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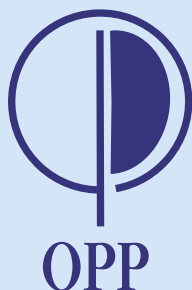
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FROM THE PRESIDENT'S DESK

Mr. Dilip Parekh



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Dear Members,

Greetings from Organization of Plastics Processors of India!

This is my maiden address to you as President of Organization of Plastics Processors of India.

I consider it as a privilege to be the President of OPPI. I am fully aware that doyens of the Indian Plastic Industry have been the Presidents of OPPI and their immense contribution for the development of the Plastics Industry. I will make efforts to ensure that our activities are member-centric and for the development and welfare of the Plastics fraternity.

The members of Organization of Plastic Processors of India process almost 43% of total plastics processed in India and they form the backbone of the Indian Plastic Industry.

Organization of Plastic Processors of India has been interacting with the various ministries- Ministry of Commerce and Industry, Department of Chemicals and Petro Chemicals, Ministry of Finance, Ministry of Environment, Forest and Climate Change etc., on an on-going basis. Our Interactions have resulted in getting favorable decisions from the Policymakers. It is constant endeavor to ensure removal of obstacles faced by the Plastics Industry.

OPPI is also on the Advisory Committee of CIPET. Our suggestions have been agreed to and accepted by Department of Chemicals and Petrochemicals and CIPET.

The Services offered by OPPI are mentioned in each issue of Digital Plastiscope. I appeal to all members to suggest any other activities which they may like OPPI to undertake. Your suggestions will be considered by us.

The new Directory of Organization of Plastic Processors of India will be published in January 2023. In case, you still want to release advertisements in the Directory kindly contact OPPI Secretariat.

With Best Wishes,

Dilip Parekh
President

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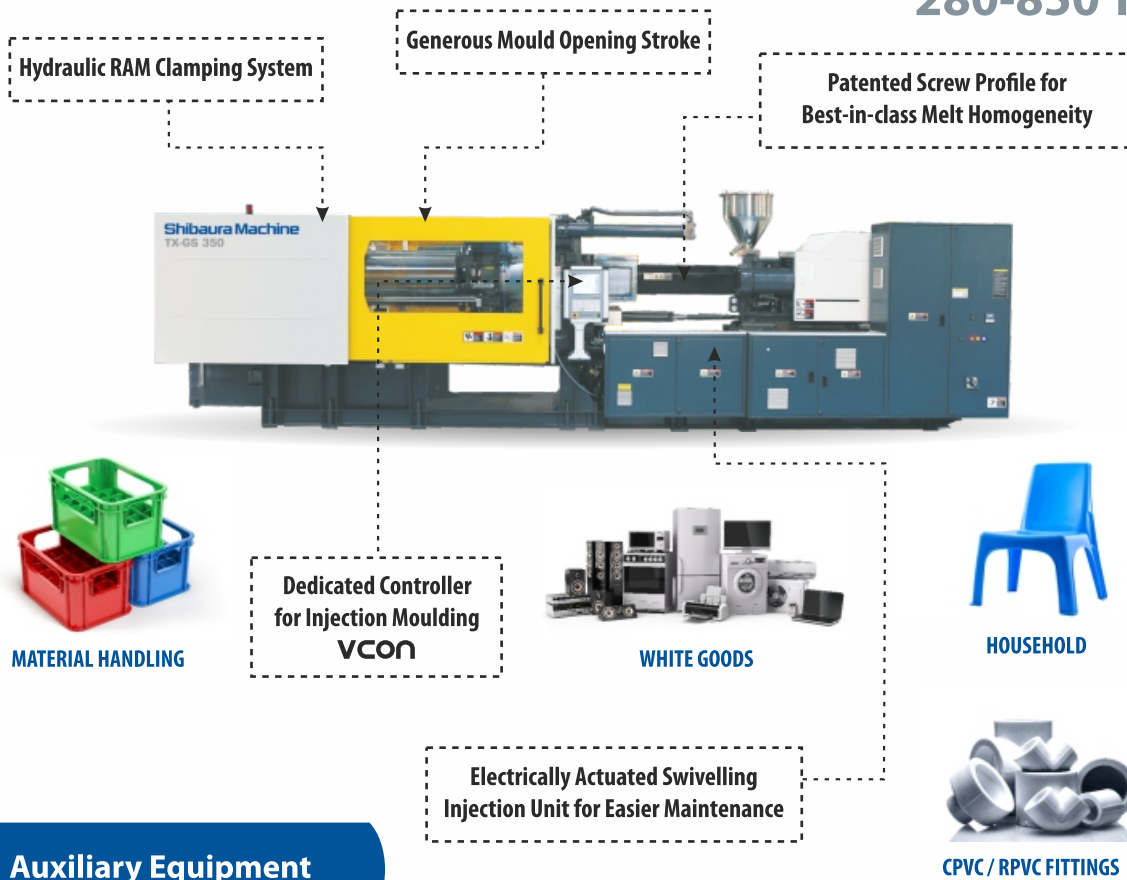
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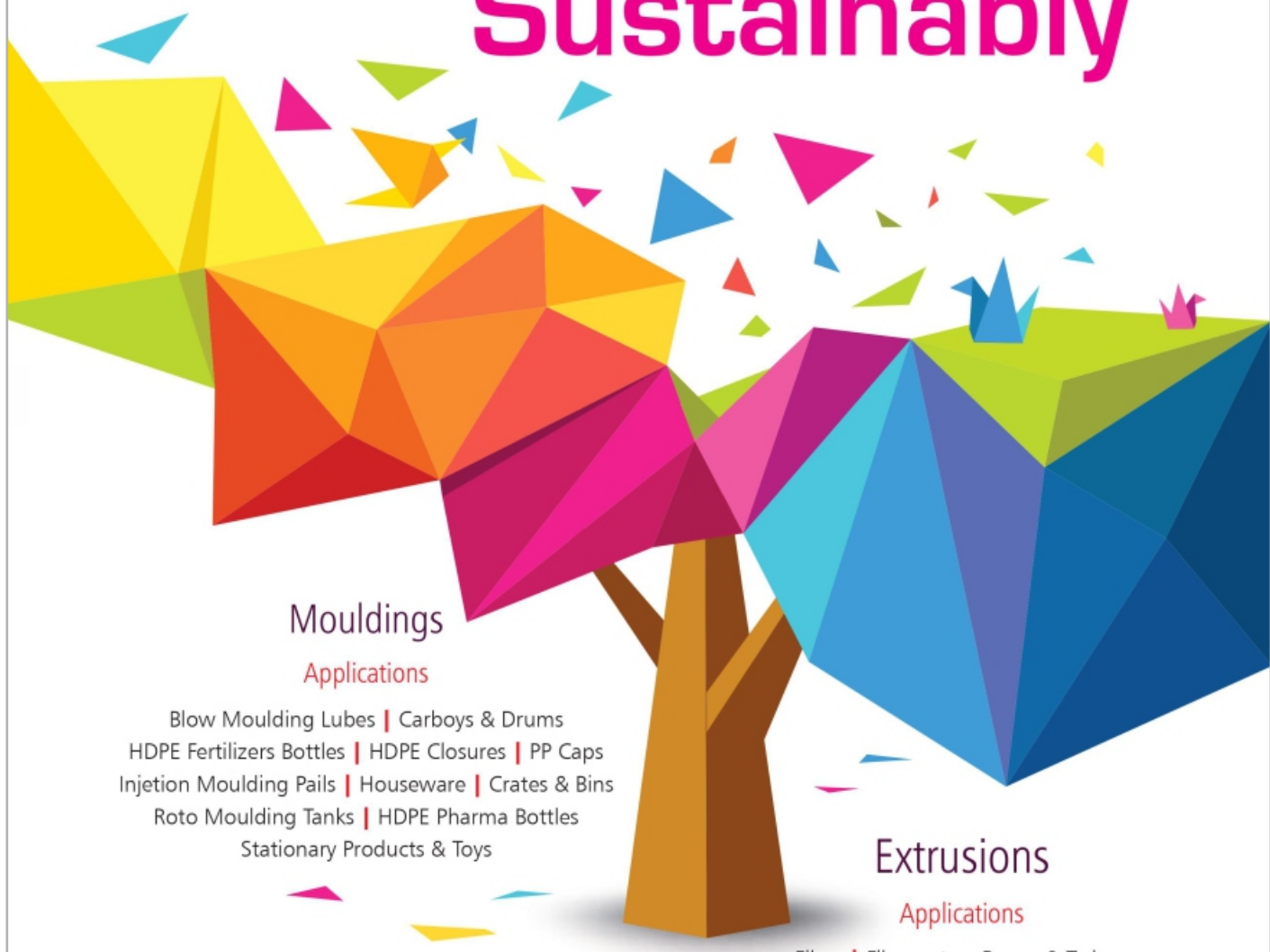


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With the fast changing business environment and the growing competitive world, it becomes important for all those connected with the Plastics Industry to increase the visibility of their activities.

Organization of Plastics Processors of India will be publishing Membership Directory 2023. The directory will be distributed to all OPPI members, Plastic Associations in India, Major Chambers of Commerce and Industry/Industry Associations in India and abroad, Trade Promotion Organizations, Financial Institutions and Diplomatic Missions.



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- MNCs setting shop in India refer to OPPI Directory for outsourcing their requirement of plastic products from India.
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Advertisement tariff, mechanical data pertaining to printing of the advertisements, terms and conditions and advertisement booking form are attached herewith.



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OPPI DIRECTORY - 2023

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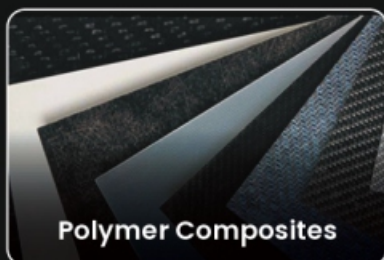
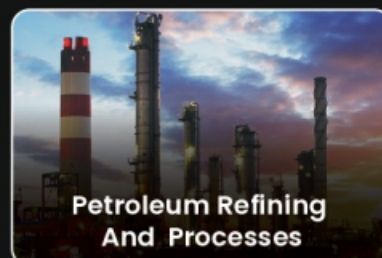
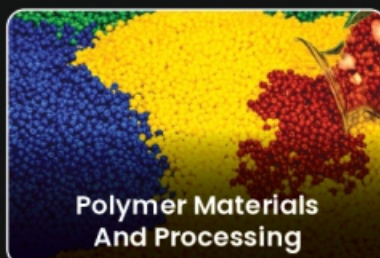
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NEWS FROM INDIA

Maharashtra Revises Plastic Ban, Lifts Curbs on Compostable Items

The decision was taken in a meeting of the state environment department, headed by the Chief Minister Shri Eknath Shinde and Deputy Chief Minister Shri Devendra Fadnavis on 29th November 2022. The resolution is in consonance with central government's policy on plastic ban. An amended notification has been issued.



The state environment department had banned the manufacturing, use, storing, distribution, wholesale, retail sale, import and transportation of all kinds of plastic bags, single use disposable items made of plastic and thermocol on March 23, 2018. Plastic to wrap or store products and small PET and PETE bottles with a capacity to carry less than half litre, among other things, were also banned.

Loc to Recycle 20m Plastic Bottles Into Fabric for Uniforms



India's largest oil refiner and fuel retailer IndianOil has launched a project to recycle more than 20 million discarded plastic bottles weighing about 405 tonne per year into yarn for making polycotton fabric as part of the company's climate commitment and net zero plan.

Initially, the fabric will be used for making uniforms with "Go Green" message for the company's 10 lakh petrol pump attendants and LPG delivery personnel to spread awareness about reducing waste. The bottles will be collected by an aggregator for deriving yarn which will be turned into cotton - mixed fabric for uniforms.

"Oil industry is a major carbon emitter. This cannot be helped (due to the very nature of the industry). IndianOil has pledged to become net-zero by 2046.

These eco - friendly uniforms will shine as our green commitment. The conversion of plastic bottles into fabric is a beautiful example of how diligent handling of problems opens doors to new opportunities," company chairman S M Vaidya said.

The project, named 'Unbottled', was launched by popular film actor and climate change advocate Bhumi Pednekar. In the first phase the bottles will be collected in seven states for processing. The company plans to tie up one processing aggregator for each region and eventually expand into high - value merchandising such as uniforms for other big companies.

Vaidya said about eight million tonnes of plastic enter the ocean annually and about 150 million tonnes circulate in the marine ecosystems. "At this pace, by 2050, there will be more plastics in the sea than fish. We must realise that the world belongs to all." The launch of the initiative coincided with the company on Saturday hosting a session on initiatives in the fields of biofuels, sustainable solar - based cooking, carbon efficient refinery technologies and energy transition at COP 27's India pavilion in Sharm El - Sheikh, Egypt.

The clothes from recycled plastic bottles match virgin polyester in quality but their manufacture takes significantly fewer resources.

