment.

We and others have learnt into this challenge through voluntary initiatives such as the Ellen MacArthur Foundation (EMF) and United Nations Environment Programme (UNEP) Global Commitment. This has not solved the problem – far from it.

Business signatories have significantly outperformed their peers in tackling plastic waste. It shows that a concerted effort can unlock change – but not at the scale needed. With only 20% of the industry signed up, it is clearly an insufficient response to the scale of the challenge.

Voluntary initiatives are not enough – that is clear. More interventions are needed across the entire plastics value chain, both upstream production and downstream waste management. Voluntary initiatives also distort the market, too often reducing the competitiveness of those taking action. We need stronger and harmonised regulations to get everyone on track to eliminate plastic waste and pollution.

A legally binding treaty is a critical opportunity to achieve this – helping us to avoid a patchwork of disconnected national efforts and create a level playing field in the global economy. To support the treaty, Unilever helped create the Business Coalition for a Global Plastics Treaty to give confidence to member state negotiators that businesses and financial institutions recognise the importance of regulation to end plastic pollution.

Packaging Expert Debunks Disposable Cup Myths, Only 1 in 400 are Actually Recycled



- Research from the UK's sustainable waste management company Biffa reveals that up to 1370 tonnes of paper fibre that could be recycled, is being wasted in the UK each year.

- With only 1 in 400 being recycled, that potentially means up to a staggering 4.98 billion takeaway cups are not being recycled and the raw materials wasted each year.
- In the immediate term businesses, consumers and waste management companies need to work together to recycle as much as possible.

New research from the UK's sustainable waste management company Biffa reveals that up to 1370 tonnes of perfectly good paper fibre that could be recycled, is being wasted in the UK each year.

It is estimated that between 2.5 to 5 billion disposable takeaway cups are used annually in the UK. With only 1 in 400 being recycled, that potentially means up to a staggering 4.98 billion takeaway cups are not being recycled and the raw materials wasted each year.

This is a recycling rate of just 0.25% for takeaway cups, compared to 70.6% for general paper and cardboard, which demonstrates the scale of the single-use takeaway cups challenge. They represent a 'perfect storm' of barriers to recycling.

First, takeaway cups are difficult to recycle. They are traditionally made of paper with a plastic coating which needs to be separated before the paper can be recycled. It cannot be collected and processed with standard paper.

Second, because they are made from paper, people think cups are widely recycled along with mixed recycling, which means

the coffee cup is one of the most commonly wishcycled items. However, a specialist system is needed to collect and process takeaway cups.

Third, they are expensive to recycle. This is because they are bulky structures surrounding empty space, meaning a small number of takeaway cups take up a lot of room and less material is transported per collection compared say, to piles of old newspapers. Compared with these widely recycled paper products, there's a higher cost and more carbon emissions created collecting and transporting takeaway cups, unless there is a specialist collection system in place.

Finally, they are prone to contamination. Beverages are served with lids, stirrers and sleeves which often do not get separated when disposed of. Also, people tend to use takeaway cups as a place to pack in all their other rubbish, creating 'mini bins'. Contamination means that cups cannot be recycled and will be incinerated to generate energy, or even disposed of in landfill.

Biffa expert waste strategy & packaging manager Roger Wright, explores common myths associated with disposable cups and recycling.

Myth 1: All Takeaway Cups are the Same

Unfortunately, not. There are significant differences when it comes to engineering and developing the cups. Cups holding hot liquid must be made from strong virgin fibre to ensure their structural integrity. Additionally, because there is an exposed

seam inside the cup touching the liquid, the cups material must be of the highest quality to guarantee the drink remains free of any contaminants.

Various types of single-use cups – like those designed for beer, soft drinks, and takeaway soups or porridge – come with assorted designs, coatings, specifications, and labels. This lack of consistency makes it harder to know how individual cups should be processed, so many people hope for the best and wishcycle in with other mixed recycling.

With designers constantly innovating, the market is flooded with cups made from different materials – not to mention the assortment of lid types that accompany them, which has further complicated the recyclability of disposable cups.