UFlex Partners with Creduce to Achieve Carbon Neutrality

Prime Minister Shri Narendra Modi's pledge to make India Net Zero by 2070 has buoyed up the country's corporate leadership in the carbon market.

Taking the pledge forward, two of India's largest firms in their own domains have signed an agreement to make this dream a reality. India's largest multinational company in flexible packaging materials and solutions UFlex signed an MOU and on-boarded CREDUCE – India's fastest growing Carbon Credits Consultancy as their consulting partners to achieve end-to-end 'carbon neutrality'. The scope would encompass an analysis on carbon footprint & neutrality, creating and formalizing carbon & plastic credit balances on an internationally accepted and recognized platform as a part of sustainable development goal, carving out sustainability roadmap and more.

As a socially responsible corporation, Uflex has been leading the way in creating future-ready, innovation-led, and technology-driven sustainable solutions, towards securing a brighter and healthier tomorrow. In their quest towards a cleaner and greener environment, the company has announced an understanding with CREDUCE Technologies Limited.

With this commitment, UFlex stands to become the largest firm in this category, to take effective steps to meet its Environment, Social and Governance (ESG) goals. This would entail co-creating a time-bound strategy towards carbon neutrality, beginning with their Flexible Packaging division followed by other divisions of the group.

“We were always committed to steer our group towards sustainable environmental practices, especially to achieve carbon neutrality in Scope 1 & Scope 2 emissions. We aspire to cut about 175,000 tonnes of carbon emission equivalent by the end of year 2024, across the group. Through our CSR initiatives, we also aspire to implement various community development and outreach programmes to achieve the stiff ESG goals that we have set for ourselves,” asserts Mr. Jeevaraj Pillai, Joint President – Flexible Packaging Business, UFlex.

Besides this, UFlex in consultation with CREDUCE, intends to leverage its sustainability initiatives and accrue carbon credits. UFlex has been championing this effort with its global sustainability initiative 'Project Plastic Fix' which includes methodologies such as – MLP Recycling (converting industrial and post-consumer plastic waste to granules), Manufacturing of PCR grade films Asclepius (by upcycling discarded PET bottles), and Biodegradable laminates (that will convert uncollected packaging waste into fertilizer within a fixed period of time) to reinstate the benefits of plastics and create a circular economy. UFlex offers a host of green

products across its businesses namely Green Inks, Water-based adhesives, PCR films, MLP Recycling machines, Water-based Cylinders, Alu-Alu Blister packs and many more, testimonies towards their environmental commitment.

Several studies have addressed the environmental impact of #plastic, but more focus needs to be placed on #plastic waste management, sustainable production processes, reducing dependency on fossil fuels and such steps that will lead to positive environmental impacts such as decreasing greenhouse gas (GHG) emissions. Considering all the above, organisations across the world are steadily moving towards Carbon Neutrality and Net Zero Carbon Emissions. The MoU reaffirms corporate India's strides towards achieving the sustainability goal and helping India lead the environmental fight back.

LyondellBasell and Shakti Plastic Industries Sign Mou for Mechanical Recycling in India

LyondellBasell and Shakti Plastic Industries have signed a Memorandum of Understanding (MoU) to form a joint venture to build and operate a fully-automated, mechanical recycling plant in India.

The plant is intended to process rigid packaging post-consumer waste and produce 50,000 tonnes of recycled polyethylene (PE) and polypropylene (PP) per year, equivalent to the single-use plastic waste produced by 12.5

million citizens. It is envisaged that the new facility will become the largest mechanical recycling plant in India and is estimated to start at the end of 2024.

LyondellBasell will market the recycled products produced by this joint venture adding volume to its Circulen Recover range of existing PE and PP materials to help meet increasing demand by converters and brand owners in India for recycled polymer materials.

"The proposed joint venture will allow us to address the issue of plastic waste in the second most populated country in the world and expand our circular polymer product offering to India," says Yvonne van der Laan, LyondellBasell Executive Vice President, Circular and Low Carbon Solutions.

"Combining our respective expertise with Shakti Plastic Industries will create an innovative system that can be scaled as the circular economy grows," added Laan.

Once established, the joint venture will leverage each partner's strengths. With the development of a recycling infrastructure in India, Shakti Plastic Industries will provide structure and formality to the waste collection process to secure materials to be used at the new venture. LyondellBasell will apply its long-standing leadership in innovative plastic production technology, vast

experience in product development and strong knowledge of the polymer markets in India.

"The circular economy will increasingly develop into a critical part of the plastic value chain in India, requiring solutions across the value chain to develop a sustainable world of plastic recycling," says Rahul V. Podaar, Managing Director, Shakti Plastic Industries.

"As we move towards becoming a value player in the circular economy, we will continue to seek opportunities for future growth. Together with LyondellBasell, we will be on the forefront in India taking significant steps to recycle rigid plastic waste which supports the government initiative to reuse recycled plastic in packaging applications,"

The Official Opening of YIZUMI New India Gujarat Factory

YIZUMI purchased a piece of land in India to build its own modern factory in the middle of 2019 and the construction started in March of 2021. After around 40 months of preparation and construction, the first phase of the factory was officially put into operation in October 2022. The total floor area of the factory exceeds 20,000m².

It is reported that the new India factory is designed and built as a modern manufacturing factory

with full reference to the standards of YIZUMI's headquarters. The factory has the capacity to better meet the needs of Indian market with some particular functions such as customization and development of non-standard requirements, parts manufacturing, complete machine assembly and commissioning, as well as customer service and training.

With the support of the new India factory, a professional team of Chinese and Indian engineers will provide Indian customers with faster product delivery, higher quality products, and better after-sales service. Its successful completion also demonstrates YIZUMI's strong determination of long-term development in Indian market.

In this regard, Mr. Zhang Tao, the deputy managing director of Guangdong Yizumi Precision Machinery Co., Ltd. ("YIZUMI") and general manager of the injection molding machine division said, "As an important production base and customer service platform built by YIZUMI outside of China, the new India factory will provide high quality products and comprehensive services to Indian customers, enhance YIZUMI's overall competitiveness in the Indian market, and radiate to the surrounding countries and regions, driving the expansion of YIZUMI's injection molding machines in South Asia, Central Asia, and Africa."



PLASTIC PRODUCTS

Solvay Launches SolvaLite Surfacing Film for Automotive Body Panels at CAMX 2022

Solvay has announced the launch of **SolvaLite®SF200** surfacing film, a light tack film for 'Class A' paintable body panels. The new product will officially be introduced to the market at the Composite and Advanced Materials Expo (CAMX) in Anaheim, California.

“With a curing time of less than 10 minutes at 150 °C, our new SolvaLite®SF200 Surfacing Film lends prepreg layups for high-class automotive body panels a very smooth cured surface where impeccable flatness is an indispensable prerequisite for painting,” says Dan Eskelsen, Head of Product and Asset Management Adhesives at Solvay's Composites business unit. “The product is based on our latest fast-cure technology and compatible with autoclave curing. It combines a longer outlife than previous surface films with good adhesion to automotive paints and primers, and minimizes the required rework prior to painting.”

Moreover, SolvaLite®SF200 provides a one-stop solution for OEMs and tier suppliers who wish to receive a perfectly matched prepreg and surface film package from a single source. The new surfacing film is targeted at large body panels used on premium sports and other luxury class vehicles. It complements Solvay's new series of **SolvaLite®714** Prepregs available in a wide range of unidirectional carbon fiber reinforced and woven - fabric formats for automotive and other high - volume press - cure applications.



RÖHM Adds Multi - Skin Sheets and Corrugated Sheets to PLEXIGLAS® Proterra Product Family

Sustainable construction materials are becoming increasingly popular. In line with this trend, Röhm has now added multi-skin

sheets and corrugated sheets to its PLEXIGLAS® proTerra product family. The translucent sheets contain up to 50 percent recycled PLEXIGLAS® PMMA and impress with the proven brand quality of the original from Röhm. PLEXIGLAS® proTerra multi-skin and corrugated sheets are ideal for roofs of patios, carports, porches, greenhouses or conservatories among others, as they are modified for maximum impact resistance and are thus hail-proof, as well as protecting from harmful UV radiation. At the same time, the material is highly resistant to weathering and UV radiation – with a 30-year guarantee against yellowing.

PLEXIGLAS® proTerra S3P 16-24 triple - wall sheets are available as a colorless and light - scattering variant in lengths from 2000 mm to 7000 mm and widths from 980 mm to 1200 mm. The sheets include the patented, water - dispersing NO DROP coating, making them especially easy to clean. Thanks to their insulating design, they reduce the energy required compared to conventional glazing in greenhouses, for example.

PLEXIGLAS® proTerra WP 76/18/3 corrugated sheets offer light transmission of up to 92 percent and are an ideal fit for various construction styles with their transparency and surface structure (honeycomb). Moreover, their honeycomb structure enables an array of interesting design and light effects. This variant is available in lengths of 2000 mm to 7000 mm and widths of 1045 mm.

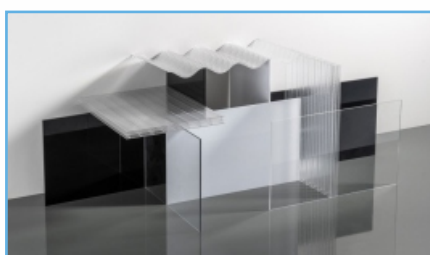
PLEXIGLAS® is a building block for greater sustainability

To meet the demand for especially resource - friendly materials, Röhm has added another product to the portfolio of the PLEXIGLAS® acrylic glass brand: PLEXIGLAS® proTerra. PLEXIGLAS® proTerra solid sheets have been on the market since early 2021. These contain approximately 90 percent recycled PLEXIGLAS® PMMA and are manufactured in a co - extrusion process. PLEXIGLAS® proTerra solid sheets are currently available as clear, white or black variants in a range of different formats and thicknesses. Moreover, it is now possible to purchase climate - neutral, semi - finished PLEXIGLAS® products whose production - related emissions are offset by reduced emissions elsewhere as part of a climate protection project.

Track 2030 – The Röhm Sustainability Program

Sustainability is an integral part of Röhm's business strategy: We want to eliminate all greenhouse gas emissions by 2050; in other words, we want our production to be climate - neutral. One of the first milestones on this

journey is Track 2030 – The Röhm Sustainability Program, which aims to significantly reduce the carbon dioxide emissions generated during the manufacture and sale of Röhm products. The company's implementation of this program is based on the Sustainable Development Goals of the United Nations, among other objectives. Other well - known branded products from the company, such as DEGAROUTE®, are available as a proTerra sustainable version or are about to be launched. Products and services with this brand help to reduce the carbon footprint during production or when being used by the customer, and save resources such as raw materials, energy or water.



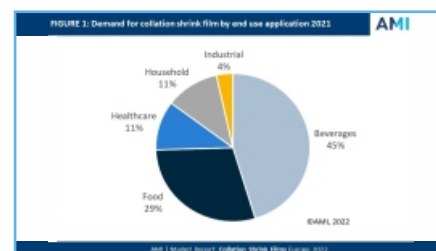
PLEXIGLAS® proTerra product range

Collation Shrink Film Market Boosted by Emerging use of Post - consumer Recycled Resins

A new report from AMI Consulting provides critical insight and analysis of the current state of play and future outlook for the collation shrink film market in Europe. The report reviews the supply and demand picture by country and gives an in - depth update on end use application trends, resin developments and their influence on growth dynamics.

Traditionally utilised to fulfill a secondary transit packaging role, recent years have seen collation shrink develop a strong point of sale presence to provide customer convenience when buying multiple items as well enhancing on - shelf appeal with full face printing opportunities.

Packaging for alcoholic and non - alcoholic beverages is by far the largest end use application for collation shrink film, followed by food. However, film suppliers to these categories are facing growing competition from carton board alternatives for point of sale packs which several major brand owners have switched to in the face of continuing consumer anti - plastic sentiment. For the same reason, for some products collation shrink films are being removed entirely, with a multi - buy discount applied at the till point. The report explores how these factors and others are influencing market demand by application.



The European market is facing a tumultuous period. Challenges include the aftermath of the Covid-19 pandemic, new sustainability - driven regulations, polymer shortages, logistics challenges and changes to retail channels. The war in Ukraine is adding further complications and inflationary pressure. These soaring costs are likely to reduce discretionary consumer spending across many categories, although

it may benefit cheaper, staple products such as canned foods which in turn could drive collation shrink usage.

In the past decade, demand for collation film has been heavily influenced by the continuing shift from monoextrusion to 3-layer coextrusion and further product enhancement by moving from 3-layer to 5-layer coextrusion. This has permitted tailor-made use of enhanced metallocene resins in combination with other more established raw materials in order to maximise gauge reduction. Down gauging of virgin resin film has reached its limits in many applications, with future innovation expected to be focused on achieving thinner films whilst maintaining 30-50% post-consumer recycled (PCR) resin content.

Collation shrink films are an ideal candidate for the incorporation of PCR as they are non-food contact. Recyclate should continue to take share from virgin LDPE, although at a lower pace than the industry may anticipate. Whilst brand owners will increasingly seek to use recyclate to satisfy internal mandates and country legislation, limited availability of high-grade PCR resin will constrain usage and subsequent volume growth over the forecast period.

AMI's Collation Shrink Film in Europe 2022 report is the result of an extensive research programme, providing a comprehensive independent assessment of this industry in times of uncertainty. The authoritative report quantifies capacity, production and demand for collation films by country

and end use applications, with a historical context and a five-year forecast.

Evonik Launches Next Generation Deaerator for UV Wood Coatings

- Specially designed for radiation curing systems
- Improves both efficiency and compatibility
- Universal for various systems and applications

Essen, Germany. Evonik's Coating Additives business line has added a new deaerator to its portfolio. Specially designed for radiation cured wood coatings the new deaerator, TEGO® Airex 923, is a highly compatible 100% active organic polymer that shows improved efficiency. UV-curable coatings have many advantages: They are environmentally friendly, nearly universally applicable and have a very fast, efficient, and productive application process. However, this kind of coating system also has foaming issues. Depending on the specific formulation characteristics and the choice of application conditions, Evonik offer defoamers and deaerators with a variety of application profiles. With TEGO® Airex 923, Evonik is adding an effective deaerator for radiation-curing of wood and furniture coatings.

Near universal application TEGO® Airex 923 breaks down foam fast and efficiently preventing air inclusions and pinholes to form. This is particularly important in high viscosity, or high solids formulations where the

concentrate provides outstanding compatibility. It can be used with multiple types of binders and many different ingredients. The polymer character and good compatibility of the product leads to excellent re-coatability and makes TEGO® Airex 923 suitable even for clear coats with highest demands on optical appearance. Easy to use Foam in wood coatings can result in a loss in transparency and protection, and can also negatively impact overall optical appearance, haptic, and even production efficiency. TEGO® Airex 923 solves these issues and is highly user friendly. The deaerator exhibits good flow behavior, making it easy to handle

Solutions Introduces the Envision Series – High Performance Bottles for High Performance Products

Mauser Packaging Solutions is pleased to introduce the Envision Series product line, a new range of 1, 4, and 5-liter plastic bottles designed for use in the automotive industry for lubricants, engine oils, brake fluids, coolants, and more, as well as the chemical industry.

The Envision Series features a lightweight yet robust bottle design for full product protection on the store shelf, on the road, and in consumers' homes. Users will benefit from the product line's ergonomic bottle shape which is easy to handle and ideal for smooth pouring, making routine maintenance even quicker. A window stripe and volume scale will let consumers know when they are running low.

Brands will benefit from custom embossment opportunities and the large label area, providing maximum brand impact and space to communicate product information. A variety of colors and filling grades are available to suit the product's needs and stand out on store shelves. The Envision Series can be manufactured with high-quality recycled plastic for a reduced environmental impact and in accordance with EU Ecolabel specifications.

The Envision Series is an exciting addition to Mauter Packaging Solutions' existing Hurrican series of high-performance packaging solutions. It will continue to expand with additional sizes as customer and market needs evolve.

SIKORA Presents the New X-ray 6000 Pure for Single-Layer Measurement of Hoses and Tubes

For over 20 years, SIKORA has been internationally known for its reliable and safe X-ray measuring systems. For single-layer applications, we have developed the X-RAY 6000 PURE. The new X-RAY 6070 PURE and X-RAY 6120 PURE models are available on the market, for measuring tubes and hoses from 6 to 65 mm and 10 to 110 mm, respectively.

In addition to single-layer tubes and hoses, the total wall thickness of many multi-layer products can also be measured. In combination with the ECOCONTROL PURE, a processor system with a high-resolution 15" touchscreen display, the measured values are

clearly displayed for further analysis. For measuring up to three layers, SIKORA also offers the X-RAY 6000 PRO



The benefits of the X-RAY 6000 PURE

- Instantaneous 360° measurement of the total wall thickness, inside and outside diameter, eccentricity and ovality of single-layer tubes or hoses
- No coupling medium and no calibration required
- One-button operation: no material parameters required
- Clear visualization of product parameters and data logging on HDD and network
- Extensive data storage options
- Automatic control of wall thickness to the minimum value (optional)
- Interfaces: OPC UA, Fieldbus, Ethernet

Your personal benefits

The X-RAY 6000 PURE is a cost-effective, safe and powerful alternative to conventional measuring technologies. The system allows you to constantly monitor the wall thickness and to reduce it to the minimum tolerance value. Safety margins can be

successively reduced and the automatic control keeps the dimensions within the specification. The assurance of quality in combination with material savings leads to a significant increase in your productivity.

Model	Min Ø	Max Ø	Measuring frequency	High voltage	Sight field	Opening
X-RAY 6070 PURE	6 mm	65 mm	3 Hz	35 or 50 kV (optional 70 kV)	70 mm	100 x 100 mm
X-RAY 6120 PURE	10 mm	110 mm				

Technical data is subject to change

Stryten Energy Components Division Launched to Serve The Battery Industry's Growing Need for Engineered Components

The Division Provides the Plastic Injection Molded Battery Components and Terminals Critical to the Growth of U.S. Energy Storage Manufacturing Capabilities

Las Vegas, Nevada, Nov. 01, 2022 (GLOBE NEWSWIRE) -- Stryten Energy LLC, a U.S.-based energy storage solutions provider, announced at AAPEX 2022 the launch of Stryten Energy Components. This new division provides engineered-to-order battery components for lead, lithium, flow and other emerging battery technologies for the automotive and industrial markets.

"Stryten Energy's Components division has invested in automation in each of our four facilities to enhance quality, productivity and service to all of our customers," said Jeremy Furr, Components Division Leader for

Stryten Energy. “These investments have helped us scale up our operations to provide the U.S. - manufactured and sourced components required for the emerging domestic battery market.”

Stryten Energy Components provides quality, cost - effective, engineered plastic components from natural and recycled polypropylene, including battery containers, covers, vents, handles and terminal protectors. Its cold-formed lead battery terminals are designed to prevent corrosion and utilize a patented SuperLock terminal to provide superior sealing. Value - added technical services and expertise help customers with product development, design, mold making and injection molding processing.

“We have seen an increase in market demand for critical battery components in the U.S. and internationally,” said Furr. “We are continuing to invest in our Stryten Energy Component plants to expand our product offering and the availability of our products to serve international customers.”

Stryten Energy Components includes a combination of the company's and its subsidiaries' existing custom plastic injection molded battery component operations with the recent acquisition of Tulip Richardson Manufacturing's plastic injection molding, lead terminal and reprocessed polypropylene operations. The division has manufacturing facilities in Lampeter, PA; Columbus, IN; Niagara Falls, NY; and Milwaukee, WI.

To learn more about Stryten Energy Components, visit the **Stryten Energy Booth #2620** at AAPEX 2022 or stryten.com.

About Stryten Energy

Stryten Energy helps solve the world's most pressing energy challenges with a broad range of energy storage solutions and components across the Essential Power, Motive Power, Transportation, Military and Government sectors. Headquartered in Alpharetta, Georgia, we partner with some of the world's most recognized companies to meet the growing demand for reliable and sustainable energy storage capacity. Stryten powers everything from submarines to subcompacts, microgrids, warehouses, distribution centers, cars, trains and trucks. Our stored energy technologies include advanced lead, lithium and vanadium redox flow batteries, intelligent chargers and energy performance management software that keep people on the move and supply chains running. An industry leader backed by more than a century of expertise, Stryten has The Energy to Challenge the status quo and deliver top - performing energy solutions for today and tomorrow. Learn more at stryten.com.

RKW Presents Polydaress Twista Silage Film at The Eurotier 2022 in Hannover

Thanks to patented folding technology, Polydress TWISTA combines silage and underlay film on one roll. This means that both films can be laid out in just

one step, reducing the amount of work required to cover the silo by 50%. Due to the folding technique, silage and underlay film are perfectly positioned and lie directly on top of each other close to the silage, which prevents unwanted air circulation and maintains excellent forage quality. Another advantage is that by laying out both films at the same time, the underlay film is also protected, as it does not have to be walked on again.

Under the Polydress TWISTA brand, RKW offers three different silage combination films. Polydress TWISTA Barrier as a combination of a special underlay film with a high oxygen barrier for excellent silage quality, Polydress TWISTA Strong, the already well - known extra robust silage solution and Polydress TWISTA Green, the sustainable film combination with a high recycled content, which not only protects the resources of the users but also the environment.

At Eurotier 2022, RKW exhibited the extensive portfolio of the Polydress TWISTA family and provided an overview of the round bale net portfolio.

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The RKW Group is an independent family owned company headquartered in Mannheim, Germany, and one of the world's leading manufacturers of sustainable film

solutions. RKW is the market leader in the areas of hygiene and agricultural films, films for the beverage industry and packaging for powdery goods. Moreover, the company also supplies films for the chemical and processing industries as well as for the construction sector. The RKW Group's innovative plastic - based films enable its customers to improve the daily life of consumers all over the world. RKW employs approximately 3,000 people at 18 locations worldwide.

Grupa Azoty is Certified for Plastics Products with a Significantly Lower Carbon Footprint, Based on Bio - Based Raw Materials

The Grupa Azoty Group has successfully passed a certification audit of the International Sustainability & Carbon Certification Plus (ISCC+) system. Having implemented the system, the Group will be able to deliver to its customers certified plastics with a significantly lower carbon footprint, produced from bio - based feedstocks such as biophenol, biocyclohexanone and biocaprolactam.

Successful completion of the certification process marks a major step towards integrating bio - based raw materials into the Group's plastics production. It is also another stepping - stone towards delivery of the Group's new strategy until 2030 with its goal of developing a green product portfolio.

Having undergone the certification process, the Group will be able to offer its customers ecofriendly ('green') products, fully derived from renewable materials. This will apply to various types of natural polyamide, as well as surface modified polyamide.

"We have passed the certification process, which lasted several months during which the Group's technologies and operational routines were confirmed as compatible with ISCC Plus procedures. This means that we are already responding to the requirements of our customers looking for products derived from bio - based feedstocks. Our experience shows that such requirements are voiced mainly by customers from the automotive industry, but the technology is gaining traction. We expect to introduce the first certified bio - based plastics into our product portfolio by the end of this year," **says Tomasz Hinc, President of the Management Board of Grupa Azoty S.A.**

The ISCC Plus certification has been adopted in the chemical sector, primarily for plastics. The system covers the market of sustainable feedstocks, including biomass and recycled materials. Its operator is ISCC System GmbH, a representative of one of the leading certification systems incorporating criteria for reduced greenhouse gas emissions and sustainable bioenergy.

ISCC Plus provides a solid foundation for voluntary adoption of sustainability criteria with respect to supply chains, confirming their full traceability. It guarantees active commitment

to raising sustainability standards, supporting the transition to a circular economy.

Innovia Launches New Generation Graphics Media Film Range with Enhanced Printability Picture

Innovia Films announces a new generation of polypropylene, high gloss films, which are printable by both HP Latex and UV Inkjet systems.

In the past years, Innovia has been successfully selling their dedicated Rayoart TM PVC free film range into the Graphic Arts media market. During this time, continual development has led to the outdoor durability of the films being extended to four years, and a white matte film has been added to the range. RayoartTM offers a more sustainable solution to the Graphics market with 50% less environmental impact compared to monomeric PVC.

Innovia's surface engineering team has continued to innovate and have successfully optimised the wide format printability of these films. RayoartTM GCP (clear) and RayoartTM GWP (white) are available in both 60 and 92 micron thicknesses and are formulated on the reverse side to give enhanced adhesive anchorage.

Both films are ideal for flat and simple curved large graphics, advertising and point of sales applications for indoor and outdoor use.



PLASTIC RAW MATERIALS

LyondellBasell Evaluates Propylene Expansion Project

LyondellBasell (NYSE: LYB) announced it is evaluating the expansion of its propylene production capacity at its Channelview Complex near Houston, TX. The potential expansion would involve building a new propylene facility using LyondellBasell's existing technology to convert ethylene into propylene for use in the production of polypropylene and propylene oxide. The related product lines are used to make everyday items such as flexible foam for mattresses, cosmetic packaging, electrical covering for 5G network infrastructure, plastic wrap for food packaging, medical syringes, vehicle bumpers, furniture upholstery and pipe for home plumbing, to name a few.

"In addition to the lower carbon emissions than competing technologies, we believe the project has more favorable economics compared to other production methods," said Ken Lane, Executive Vice President Global Olefins & Polyolefins. "The products offered through this investment will be an

important element to helping our value chain partners achieve their long-term sustainability ambitions. Additionally, this upstream investment would allow us to be less dependent on propylene market supply and demand, providing us with the opportunity to serve growing customer needs better."

A final investment decision on this 400 kiloton propylene expansion project is expected towards the end of next year. The project would have an annual capacity of 950 million pounds per year. It would increase the company's propylene capacity at the Channelview Complex by more than 35 percent and would create approximately 10-15 new jobs.