Myth 2: Takeaway Cups are Valuable to Recyclers

Without a specialist system in place, cups are problematic for recyclers. The cups weight to volume ratio makes it an inefficient item to manage. Consequently, the total recoverable value is limited. Typically, hot cups weigh 275gsm on average, with many being 'double walled' or 'sleeved' for safety purposes, adding an outer layer of approximately 225gsm. Contrastingly, cold cups average a weight of 300 gsm.

Ultimately, the cups' highest value is only achieved through crushing or stacking them. Without these measures, collecting and processing the cups becomes impractical due to the insufficient value in the

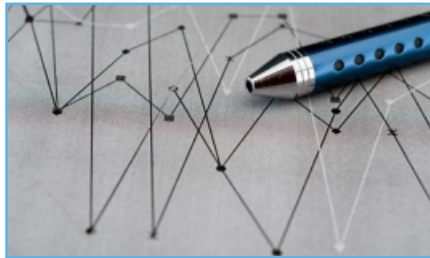
total volume. Despite the use of costly virgin solid bleached sulphate (SBS-based fibre), their design introduces challenges for efficient recycling.

Myth 3: Takeaway Cups are Simple to Recycle

We wish that were the case. With almost as many different types of coating used to seal them as there are big brand takeaway chains, it's virtually impossible to tell them apart in most recycling systems if they don't arrive at the recyclers properly segregated. Without additional manual pickers or the presence of a dedicated digital technology, it is complicated to distinguish one type of cup from another and separate at scale. This means it is harder to guarantee the quality of the recycled material.

Eastman's molecular or chemical recycling technologies enable the breakdown of plastic waste into monomer feedstock. This material is then repolymerized to create quality materials without compromising performance. Eastman's process enables materials to be used for subsequent production cycles without limitation. "With over 70% of the feedstock secured for our upcoming recycling plant in Normandy, including materials typically rejected by mechanical recyclers, this agreement represents a significant element of our feedstock availability and reinforces our commitment to sustainable solutions," says Brad Lich, Eastman's executive vice president and chief commercial officer.

Plastic Ingenuity Shares Progress and Industry Trends in Circularity Report



- During 2023, Plastic Ingenuity conducted its annual Packaging Sustainability Stakeholder Study, noting a significant uptick in environmental initiatives among those surveyed.
- 100% of the organisations surveyed in 2023 had well-defined sustainability goals – up from 67% in the first year of the study, 2021.
- The 2023 study revealed that looming implementation of Extended Producer Responsibility (EPR) legislation in the U.S. will be a pronounced driver of change.

Plastic Ingenuity, the largest custom thermoformer in North America, has published its third annual Circularity Report, highlighting milestones achieved in the past year and opportunities ahead. From earning a WorldStar Packaging Award to securing key certifications for environmental management, Plastic Ingenuity has reinforced its position as an effective leader in the evolving sustainability arena.

During 2023, Plastic Ingenuity conducted its annual Packaging Sustainability Stakeholder Study,

noting a significant uptick in environmental initiatives among those surveyed. In fact, 100% of the organisations surveyed in 2023 had well - defined sustainability goals – up from 67% in the first year of the study, 2021. This comprehensive study involves sustainability and packaging experts from consumer-packaged goods (CPG) companies, retail sectors and healthcare organisations. 76% of participating stakeholders identified “make packaging from recyclable materials” as their top sustainability goal in 2023.

The knowledge gathered from these stakeholder studies continues to inform Plastic Ingenuity's strategic initiatives, such as its recent certifications in ISO 14001 and ISCC Plus, and its adoption of carbon emissions accounting.

Among many important findings, the 2023 study revealed that looming implementation of Extended Producer Responsibility (EPR) legislation in the U.S. will be a pronounced driver of change. In addition, those that operate on a global scale are conscious of the potential impact of the EU Packaging and Packaging Waste Regulation (PPWR). Legislation will play a vital role as a facilitator of transformation in coming years, rousing action in organisations that have struggled to meet their voluntary circularity goals.

These initiatives are explored in detail in Plastic Ingenuity's new Thermoform Circularity Report.