Forward Looking Statement

The statements in this release relating to matters that are not historical facts are forward-looking statements. These forward-looking statements are based upon assumptions of management of LyondellBasell which are believed to be reasonable at the time made and are subject to significant risks and uncertainties. Actual results could differ materially



based on factors including, but not limited to, market conditions, any final investment decision, our ability to obtain all necessary regulatory approvals and to successfully construct and operate the proposed facilities described in this release; industry production capacities and operating rates; our ability to successfully execute projects and growth strategies; and general economic conditions in geographic regions or markets served by LyondellBasell or where operations of the company are located. Additional factors that could cause results to differ materially from those described in the forward-looking statements can be found in the "Risk Factors" section of our Form 10-K for the year ended December 31, 2021, which can be found at www.lyondellbasell.com on the Investor Relations page and on the Securities and Exchange Commission's website at www.sec.gov.

Solvay Launches New Emulsifier to Boost Coatings and Adhesives Performance

Solvay launched Reactsurf[®] 2490, a new APE-free¹ polymerizable surfactant designed as a primary emulsifier for acrylic, vinyl-acrylic and styrene-acrylic latex systems. Reactsurf[®] 2490 improves emulsion performance to deliver superior functional and aesthetic benefits in exterior coatings and pressure sensitive adhesives (PSAs), compared to conventional surfactants, even at high temperatures.

In addition to exterior coatings and pressure sensitive adhesives, other common uses of Reactsurf[®] 2490 include paint binders, adhesives & sealants, textile & nonwoven binders, paper coatings, and building & construction applications.

"Exterior coatings and pressure sensitive adhesives are both prone to surfactant leaching," explains Sel Avci, Coatings Global Marketing & New Business Development Director. "In exterior coatings exposed to harsh environmental conditions, leaching leads to dirt pick-up and water marks, while it leads to water whitening in PSAs. Reactsurf[®] 2490 prevents surfactant migration, which improves water-whitening resistance for PSAs and dirt pick-up resistance for exterior coatings. This means clear label products retain their original appearance, and exterior surfaces remain clean and dirt free."

Reactsurf[®] 2490 is highly reactive and easily incorporated during the emulsion polymerization reaction. It eliminates the need for secondary emulsifiers, thereby facilitating fast and simple design of new latexes. REACH - certified and water - soluble, Reactsurf[®] 2490 also ensures compliance with increasingly stringent regulatory requirements for APE-free solutions. Its optimal combination of properties includes low dynamic surface tension and critical micelle concentration, good particle size control, low grit and low foaming, in turn enabling better film hardness and antiblocking.

In tests of elastomeric coating binders, Reactsurf[®] 2490 delivered improved blocking resistance and superior dirt pick-up resistance after three months of outdoor exposure. Initial tests also demonstrated improved water - whitening resistance in PSA applications.



¹Alkylphenol ethoxylate - free

Reactsurf[®] 2490 is currently available in Asia, Europe and Latin America.

Reactsurf[®] is a registered trademark of Solvay

New Materials Create Safer, Quieter EVs.

Ascend Performance Materials has developed two materials for electric vehicles that improve safety and passenger comfort. The company's Starflam[®] X-Protect and Vydne[®] AVS tackle two unique challenges automakers face when developing their EV platforms.

Unrivaled Safety



The Cadillac LYRIQ, which has been dubbed "crypt - quiet" and "the quietest car I can remember driving" by the press, sports an electric AC compressor mounting bracket made of Vydne AVS, which effectively helps damp that component's vibrations at the source while also providing structural support.

Starflam X - Protect is an industry-leading flame-retardant nylon 66 that withstands exposure to 1,100°C direct flame for 15 minutes, surpassing standard flame - retardant materials and aluminum tested in accordance with SAE As5127 (a test originally designed for aero space applications). Watch Starflam X-Protect in action.

"Safety remains one of the primary concerns for people considering an EV," said Ian van Duijvenboode, Ascend's senior director for

e-mobility. "Despite being relatively rare, critical battery failure and thermal runaway can occur and X-Protect was designed to keep people safe even in extreme circumstances."

Unparalleled vibration damping and one of the quietest cars Ascend's team of e-mobility application development engineers and polymer scientists created a novel solution to dampen noise, vibration and harshness in EVs, which produce vibrations at 10 times the frequency of internal combustion engine vehicles.

Vydyne AVS is a new engineered material effective at damping high - frequency vibrations from noise sources like motors and compressors, which translates into an 80% reduction in cabin sound pressure.

One of the applications where Vydyne AVS is being used is in the Cadillac LYRIQ, which has been dubbed "crypt-quiet" and "the quietest car I can remember driving" by the press. The LYRIQ sports an electric AC compressor mounting bracket made of Vydyne AVS, which effectively helps damp that component's vibrations at the source while also providing structural support.

"Vydyne AVS is the result of years of engineering development combined with our unique ability to tailor the polymerization process to target specific attributes," said Dr. Steve Manning, Ascend's senior director for engineered materials. "It's an example of our commitment to help customers lead in innovation and tackle the unique challenges driven by this transformation to electrification."

Ascend will be showcasing its new materials, including its low-carbon - footprint products, under its Advancing Together theme at K 2022 from 19-26 October in Hall 6 Stand A07.

Halogen - Free Flame Retardant Masterbatch for Electrical Conduits

Gabriel - Chemie has held a leading position in the production of flame retardant masterbatch goods for many years.

One of the main objectives of the group is sustainability. Which is why gabriel - chemie has successfully developed a series of halogen - free flame retardant masterbatches for the electrical tube conduits market.

After the launch of "Maxithen" CO - reduced white masterbatch, Gabriel - Chemie presents a new series of flame retardant halogen - free masterbatch for the electrical conduits and tubes market. This new portfolio of products emphasizes the importance of sustainability in the group. The safe use of many everyday products is guaranteed only through the addition of flame retardant additives. Whether in vehicles, electrical equipment and wiring, consumer electronics, furniture, textiles or in high - rise and underground structures: flame protection is essential for ensuring maximum safety.

The use of halogen - free masterbatch is essential for several reasons. It helps avoiding the corrosion phenomena of electronic equipment and extruder machines. It reduces emissions of

toxic gases in case of fire and keeps outdoor properties from harmful external influences. The improved recyclability of the plastic product helps reducing the group's carbon footprint.

Gabriel - Chemie offers a valid technical and advantageous economical solution for tubes and electric conduits. The halogen - free masterbatch not only complies with the flame retardant norm EN 61386, but also with the halogen-free norm according to EN 50642 and the low smoke norm IEC 61304-2.

The new series is available in a full product range with more than 10 masterbatch.

Grafe Develops Customer-Specific Solutions with Plexi - Glas® Moulding Compounds

The invisible integration of operating elements into the housing is currently a major trend, driven primarily by automotive applications. Classic knobs, levers or conventional rotary controls and switches disappear behind the surface and offer two advantages at the same time: On the one hand, the increasing number of switches and control elements associated with new operating concepts, digitalization and greater functional scope can be better integrated into the cockpit, and on the other hand, high - quality surfaces, pleasant haptics, pleasing structures, diverse colors and modern designs are becoming increasingly important.

In new car models, digital controls have mostly replaced the classic knobs and buttons, but

comparable solutions are also being worked on in other industries worldwide. Aesthetic design as well as individual coloring and illumination of control elements that blend harmoniously into the design of the product are also highly valued by consumers in other areas.

Black panel: operating elements can be integrated indiscernibly into the Housing.

The so-called black panel effect or secret-until-lit-function plays an important role here. Information is displayed in the exact color of the display, which is only visible when the device is switched on and is otherwise perceived as a dark, high-gloss cover. The grey coloring of the display covers merges with the housing to form a uniform black unit. The installed LEDs are only activated when touched and then depict the display or the operating elements in strong colors.

GRAFE combines these color properties with the entire range of PLEXIGLAS® molding compounds. Robust, impact-resistant molding compounds, such as PLEXIGLAS® Resist Ag100 or PLEXIGLAS® Heat resist Ft15 for higher heat resistance, can be used as application polymers. "There is increasing demand for molding compounds in grey colors for the black panel effect," reports Elke Milus, technical contact for PLEXIGLAS® applications at GRAFE. The expert points out that GRAFE can offer a tailor-made solution for every enquiry and every customer requirement.

Light Diffuser: Light diffusion enables innovative LED design

Initially, the GRAFE team used transparent and muted colors and glossy surfaces, but now they also work with diffuse materials from Röhm. The various light - scattering PLEXIGLAS® molding compounds enable homogeneous backlighting of surfaces. They can be used to create velvety matte surfaces when extruding profiles or to mask out disturbing LED spots. Light - diffusing PLEXIGLAS® molding compounds are also available, which have been specially developed for edge lighting and ensure uniform light emission over the entire surface.

According to Elke Milus, GRAFE also combines the light-diffusing PLEXIGLAS® molding compounds with the diverse color ideas of the product design, making many applications conceivable. As examples, the expert lists brake lights in the exterior of cars and Ambilight solutions for interior lighting, displays in the cockpit, infotainment systems or speedometer covers in the interior. The product focus can also include brand logos or manufacturer lettering with light. Elke Milus: "In principle, this effect can be realized for everything that lights up with the help of LEDs." In the furniture industry, it would be possible to optimize edge design in this way, and in the electronics sector, high - gloss surfaces can be realized on the operating and display windows of household

appliances such as washing machines, dryers or electric ovens.

GRAFE, headquartered in Blankenhain, produces and distributes colored PLEXIGLAS® molding compounds as a cooperation partner of Röhm GmbH, Darmstadt. The Thuringian compound and masterbatch specialist has been doing the small - volume business for them for two years now. GRAFE is flexible in this respect and contributes its know-how as a competent partner in color design according to customer requirements. The company offers special colorings and compounding's in quantities as low as 25 kilograms. Here, the Röhm's modular system for formulation and colorants is used, and new color developments from GRAFE are also implemented. This ensures the same product quality, regardless of whether small quantities are produced at GRAFE or larger quantities at Röhm.

"We do what we do best: Developing color according to the customer's wishes, no matter how great the need," explains Ms. Milus. "For this, we have our established structures and are faster than any competition. We work out customized formulations, are the competent contact for color enquiries as well as customer - specific developments. Customers benefit from direct contact with the producer, fast production as well as short delivery and development times, and the quick solution of technical enquiries with close advice and support."



PLASTIC MACHINERY

Coca - Cola HBC in Nigeria Turns to Sidel for 'the Ideal Project'

Sidel, the complete line solutions provider, has recently accomplished the installation of its Super Combi high - speed, flexible and digitally empowered packaging line at the Nigerian Bottling Company (NBC). NBC is part of Coca - Cola Hellenic, the Coca-Cola Company's third largest bottling partner, which sells more than 2 billion unit cases each year to 600 million consumers in 29 countries. Nigeria is its most southerly market.

In June 2022 Sidel installed the Africa region's first Sidel Super Combi line for carbonated soft drinks (CSD) at the NBC plant in the northern city of Challawa. Capable of bottling speeds of 65,000 bottles per hour, this high - speed combined line was the perfect solution for NBC to meet Nigeria's booming CSD market. Described by the Engineering Group Manager Theodoros Kappatos 'the ideal project' in honour of its smooth performance, this is the fifth line that Sidel has installed, building on a relationship that has gone from strength to strength since 2017, when Sidel

planned and executed a line in Abuja that has performed strongly for the bottling company ever since.

Carbonated soft drinks are very popular in Nigeria, with consumption higher than the regional average at 17 litres per head per year. Sales of low - calorie and low-sugar options are increasing as more Nigerians embrace healthy eating. CSD is one of the best-performing soft drinks segments, with growth of 6.7% between 2019 - 2020. Premium brands dominate CSDs, led by Coca-Cola with a 38.7% volume share.

The Super Combi Solution

The Sidel Super Combi is an all - in - one solution comprising blowing, labelling and filling. This technology is increasingly being chosen by the large beverage companies such as Coca - Cola, that are continuing to invest in the latest high - speed, high - efficiency equipment and have confidence in Sidel's quality, consistent worldwide standards and continuing innovation.

Flexibility was a key consideration in NBC's choice of equipment. The Challawa line needs to

accommodate 20 different SKUs, with a variety of brands including Coca-Cola, Coke Zero, Fanta and Sprite in PET bottles sizes of 600ml and 350ml, and quickly adapt to different caps and labels.

"We have built such a strong relationship with Sidel. Over the course of several projects that we have worked on together, Sidel has shown how they truly understand our business," says Theodoros Kappatos, Engineering Group Manager, NBC. "With Sidel at our side, we know we can easily meet demand in this fast - growing market. The Challawa line is a great example of Sidel's unique capabilities. Having been completed ahead of schedule it underscores the fact that we selected the right partner for this development."

Enhanced Sustainability

The new Sidel complete line will allow the customer to save energy and resources. The Super Combi can blow bottles using the lowest possible blowing pressure, with water recycling at the transferring stage and a filtration system on the filler. Its Gebo OptiFeed closure feeding solution also has low energy and no air consumption, delivering

high quality caps using features that enable smooth cap handling, and that automatically detect cap quality and colour. Sidel BlendFILL, which combines mixer and filler tanks in one single compact system, reduces CO2 consumption by up to 50%. Down the line, the EvoFilm shrinkwrapper offers energy savings thanks to its new light-weighted tunnel belt and eco tunnel flaps.

Superior Hygiene

Hygiene has been a key element for NBC, which is ensured by the Sidel solution.

At the beginning of the line, clean conditions are ensured by EasyFEED with its UV lamps, and a dedusting system for preforms is integrated into the blower. Having installed High-Efficiency Particulate Air (HEPA) filters on the roof, a tight enclosure keeps the filling environment safe, preventing any potential risk of contamination and increasing even further the already exceptional standards of hygiene. The tank, filling valves and piping, which are always in continuous contact with product, are made with high food grade stainless steel, S/S AISI 316L. Finally, automatic Cleaning In Place (CIP) is performed with automatic dummy bottles, allowing superior hygiene for all kind of beverages.

Digitally advanced performance

To ensure maximised line performance, NBC has chosen to use Sidel's Evo-ON[®] software suite. An example of how digitalisation is accelerating in the African marketplace, the Evo-ON[®] system aggregates and

analyses equipment data, offering real-time and proactive alerts, notifications, customisable dashboards and reports.

EVO-ON is made of three powerful applications:

Evo-ON[®] Care, a smart app which analyses component data and monitors trends to minimise unplanned downtime and reduce operating costs. Built-in predictive capabilities enable NBC to anticipate the maintenance of specific parts at the most appropriate time. As a result, it can extend component service life by up to 30% and help improve Overall Equipment Effectiveness (OEE) by up to three percent.

Evo-ON[®] Eco monitors utilities and media consumption. It provides valuable inputs to reduce carbon footprint, suggesting prompt corrective actions on any unexpected consumption source. Using all these elements, it helps to reduce emissions and costs as well as identify best energy usage practices and variations in consumption per shift, recipe and SKU.

Evo-ON[®] Performance is focused on productivity and ensures production units meet their performance targets. Based on root cause analysis, it identifies any hidden opportunity to increase efficiency, giving recommendations to help users solve efficiency losses and optimise line performance. It also defines priorities according to the issues that most impact customer line performance with machine problems automatically ranked by level of importance;

as a result, Overall Equipment Effectiveness (OEE) can be increased by up to 20%.

A Partnership with a Track Record

The Sidel team drew on the experience it has gained of working in this large country with its challenging logistics during its recent installations for NBC in Benin City, Challawa and Owerri. All installations have been validated with high line efficiency of between 98.2% and 99.7% on handover. Sidel has also provided engineers to help train and coach NBC's operators after each line's installation.

Together, Sidel and NBC are building a trusted partnership and the foundation for future projects in support of NBC's continued success in Nigeria.

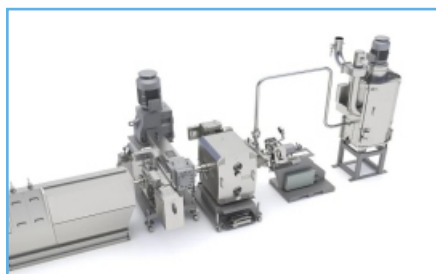
Comprehensive Recycling Solution with Throughputs Up to 10t/hr for the Plastics Industry

MAAG is regarded as an important partner to the recycling industry; delivering energy efficiency, productivity and product quality. Our solutions save resources through smart design, compact construction and durability of components.

MAAG Group's downstream equipment recycling systems help users to quickly and efficiently remove heavy contaminants such as paper, aluminum and wood to produce reusable pellets. MAAG equipment is the right choice for mechanical, chemical and advanced recycling.

MAAG Downstream Equipment recycling systems are coordinated to each other, and can be operated via proprietary control system.

Modern recycling systems must be capable of handling feedstock of varying quality grades. With this in mind, the Ex125 - 6 recycling pump provides precise, uniform pressure for downstream filtration and pelletizing over a wide range of feedstock inputs.



MAAG Group recycling system

At the heart of Maag recycling systems is the Ettlinger Recycling melt filter, a continuous - running high - performance melt filter. Melt with contamination content of 16% and particles up to 4 mm can be pumped into the filter for removal and discharge. Our ECO 1000 achieves throughputs up to 10,000 kg/h depending on filter fineness ranging from 60 μm to 1800 μm .

Both ERF and ECO series are capable of filtering almost any polymer used in recycling operations, in the production of recycled pellets, sheets and films, strips and fibers, or in the compounding industry.

All Ettlinger Recycling melt filters operate continuously, keeping the volume and pressure of the melt stream constant. This avoids increasing extruder speed, and as a result, cuts energy consumption by as much as 30%.

After filtration, underwater and strand pelletizing ensures a perfect pellet shape for the recycled resin. The benefits and innovations seen in the latest PEARLO model embody Maag's advances in underwater pelletizing founded on the decades of experience of both Gala and Automatik. The result is a highly uniform spherical pellet with low fines content.



High - performance melt filters remove impurities and contaminants from the recycling melt stream

Three Exhibits at K 2022 - One Goal: Sustainable and Efficient Production of Packaging Items

At K 2022, three Allrounders specially designed for the packaging sector will be on show. As an alternative to thermoforming, an electric Allrounder 720 A with a new injection unit 1300 will be producing thin-walled IML cups at Arburg stand 13A13. Two other innovative applications will be showcased at stands run by partners.

Arburg will be using an electric Allrounder 720 A with a clamping force of 2,900 kN, a new 1300 injection unit and in the new "Ultimate" performance variant for high - speed and sophisticated

processes to demonstrate that high - quality injection moulding technology can be an alternative to thermoforming.

The exhibit at K 2022 used a 4-cavity mould from Brink to produce thin-walled IML round cups from PP monomer material by means of injection compression moulding. The plastic is biomass - balanced and ISCC-certified. Four moulded parts, each weighing 12 grams and with a wall thickness of only 0.37 millimetres, are produced in a cycle time of 3.95 seconds. Also integrated into the production cell is a side - entry robot from Brink that inserts the labels, removes the finished cups and stacks them on a conveyor belt. In this application, special attention was paid to designing parts with low material requirements and to energy efficiency.



An electric Allrounder 720 A with new injection unit 1300 was producing IML cups from PP monomer material on Arburg stand

Outstanding Innovation: Foamed Cups

Trexel (stand B46, Hall 13) exhibited an outstanding innovation in packaging at K 2022: cost - effective, 430 millilitres holding thermal cups were produced on an electric Allrounder 520 A with MuCell

package in a cycle time of about 5.5 seconds. The cups are not only very light and have excellent insulation properties, but can also be easily recycled after multiple uses. The foamed wall thickness is two millimetres. The MuCell and chemical foaming processes are combined for stable, fast and cost-effective series production. The cups can be used very often and are even lighter than the common disposable alternatives made of paper – while using significantly less material. The product can also be created with any design using the IML process. This pioneering application was developed in a cooperative project between Arburg, Bockatech and other partners Borealis (material), Trexel (MuCell), Roboplas (IML automation) and MCC Verstraete (IML labels).



The production of foamed and recyclable IML returnable cups was showcased by Trexel

Refining and Separating Cups by Type

Plasmatreat (stand I65, Hall 11) used a "smart" turn-key system based around an IT-networked Allrounder 370 A to demonstrate how production efficiency can be increased with the aid of digitalisation and automation. Printed cups that can be refined inline and separated by type using a digital product passport are produced as part of the R-Cycle initiative. A Multilift

V 20 linear robotic system removes the cup and conveys it to plasma treatment, followed by printing in a digital printing station. To allow the cups to be separated by type in a recycling plant after the use phase, each plastic product is given a digital product passport. The pivotal element of R-Cycle is a database that contains all the information about the materials used.



Arburg partner stand I65, Hall 11: At K 2022, Plasmatreat will be presenting a turnkey system based around an electric Allrounder 370 A.

At K 2022 W&H Presented New Machine Technologies and Packaging Solutions for Sustainable Flexible Packaging Production.

Windmüller & Hölscher, specialist for machinery in the flexible packaging market, presented new developments in three areas at K 2022: Efficient production, Circular Economy, and Digitization. The W&H slogan at K 2022, "Get in the Loop" and the infinity symbol illustrate the way these three topics influence each other and contribute to the success of sustainability.

The highlight for trade fair visitors was the VAREX II blown film line in operation at the booth. The daily machine show

in Düsseldorf featured live demonstrations of the new EASY2 Change assistance system, an autopilot for product changes. Compared to an experienced operator, the number of necessary clicks for a product change is reduced by more than 70 % and the time needed is cut by more than half - and all that with the certainty that no errors are made. This is especially important for difficult products, for example containing recycled materials with varying qualities. After the end of the trade show, the line is now being delivered to the customer IsoFlex Packaging, a member of the Sigma Plastics Group in Nashville, Tennessee, USA.

W&H also highlighted new packaging solutions ready for the Circular Economy: Six examples that are made for recycling and four solutions that use high percentages of recycled materials. All solutions have been extruded and printed with W&H lines and have been tested for their practicability with W&H sack making lines or with converting partners – proving that sustainable solutions with the required functionalities are possible today.

Highlights From W&h at K 2022 –

Circular Economy – Solutions ready for recycling Recyclable pet food bags: W&H showed two different approaches to this recyclable packaging solution, that is trending in the market: a blown film with a co-extruded EVOH barrier layer and one made with a functional barrier coating during the printing process.

Recyclable Coffee Pouch: A stretched MDO PE-film with an EVOH barrier layer combined

with PE sealing film. With a total amount of only 2% EVOH this solution exceeds the current recycling regulations, while at the same time providing the barrier properties for oxygen and water vapor required for this kind of packaging.

Circular Economy – Solutions using recyclates. 50% PCR Collation Shrink: All new collation shrink film with 50% post-consumer recycled material. It offers the same shrink values and Mechanical properties as conventional, non-PCR recipes. PE Valve Sack: All new film recipe with 30 % post-industrial material that displays similar mechanical properties as a conventionally produced film.

Digitization

Easy2 Change: The new Easy2 Change assistance system supports the operator during every necessary step of a product changeover saving time, waste, and resources.

RUBY App: The brand-new app for mobile production monitoring based on the IOT-System by W&H.

Efficient Production

MDO-PE in 2×1260 MM: W&H shows a new line set-up for MDO-PE producing 2×1260 mm net width with optimal film properties, increased output and bag - making efficiency. This solution shows that recyclable monomaterial solutions can be produced at highest efficiency. **Filmatic II V:** The new winder generation with best - in - class winding performance, Easy operation and excellent safety standards. The start of the

winding process is critical, therefore the surface winding from the beginning to the very end of the roll was improved.

Starlinger Unveils New Pet Recycling Line

The recoSTAR PET Art line, unveiled at K Show 2022, offers advances in efficiency and uptime.

Starlinger unveiled its newest recycling line, the recoSTAR PET art, at the K Show in Dusseldorf. The line puts together advances in efficiency, automation, and uptime in a complete flake - to - pellet PET bottle recycling line.



The recoSTAR PET art recycling line from Starlinger. Photo Credit: Starlinger

The PET Art features a new combined dryer unit that replaces the separate drying stages of the previous recoSTAR. The extruder is also a new design, with a length/diameter ratio of 24, down from 40. The increased capacity in the solid state polycondensation reactor ensures thorough decontamination and cleansing, eliminating the need for a specific degassing station. A melt pump was added between the extruder and pelletizer. After crystallization and solid - state polycondensation, material moves through an energy recovery station that harnesses the heat of the warm pellets.

The changes result in a 25% reduction in energy use relative to the previous model, while increasing capacity from 1.8 to 2.1 ton/hr. Starlinger also reported that the machine requires 46% less maintenance time thanks in part to its dry vacuum pumps and open - loop desiccant air flow. Continuous automatic monitoring of process parameters has been implemented to ensure product quality, especially important for producing food - safe material.

Comexi Offers Unique Laminator Solutions That Reduce Environmental Impact



The company has made a definite commitment to automation with the development of two new laminators: the SI2 Evolution and the ML2 Evolution

With the objective to be the primary global supplier for the flexible packaging industry, Comexi has positioned itself as one of the leading laminator and coating solution companies, by offering unique solutions that reduce the environmental impact. It has achieved the highest quality standards in laminating with solventless adhesives as well as water - based adhesives or solvent, due to its constant commitment to state - of - the - art technologies. Furthermore, Comexi's continuing

innovation in the finishing sector has led to holographic solutions that provide attractive designs and copy - proof attributes.

In a highly competitive environment with fierce competition and no tolerance for human error, not only are losses paid for at a high price, but traceability is essential as well. Consequently, Comexi has taken a step forward; the company has made a visible commitment to automation of the process and the machine. Comexi's Lamination business unit has developed two new machines that respond to these commitments, the SL2 Evolution and the ML2 Evolution.