Robotic Sorters with AI Technology Deployed in Fresno Recycling Center



A grant from the Recycling Partnership enabled Implementation of RecycleOS Technology from Everest Labs.

Caglia Environmental, based in Fresno, California, announced improvements to recycling technology at its Cedar Avenue Recycling and Transfer Station (CARTS). The enhancement is made possible by funding from The Recycling Partnership's PET Recycling Coalition. Caglia Environmental was one of 12 businesses and organizations in North America to receive a PET Recycling Coalition grant.

The grant has enabled the installation of robotic sorters using RecycleOS from Everest Labs. RecycleOS software is designed to identify PET plastic and classify into three specialized streams, which each robot efficiently sorts into three different bunkers. This process is unique as most facilities that accept PET collect and bale the three streams as one. The system has the ability to separate these plastics into PET bottles, thermoformed packaging and pigmented/ opaque PET.

Thermoformed products such as food packaging will be separated from bottles by the new system.

"Being at the forefront of separating PET into specialized streams is a proactive leap towards the bigger

and broader recycling landscape that extended producer responsibility (EPR) will bring to California and the industry," says Adam Gendell, director of material advancement at The Recycling Partnership.

Caglia Environmental's new investments in EverestLabs solutions are expected to increase the efficiency of PET plastic recycling and ensure the purity of recycled materials, thereby enhancing their value and sustainability.

The facility can now sort clear PET bottles, thermoformed products, and pigmented/opaque PET into separate streams, significantly improving the recycling process and output quality. This retrofit represents the first time a material recovery facility (MRF) has consistently targeted each of these three product types as separate commodities and will serve as a benchmark for MRF's seeking to do this in the future.

"The Caglia team saw right away that RecycleOS-powered robotics and data dramatically improved their bottom line on their Last-Chance line," says JD Ambati, founder and CEO of EverestLabs.

Plastic Waste Treatment - A Billion Dollar Opportunity for Nations.

ISLAMABAD: Pakistan can easily generate \$1.2 billion annually through utilising plastic waste which has the potential to generate thousands of job opportunities and can become a whole business in the country.



This was the crux of a lecture jointly organised by the Pakistan Institute of Development Economics (PIDE) and the World Bank (WB) titled, "Introduction to the Circular Economy".

Speaking on the topic, Charles Schneider, senior private sector specialist World Bank said that the circular economy opportunities can be found in nearly every sector - the plastics, fashion, and food sectors stand out as some of the most likely to be impacted. He said that out of the total market of \$1.2 billion of plastic waste only \$144 million which is just 15 percent of the total plastic waste is being utilised while rest 85 percent is simply not utilised.

He said that other than plastic waste there are various other sectors just like agriculture waste which has the potential to significantly contribute to the economy, adding that developed countries are fully tapping such opportunities while Pakistan-like countries are not utilising it.

Schneider while introducing the concept said that circular economy (CE) is an economic model to minimise waste and make most of resources. Unlike the traditional linear economy, which follows the "take, make, dispose" model of production, the circular economy is regenerative by design and aims to keep products, equipment and infrastructure in use for longer.



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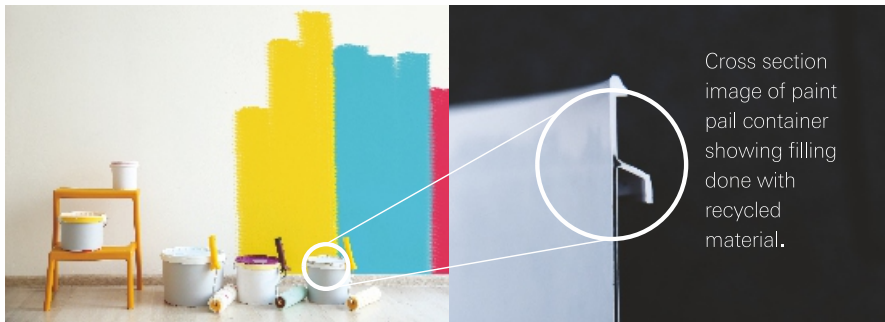
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