The Most Autonomous Laminator

The new SL2 Evolution will become the next industry standard, as a result of its perfect flawless combination of automation, reliability, and productivity. This machine is the leading performing option for solventless lamination for the following reasons: an incredible and futuristic design; the completely renovated interface; an exclusive applicator head design (consisting of full motorization and metering sleeves usage); options to incorporate automatic change turrets; an extremely intuitive touch environment; and overall top - notch options. Among these latter options, the Closed Loop system is of special interest, as it automatically adjusts and maintains the adhesive grammage without solvents throughout the production process. Undoubtedly, the SL2 Evolution is the most autonomous laminator on the market.

A Highly and Extremely Versatile Machine

The Comexi ML2 Evolution laminator is a highly and extremely versatile machine that is operable with all types of adhesives and coatings: solvent-based, water - based, wax or solvent - less. Furthermore, the machine performs a wide range of in-register applications such as cold-seal, ink or varnishes. As a result, it has a series of easily interchangeable technological trolleys to satisfy every demand. Moreover, the MI2 Evolution laminator has a completely modular drying tunnel that substantially helps to perform a tremendous number of applications. The winding section can also be configured in accordance with various requirements.

The ergonomic design of the Comexi ML2 Evolution laminator allows for a simplistic and intuitive top speed performance of daily operations, thus subsequently maximizing production and minimizing downtime. In order to meet the highest standards, the Comexi MI2 Evolution has incorporated new state - of - the - art options that facilitate the conversion of flexible packaging. These options include the Comexi Closed Loop, which automatically adjusts and maintains the adhesive grammage without solvents throughout production. Additionally, the automatic mark - to - mark registration adjustment system for cold-seal will become an industry milestone, as it does not require operator intervention during the settings, as well as considerably reduces material waste and the loss of adjustment time.

To briefly summarize, the objective of the two systems is to facilitate the job set-up task and make machines more automatic, thus leading the industry towards full autonomous machinery. All of the aforementioned options, particularly in combination with an completely innovative new design, renders a spectacular appearance that has never been seen on the market, and will become the new standard for Comexi.

Dow and MVP Introduce The Next Generation of Fast Flow Light Resin Transfer Molding

Dow (NYSE: DOW), one of the world's leading materials science companies, and Magnum Venus Products (MVP), a global manufacturer of fluid movement and production solutions for industrial applications, introduce a new polyurethane - enabled chemistry delivered by an innovative three component injection system using a unique Fast Flow Light RTM process. This innovative process for closed molding increases part production by decreasing injection times. The new technique is a blend of MVP's Flex Molding Process and Light Resin Transfer Molding and utilizes collapsible resin channels for a faster resin flow.

“Our Fast Flow Light RTM process draws from years of experience as a leader in closed molding and blends techniques to deliver faster, more efficient part production,” said Joan Tracy, Director of International Sales for MVP, “The process was

brought about by the need to meet faster cure times for large parts using high viscosity resins such as fire retardant materials.”

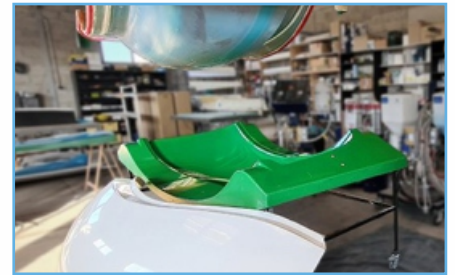


The next generation Light RTM is the outcome of the collaboration between Dow and MVP, applying new polyurethane-based solutions to cutting edge machine processes. Light RTM presents a more efficient and cost-effective alternative to traditional RTM, or closed molding process, due to the minimal tooling structure required and material efficiencies. In fact, the polyurethanes system

is produced with between 20-25% bio-based materials (as per DIN EN 16785 - 1 standards). Thanks to the polyurethane's high toughness level, less material is needed to reach the same mechanical properties as with conventional solutions, creating more durable, longer-lasting and lighter vehicle components. Fast Flow LRTM uses resin channel design with injection port located at center of part. By injecting part from center to border, the part can be precisely finished with no trimming required.

“Our novel polyurethane systems solution provides superior aesthetic properties and better industrial hygiene profile vs incumbent resins in use”, said Francesca Pignagnoli, Commercial Director Industrial Markets Europe, Dow Polyurethanes.

“Our new Light RTM application is compatible with MVP's Fast Flow Light RTM using a new 3-component system designed to meter/mix and dispense low to high volumes of resin.” MVP's Fast Flow injection system was designed for the use of larger molds while maintaining high reactivity, reducing the curing time and therefore the cycle time. The combined optimization of this special process and Dow Light RTM Polyurethane systems in synergy result a new solution that allows for a smooth introduction for current and future Light RTM customers.



CALENDAR FOR 2022-2023



Organization of Plastics Processors of India

IPF Bangladesh 2023

22nd to 25th February 2023
International Convention City
Bashundhara

Hanoi Plas 2023

8th to 11th June 2023
ICE, HANOI VIETNAM

Plexconnect 2023

15th to 17th June 2023
NESCO, Mumbai

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M&As/TIE-UPS/INVESTMENTS

Ipackchem Acquires TPF Plastics LLC

Ipackchem Group (“IPACKCHEM”) announced it has acquired a majority stake in TPG Plastics LLC (“TPG”), a leading manufacturer of engineered plastic blow molded products, to bring IPACKCHEM’s Advanced In-Mold Fluorination technology (“Advanced IMF”) to North America, with an initial focus on the crop protection market for the 2023-24 growing season.

Founded in 1987, IPACKCHEM is a leading global supplier of innovative and specialized barrier packaging solutions that service the crop protection and specialty chemicals end markets. IPACKCHEM’s leading market positions are further underscored by its strong sustainability orientation and 100% recyclable plastic barrier packaging. It currently has facilities across Europe, the UK, China, India, Brazil, and South Africa.

From its state-of-the-art manufacturing facility in Murray, Kentucky, TPG is a premier supplier of portable fuel containers and engineered blow molded products. TPG has industry leading expertise in the highly regulated portable fuel container

market and its products use patented flame mitigation and dispensing technology to ensure the highest levels of product safety.

ADDMAN Acquires Harbec Inc.

The purchase unlocks end-to-end polymer product lifecycle services for customers while combining industry-leading engineering talent.

ADDMAN, an engineering-centric provider of additive and traditional manufacturing solutions, has announced the acquisition of HARBEC Inc. The ADDMAN / HARBEC transaction was supported by the private equity firm American Industrial Partners (“AIP”).

Founded in 1977, HARBEC specializes in the pre-production and production of precision machined components (3 to 7-axis CNC, EDM), metal (DMLS) and polymer 3D printing, injection molding with internal tool and die-making capabilities and quality assurance. HARBEC has extensive experience with a variety of materials including aluminum, titanium, Inconel, magnesium, steel, brass, copper, and serves a nationwide customer base in the

aerospace, medical and high-end industrial end markets. Headquartered in Rochester, New York, the company operates a state-of-the-art, AS9100D (aerospace) and ISO13485:2016 (medical) certified facility with ITAR license (defense) and an ISO Class 7 cleanroom. The acquisition of HARBEC adds 160 talented and dedicated employees to the broader ADDMAN organization.

Atkore Announced The Acquisition of Elite Polymer Solutions



Atkore Inc. announced the acquisition of the assets of Elite Polymer Solutions, a manufacturer of High Density Polyethylene (HDPE) conduit, primarily serving telecommunications, utility, and transportation markets for a purchase price of USD 91.6 mln, said the company.

“The acquisition of Elite Polymer Solutions strengthens our HDPE conduit product portfolio, expands

our national presence and enables us to better serve increased demand for underground protection in the electrical, utility and telecom industries”, said John Pregoner, President of Atkore's Electrical business.

Greif to Acquire Lee Container

Greif, Inc. (NYSE: GEF, GEF.B), a global leader in industrial packaging products and services, announced it has entered into a definitive agreement to acquire Lee Container Corporation, Inc. ("Lee Container" or "Lee"), an industry-leading manufacturer of high-performance barrier and conventional blow molded containers, for a purchase price of \$300 million before taking into consideration tax benefits with an estimated net present value of approximately \$30 million.

Lee Container is a leader in the North American blow molded jerrycan industry, primarily serving growth-oriented customers in the agrochemical, other specialty chemical, oil & lubricant and pet care segments. Lee Container operates three strategically positioned manufacturing facilities in Homerville, GA, Centerville, IA and Nacogdoches, TX, with over 500 employees throughout the U.S.

The Acquisition Represents Numerous Key Strategic Benefits, Including:

- Offers immediate scale in jerrycans and small plastic bottles in North America, with

a platform for future growth through both organic and inorganic reinvestment opportunities

- Provides favorable exposure to growing agricultural and specialty chemicals end markets, which offers portfolio diversification benefits to Greif's GIP business mix
- Margin accretive transaction pre-synergies, with multiple levers for value creation and incremental synergy capture under Greif ownership
- Attractive return profile given strong strategic fit, upside optionality for growth, and strong cultural alignment with Greif

Multicolor Corporation Complets Purchase of Flexcoat Autoadesivos

Multi-Color Corporation (MCC), one of the largest label companies in the world, has announced its acquisition of Flexcoat Autoadesivos S.A., based in Louveira, Brazil. The purchase adds Flexcoat's label and lamination operations to MCC's existing South American portfolio.

MMT Acquires Confluent Medical Equipment Line

Medical Manufacturing Technologies (MMT), a global provider of medical device manufacturing solutions, announced the purchase of

Confluent Medical Technologies' equipment manufacturing group. These will be rebranded as Interface Catheter Solutions (Interface), a return to its historic roots.

Prism Worldwide Acquires CRC Polymer Systems

Prism Worldwide (Prism), a clean technology company, has acquired CRC Polymer Systems (CRC), a custom compounding company providing compounds, resins and pigments to the plastics industry. "We are delighted to have found the ideal partner at CRC," said Prism CEO Bob Abramowitz. "The strategic combination of Prism and CRC's knowledge and technology will accelerate Prism's entry into the sustainable polymer market."

With the acquisition of CRC, Prism will increase its product development, compounding, blending and distribution capabilities in the United States and North America. Introducing Prism's new upcycled polymers into CRC's existing proprietary compounds will result in new sustainable product options. The combination of the two companies will allow Prism and CRC to deepen their commitment and ability to meet existing customer needs and deliver new circular polymers in numerous markets.



CIRCULAR ECONOMY/ BIO-PLASTICS/ RECYCLING

New Concept for Circular Solutions with Alternative Raw Materials

- Introduction of CQ label for products with alternative raw materials
- Extension: Evocycle® CQ for innovative recycling technologies and cycle designs

As an extension of the new "CQ" label for products with alternative raw materials, Covestro is introducing the name "Evocycle CQ" for innovative recycling technologies and cycle designs.
© Covestro

Alternative raw materials are an important pillar in building a circular economy. Here, materials manufacturer Covestro is focusing on an increased use of biomass, recycles and green hydrogen. The company is now offering products with a minimum content of 25 percent of alternative raw materials under the new "CQ" label. CQ stands for "Circular Intelligence", a smarter approach to more sustainable materials and solutions. Customers can easily distinguish products based on alternative raw materials from fossil-based ones by the CQ label in the product name.

"All our solutions under the umbrella CQ prove that we are continuing to work on making our vision of the circular economy a reality, to help customers and partners achieve their sustainability and climate goals. In this way, we also aim to meet consumer demands for more sustainable products," says Sucheta Govil, Chief Commercial Officer of Covestro. "And this is just the beginning. In the long term, Covestro also wants to offer every one of its products in a climate-neutral¹ version."

Evocycle® CQ: a New Name for All Innovative Recycling Technologies and Cycle Designs of Covestro

Plastic waste is a valuable raw material and should not simply be disposed of. Therefore, Covestro is taking pride in proving that the path to circularity is possible for all stakeholders – and makes innovative recycling a priority. For the Climate neutrality is the result of an internal assessment of a partial product life cycle from raw material extraction (cradle) to Covestro's factory gate, also known as cradle - to - gate assessment. continuous evolution

of recycling, the company now introduces the name "Evocycle® CQ". It is an extension to the CQ label and stands for recycling technologies which enable the use of recycled plastics and recycled raw materials from the Covestro portfolio within a streamlined closed - loop system.

What's more, the company is not active here alone, rather collaborating with partners from all fields of recycling and reuse to unlock its potential across the entire value chain. That's how it transforms the industry turning waste into valuable resources, reducing the use of fossil fuels and significantly reducing CO2 emissions.

The first initiative is called Evocycle® CQ Mattress: Covestro, together with partners, has developed an innovative technology for the chemolysis of polyurethane flexible foams from used mattresses, in which both main components – the polyol and the precursor to the isocyanate TDI – can be recovered. With this, end of life mattress foams are directly transformed back into renewed polyurethane building blocks.

Since last year the company is operating a pilot plant at its Leverkusen site confirming the positive lab test results. And the journey continues: Covestro is working with recycling specialists such as Interzero and Eco-mobilier2, as well as other partners along the value chain, to ultimately close the material cycle for polyurethane mattresses completely and on an industrial scale.

From Mass - Balanced Raw Materials to Green Hydrogen

Raw materials produced from biomass and, in particular, from biowaste and residual materials are also becoming increasingly important. Covestro relies primarily on the latter raw materials because they are available in large quantities and can be used to manufacture a wide range of plastics. Through mass balancing, they are offered in the same good quality as their fossil-based counterparts without customers having to change their processing operations.

Covestro works with a number of suppliers who offer the raw materials using a mass-balance approach certified to the internationally recognized ISCC PLUS standard. The starting point also includes fossil raw materials, with the biological portions being allocated to the products by a third party audited allocation method.

Covestro is thus converting its production to the use of alternative and, above all, mass - balanced raw materials, in some cases also

using renewable energy from wind and solar power. Many of the company's sites are now also ISCC PLUS certified, Including Leverkusen, Dormagen, Krefeld-Uerdingen, Antwerp, Filago, Shanghai, Map Ta Phut and Changhua.

Green hydrogen generated with the help of wind or solar energy also plays an important role for the chemical industry – both as an alternative raw material and as a source of clean energy. Covestro, together with partners, is committed to the urgently needed market ramp-up. The company uses hydrogen and its derivatives to produce high - performance plastics.

Bio - Plastics

Plastics produced from renewable resources are often referred to as bio-plastics or biopolymers. However, the term "bio-plastics" is not precisely defined. It is commonly used to describe a variety of materials that consist, at least partially, of bio - based (renewable) feedstock and / or are nb biodegradable.



The term "bio - plastics" refers to polymers which are bio - based, biodegradable, or both.

Bio-based: This means that a material is (at least partly) derived from biomass, that

is, organic material of biological origin (excluding material embedded in geological formations and / or fossilized). Examples of biomass are plants, trees, algae, marine organisms, micro - organisms, animals, etc. "Bio-based" can also mean that the feedstock used for producing a material derives from any form of organic waste.

Biodegradable: Materials are biodegradable if they can be converted into natural substances such as water, carbon dioxide and compost by different naturally occurring organisms. In most cases, microbiological biodegradation is the most important process. Biodegradation is strongly dependent on the conditions for the microorganisms in water and soil. Furthermore, the biodegradation process is dependent on the presence or absence of oxygen. The property of biodegradation does not depend on the resource basis of a material but is rather linked to its chemical structure. The term "biodegradable" does not specify neither the time frame nor the environmental conditions which are necessary for the natural degradation of the material.

NOVA Chemicals Launches 100 Post - consumer Mechanically Recycled Polyethylene Resin

NOVA Chemicals Corporation ("NOVA Chemicals"), a leading producer of polyethylene resins, announced the launch of its new, mechanically recycled polyethylene resin: EX- PCR -Nc4.

CIRCULAR ECONOMY/ BIO-PLASTICS/ RECYCLING

Incorporating this product allows converters and brand owners to meet their sustainability goals, without compromising package performance in applications such as shrink, e-commerce, heavy-duty sacks, and protective packaging.

EX-PCR-NC4 contains 100 percent post-consumer recycled polyethylene (rPE) and offers highly versatile design flexibility making it an ideal solution to lower the carbon footprint of packaging and address climate change. NOVA Chemicals' rPE is sourced from distribution center flexible film, which includes a blend of back-of-store stretch and front-of-store consumer drop off. Source materials are processed with state-of-the-art technology resulting in a low odor, consistent, and stable product. NOVA Chemicals' proven technical expertise can help guide customers to incorporate rPE and maintain the necessary level of performance while also creating recyclable flexible packaging that remains in the PE stream through a design for recycling approach.

Commercial quantities of EX - PCR - NC4 are available today.



“Our new rPE product line is the definition of a win-win. It provides converters and brand owners with a more sustainable

packaging solution without compromising overall quality or strength. And, by utilizing rPE, we're diverting plastic waste from landfills while also enabling a fully-recyclable new product: a true demonstration of circularity,” said Alan Schrob, NOVA Chemicals Mechanical Recycling Director. “We aim to deliver commercial quantities of consistent high-quality rPE products to meet the needs of our customers and the desires of the brand owners and consumers. NOVA Chemicals continues to demonstrate leadership in providing sustainable polyethylene solutions, and we look forward to additional growth in this space.”

Stora Enso and Dizzy Pioneering Circularity in Food Packaging

Packaging is essential to our capacity to deliver wholesome, premium food and beverages to people all over the world, but we are convinced that this cannot be done at the expense of the environment. The typical packaging system in use today is unsustainable since it is still essentially linear: raw materials are used to create packaging for products, which is then discarded once the products have been used. **Important problems are being caused by this approach, especially when it comes to plastics.**

At Stora Enso, we are inspired by the mission "Do good for people and the world," which is why we seek to collaborate with businesses that share our values. And we couldn't be more pleased to collaborate with Dizzie in the United Kingdom, a truly inspiring circular solution for home delivery of dry food products. Customers can buy necessities without packaging waste by utilizing the same reusable pots produced in Biocomposites by Stora Enso, which helps cut 114 billion pieces of plastic from shop shelves in the UK alone each year.

So, how does it work? Products are packed in waste-free packaging that is delivered to the consumers' doorstep with carbon-neutral delivery. When they run out of product, Dizzie will collect the pots, wash them, and fill them again & again & again... The pots from strong and durable Biocomposites are designed to stand up to 200 cycles of reuse!

Eliminating packaging waste has never been easier thanks to the hundreds of refillable items in reusable pots that can be delivered right to your doorstep. Since 2018, the Dizzie team (formerly Good Club) has been on a circular journey. Ben Patten, an entrepreneur, and Danny Blackman, a product designer, have raised £6 million in funding to provide packaging solutions that support the shift from single use to reusables.

These magical reusable pots were designed by Blond design and produced in Biocomposites by Stora Enso, a Bio-based material. The material contains a mixture of 60% Eco-Polypropylene (made from oil residues and cooking oils waste) and 40% wood fibers. This results in pots that are made from 98% renewable materials, offering a huge reduction in carbon footprint. When the pots reach the end of their life, they can be returned to the manufacturer to be broken down into the raw material used to remake the pots, enabling a closed - loop system. Biocomposites can be easily recycled while retaining their properties, making them an excellent choice for businesses seeking higher levels of sustainability.

Nearly 1 million single-use plastic bottles and 150,000 kg of CO₂ have been saved by Dizzie's consumers since the company introduced its refillable line in 2021. Additionally, Dizzie has made it simple for any retailer or brand to set up its circular packaging solution and join the reuse revolution by releasing its new reuse platform. One national store in the UK is using the platform right now, and two more are planned for the fall of 2022.

Stora Enso is proud to have such an inspiring partner, and we're honored to have been selected as the source of material to aid in the advancement of circular designs. The construction of open and transparent material flows, or the march toward circularity is one of Stora Enso's bold sustainability goals.

Co-Development of Oxygen Barrier Enables Recycling-compatible Food Packaging

Henkel and Siegwerk are both market leaders for sustainable solutions. At two trade events in October, the companies told the story of how they joined forces to co-develop an innovative oxygen barrier coating. The new solution provides outstanding performance and also enables mono-material flexible packaging that is easier to recycle – opening up exciting potential to accelerate the transition to a circular economy.

Henkel and Siegwerk are both leaders in sustainable and innovative packaging solutions. The two companies share a pioneering spirit and a long track record of efficiency and food safe packaging. They also share a belief that the transition to a circular economy will require new technologies – and new forms of collaboration, too.

Representatives from Henkel and Siegwerk met at K-Fair in 2019 and agreed to co-develop an oxygen barrier coating for more recyclable food packaging. Now, they are preparing to launch that solution in North America and Europe and will introduce it at two trade fairs: K-Fair in Düsseldorf from October 20 to 24 and Pack Expo in Chicago from October 23 to 26 booth number S-2172.

Working in close partnership, Henkel and Siegwerk shared knowledge and explored ideas for how to create a barrier solution for flexible packaging without compromising shelf - life. The

result? An industrially validated oxygen barrier coating that enables mono - material flexible packaging for dry food products, setting recyclers free from the headache of mixed materials. Recently, the product has been recognized by APR (Association of Plastics Recyclers) Critical Guidance to be compatible with recycling.

TOMRA Presents Study Results of PLA Sorting from Municipal Plastic Waste at The K Show

With the aim of determining the sortability of PLA from municipal mixed plastic waste, TotalEnergies Corbion and TOMRA Recycling conducted a sorting test in August 2022. The outcome, has been confirmed many times before, sorting PLA from other plastics waste is easy and straight - forward.

Using a Near Infra-Red (NIR) sorting machine, PLA trays mixed with other post-consumer plastic items were fully recovered with a very high purity at the TOMRA center in Mülheim - Kärlich, Germany. Also when the PET bottle fraction was sorted from the mixed plastics waste stream, no PLA trays ended up in the PET stream. This realistic and industrial test shows that PLA is sortable and will not contaminate other recycling streams.

“Plastic waste collectors and sorters know that using the infrared technology, PLA plastic products can easily be sorted

from other municipal waste. In closed loop environments, where PLA bottles and PLA cups are exclusively used, the amount of PLA is sufficiently high to also make it economically feasible to collect, sort and clean the PLA", says Jürgen Priesters, SVP TOMRA Feedstock.

TotalEnergies Corbion is actively collecting used PLA products from closed loop systems and pre consumer waste. The collected PLA waste is used as feedstock for making rPLA and will help divert PLA from ending up in landfill or incineration. It also further reduced the carbon footprint of PLA and rPLA reduces the need for biomass and land use. Luminy® rPLA, containing 20% post-industrial and post-consumer PLA waste is commercially available.

"In collaboration with Tomra, a leading supplier of waste sorting equipment, we confirmed (again!) that PLA can be effectively sorted from other municipal plastic waste using existing separation equipment. Claims that PLA contaminates PET recycle streams have again proven to be nonsense. Many other studies, as cited in our white paper about end of life options for PLA, have confirmed exactly the same." says François de Bie, Senior Marketing and Supply Chain Director at TotalEnergies Corbion. He continues, "In short no technical barrier exist that prevent an effective separation of PLA from other plastic waste.

New Light Weight PLA High Temperature 3D Filament

The new Light Weight (LW) PLA High-Temperature 3D print filament was the result of a joint development between TotalEnergies Corbion (Gorinchem, the Netherlands) and colorFabb (Belfeld, the Netherlands). The new filament allows for printing lighter weight and higher heat resistant parts.

Enthusiasts of Remote Control (RC) planes can now design and produce 3D planes that will withstand high sun temperatures. For this formulation colorFabb incorporated Luminy PLA technology to boost temperature resistance in their already existing light weight PLA 3D printing filament. While heat exposure still needs to be controlled, prolonged heat stability allows the planes not to be deformed quickly as the original LW-PLA.

"Good collaboration with customers is essential to develop new applications that fulfil market demand. Understanding product goals and requirements is essential to come to solutions that solve practical challenges", said Vladislav Jašo, Application Specialist at TotalEnergies Corbion. "The openness and exchange of information were crucial to deliver results", he added. TotalEnergies Corbion Research and Development laboratories facilitated a speedy optimization of the new

formulation, delivering high heat resistance, while still allowing for excellent 3D printability and low weight.

"The new formulation exceeded our expectation during the real-world test. Within minutes the original LW-PLA printed parts started to deform, literally in front of our eyes, but the new formulation kept its shape well over time", said Gijs Houdijk, Head of Additive Manufacturing at colorFabb. "The team of experts at TotalEnergies Corbion knew exactly what we needed and were able to speed up our R&D effort".

The new Light Weight PLA High - Temperature 3D print filament is easier to use than other filaments. Made of Luminy PLA, it has a much better carbon footprint than other alternatives, and it is not toxic. Making it the right choice for 3D printing – safe and environmentally friendly.

In comparison with the previous version of the filament, the new Light Weight PLA High - Temperature 3D print filament, made with Luminy PLA, stood the heat without deformation by the sun.

Industry - First Stroller Portfolio with Bio - Based Materials Displayed at K - Show

Bugaboo, DSM Engineering Materials, Fibrant and Neste announce that their cross-value chain partnership has successfully

enabled the launch of an entire Bugaboo stroller portfolio made with bio-based materials. The Bugaboo donkey stroller was on display at the DSM Engineering Materials booth at K2022.

Specifically, the majority of the strollers' plastic parts are made using DSM Engineering Materials' Akulon 100% bio-based B-MB polyamide 6 (PA6), which in turn is made using bio-based feedstock from both Fibrant and Neste.

DSM Engineering Materials uses a mass-balancing approach with renewable waste and residue raw material to enable some 75% Pa6 carbon footprint reduction compared to conventional Pa6 and up to 24% of the entire stroller.

Earlier in 2022, Bugaboo announced ambitious targets to achieve net-zero carbon dioxide (CO2) emissions by 2035. As most of Bugaboo's impact derives from its Scope 3 emissions, a transition toward lower fossil carbon materials is a key element of the company's environmental, social, and governance (ESG) strategy.



Industry - First stroller portfolio with bio-based materials.

This aligns closely with the ambitions of the other partners: DSM Engineering Materials' ongoing ambition of a full alternative portfolio of bio-based and circular solutions,

helping to de-fossilize the economy as part of its SimplyCircular initiative, Fibrant's commitment to make the entire value chain more sustainable and Neste's offering of Neste RE feedstock for polymers and chemicals.

While conventional Akulon Pa6 is already good for carbon footprint reduction, switching to Akulon 100% bio-based B-MB Pa6 offers a significant carbon footprint reduction compared to conventional PA6 and helps to further de-fossilize the value chain.

Used in the entire stroller line, the new material was developed by DSM Engineering Materials in collaboration with its partners Fibrant and Neste.

Specifically, Neste provided renewable Neste RE, a feedstock for polymers made 100% from bio-based materials such as waste and residues, which was used to replace fossil feedstock in the value chain. DSM Engineering Materials, Fibrant, and Neste are all ISCC-PLUS certified.

With identical mechanical performance and characteristics to conventional Akulon grades, this mass-balanced bio-based Akulon PA6 offers the quality and durability necessary to comply with Bugaboo's strict safety standards, making it a drop-in substitution while enabling a CO2 reduction of up to 24% per stroller in line with the company's ambitious ESG targets.

This first line of strollers will be gradually available online and in stores worldwide in the

coming period. In addition, over the course of 2023, Bugaboo will transition its entire stroller portfolio to production with bio-based materials.

World's First Plant-based Medical Grade Face Mask Authorized Under EUA by U.S. FDA

PADM Medical Group of Companies (PADM Medical Canada and PADM Medical USA), has received its Emergency Use Authorization (EUA) from the U.S. Food and Drug Administration (FDA) to market PRECISION ECO™, the world's first plant-based, procedural mask with ear loops for use in healthcare and medical settings in the United States of America.



Luminy PLA based face mask with 83% USDA Biobased Preferred Certification.

Increasingly, governments and consumers are recognising the environmental need to develop recyclable and compostable products. Most disposable Personal Protective Equipment (PPE) can take up to 450 years to decompose in the natural environments. Using bioplastics, such as PLA is a solution to tackle hygiene and safety needs in medical settings.

Derek Atkinson, Vice President, Business Development at TotalEnergies Corbion says, “We should not accept the limitations of the current way of doing things as being the only way. As we try to minimise the impact the of our products on the environment, it is these developments that help us realize these ambitions.” He continued, “as the supplier to PADM Medical Group of the high purity polylactic acid Luminy® PLA needed in the production of these ground breaking biobased surgical masks, we are delighted to learn that PADM has succeeded in obtaining Emergency Use Authorization from the US FDA.”

The PLA procedural masks reduce the adverse impact on the environment from single use disposable face masks. Produced from sugarcane, Luminy® PLA greatly reduces the carbon footprint of this applications. The PRECISION ECO™ Compostable / Plant Based Procedural Mask with Earloops is a USDA Certified Biobased product under the USDA BioPreferred Program with a biobased content of 82%.

“The Emergency Use Authorization on PLA facemasks is a milestone. It is a reward to our commitment to making eco-conscious products to support the health and wellness of all individuals and our planet.” said Martin Petrak, PADM Medical Group CEO.

Plastic Waste in the UK - Statistics & Facts

The world has become dependent on plastics in recent decades due to their relatively

cheap production costs, durability, and incredible versatility. Annual global plastics production is now roughly 370 million metric tons per year – an increase of 80 percent since the turn of the century. However, huge amounts of this become waste, with many plastic products thrown out after just one use. These often end up polluting rivers and oceans, causing devastating damage to marine life. Plastic waste has become a major environmental issue worldwide, with the United Kingdom playing a substantial role in this problem. The UK consumes an enormous amount of plastics every year and is considered to be the second - biggest producer of plastic waste per capita in the world.

The UK generates a huge amount of plastic waste

It is estimated that UK households throw away a staggering 100 billion pieces of plastic packaging a year, averaging 66 items per household per week. These are mainly food packaging items, such as snack bags and fruit and veg trays. In 2021, 2.5 million metric tons of plastic packaging waste were generated in the UK. Globally, the UK is believed to be the fifth - largest producer of single - use plastic waste, with an estimated three million metric tons generated in 2019. This averaged 44 kilograms per person.

What happens to plastic waste in the UK?

44.2 percent of UK plastic packaging waste was recycled in 2021. However, recycling

rates also include energy recovery from incineration and plastic waste exports. It is believed that almost half of all UK plastic waste is incinerated for energy recovery, with 25 percent landfilled and just 12 percent recycled in UK reprocessing facilities. The remaining waste is shipped abroad. Turkey is now the main destination for UK plastic waste materials, importing 123,000 metric tons in 2021. The UK lacks the infrastructure to deal with the enormous amounts of plastic waste it produces each year, so has relied on exports for many years. The recent bans and restrictions on waste imports by countries such as China has placed increased pressure on how the UK manages its waste. The UK government has been urged to invest in recycling infrastructure and new recycling technologies.

The war on plastic waste pollution

Plastics can take centuries to decompose, which is why there are growing concerns in the UK about plastic waste pollution. The UK government has introduced several policies in a bid to combat the scourge of plastic waste, such as the single-use carrier bag charge. This has significantly reduced the number of single-use plastic carrier bags issued by supermarkets. There have been calls for a ban on other problematic single-use plastics, such as cutlery, plates, stirrers, and coffee cups, with Scotland becoming the first part of the UK to implement such a ban. A deposit return scheme (DRS) for drinks containers will also be

introduced across the UK in the coming years, with the hopes of incentivizing people to recycle. Additionally, a tax was introduced in 2022 on plastic packaging that doesn't consist of at least 30 percent recycled content. The UK Plastic Pact has also helped reduce the amount of plastic packaging used by supermarkets and other businesses.

Arkema Increases its Bio-based Offer With a New Range of Mass Balance* Acrylic Materials

Arkema announced a major step forward in its innovative sustainable offer with the certification of a range of bio-attributed acrylic monomers using the mass balance* approach. These monomers enable Arkema to start offering certified bio-attributed specialty acrylic additives and resins for a wide range of applications. This positions the Group as a global leader in the offer of bio-attributed acrylic materials and as a key partner for customers on the market.

The launch of Arkema's new range** of bio-attributed acrylic monomers and specialty acrylic additives and resins, mass-balance certified under the International Sustainability and Carbon Certification - PLUS (ISCC+) framework, is a key milestone in the transition to a more renewable and lower carbon economy.

The replacement of fossil feedstock by bio/bio - circular feedstock will support Arkema's customers in achieving their

climate plan goals by reducing their scope 3 greenhouse gas emissions.

Bostik Unveils Two New Tape and Label Adhesive in India to Bolster The Manufacturing Industry and Support The Shift Towards Circular Economy

Bostik, a leading global adhesive specialist for industrial, construction and consumer markets, has launched two new innovative products Bostik HM2060 and Bostik HM 2070 for the tape and label market in India. Bostik is in India with over 20 years of local presence, including a strong Research & Development (R&D) team.

The first of the two new products Bostik unveiled for the Indian market is Bostik Hm2060, a single solution for high - speed label converting in the Fast Moving Consumer Goods (FMCG), pharmaceutical and logistics industries. As India's manufacturing scene continues to grow, there is an urgent need to increase label production productivity to cope with the surge in volumes of consumer and commercial goods. Bostik HM2060 assumes the dual role of a Hot Melt Pressure Sensitive Adhesive (HMPSA) and label, making it the ideal solution for labels that need to endure high converting speed of above 100 metres per minute, resolving any obstacles from conversion speed limitations.

“We're pleased to launch these two adhesive solutions to support the thriving tape and label industry in India. With over 20

years of local presence, including a strong Research & Development (R&D) team, we are well aware of the transformations happening in the industry and the ever - evolving manufacturing and supply needs of our customers. Producing innovative products is what we constantly strive to achieve, and this could not have been possible without our R&D team that works tirelessly to develop new ways to address customers' challenges,” said Vikas Kulkarni, Managing Director of Bostik India.

For the adhesive coating process of Bostik HM2060, only a lower operating temperature is required. This enables it to consume significantly less energy, aiding in easier maintenance of converting machines. Compared to regular HMPSAs, Bostik HM2060 offers improved oil and solvent resistance and better adhesion on low surface energy (LSE) substrates.

Bostik's second cutting - edge solution is Bostik HM2070, a tape adhesive developed to address the increasing demand for sustainable packaging in India's e-commerce industry, which is expected to reach US\$350 billion by 2030. Concurrently, the Indian government has implemented a ban on single-use plastic or plastics with PE films that are less than 75 microns. In an industry where disposable plastics are frequently used, e-commerce sellers today are in greater need of environmentally friendly packaging alternatives.

The Bostik Hm2070 was specifically developed for kraft paper-based bags and thicker PE-based bags with films up to



120 microns. It is a hot melt tape adhesive that can be applied to kraft paper applications that hold a tear index of up to 15mNm²/g. The solution ensures tamper-evident sealing and utilises 20% less adhesive material than traditional HMPSAs, enabling manufacturers to produce kraft bags that are both sustainable and functional, which then provides sellers with environmentally friendly solutions for their packaging needs.

Vecoplan Presents Cutting-edge Cleaning Process for Plastic Recycling

Vecoplan is a developer of solutions for effective closed-loop recycling to meet the increased demand for high-quality plastic recyclates. At this year's K trade fair the company, a partner of the recycling industry, has introduced a further step in plastics processing. Its approach, which demonstrates new ways to save water and energy, represents a deliberate departure from established treatment processes.

Recycling of plastics is not only crucial for climate neutrality, it also conserves valuable resources and the environment. Many sectors of the plastics industry are consequently undergoing a transition. The aim is to increase the recycling rate and

use the advantages of plastic in such a way that no damage is caused to the environment. "We're seeing an increasing demand for high-quality plastic recyclates," says Martina Schmidt, head of the Recycling and Waste Division at Vecoplan AG. "Many manufacturers are introducing closed cycles because it gives them direct control." Vecoplan is one of the leading suppliers of machinery and equipment for processing primary and secondary raw materials for thermal and material recycling. For years, it has been a successful and reliable partner to the recycling industry. Now, in a further contribution to closed-loop recycling, the system provider is offering additional processing options. "Plastics recycling at a suitable level of cleanliness is becoming increasingly important," says Schmidt. "By offering this to our customers, we can give them even greater support. At the end of the process chain they get a material that is ready for the extruder."

At its new technology centre in Neunkhausen, Vecoplan has installed a demonstration and test facility called the Cleanic, which covers some 600 square metres. Together with Vecoplan's experts, customers can run cleaning tests with film waste and thin-walled hard plastics made from polyolefins like LDPE, HDPE and PP. The facility, which features a new combination of machines for cleaning plastic, processes it to yield high-quality extrudable flakes that can find use in the manufacture of consumer goods, packaging and cosmetics. "Our approach is purposely different from conventional solutions," says

Martina Schmidt. "Our developers have optimised the processing method to provide better cleaning quality while reducing energy and water consumption." Vecoplan's engineers worked closely with a network of experts to achieve this practical solution.

New Process

The Cleanic demonstrates the systematic use of cleaning and separation technologies that help to cut back on the use of energy and water. Post-consumer waste can be cleaned in a cold or hot process and with or without lye – depending on the degree of contamination and the quality requirements for the recyclate. The combined demonstration and testing facility is able to handle polyolefins in the form of plastic film or used bottles.

"We rely on mechanical dry pre-cleaning, which means there is no conventional pre-wash," says Schmidt. "This lowers our use of fresh water, and we can significantly reduce the quantity of waste water. The facility thus demonstrates processes that are economical in the use of water, an important resource."

High Cleaning Quality

The required degree of cleanliness can be customized according to the user's requirements. In addition to wet or dry mechanical cleaning, the Cleanic can demonstrate temperature-controlled intensive heating using a sodium hydroxide (NaOH) solution, for example when the regranulate is needed for the consumer goods or cosmetics industry. This is an effective means of dissolving greasy and oily impurities and of removing adhesives from labels.

Efficient water treatment

Vecoplan prepares the cleaning lye in the Cleanic separately from the process water. Instead of using the lye or process water until it is saturated with contaminants and then cleaning it, the waste water is fed via collection lines at every point in the facility to a specially designed water treatment system where it is cleaned and returned to each component. “This reduces our use of fresh water and lye while also improving the cleaning quality,” says Schmidt. “It is our contribution to sustainable recycling.”

Processing of plastic film

In post - shredding, a wet granulator shreds the cleaned plastic film to the particle size required for drying and extruding. A combined friction separator and dewatering screw then dries the material mechanically to a residual moisture of five to six percent. The use of mechanical instead of thermal drying demonstrates how it is possible to improve the environmental footprint of plastics recycling.

Processing of hard plastics

After dry and wet cleaning, thin-walled hard plastics are sent directly to a turbo dryer, which ideally can reduce the residual moisture to only two percent. The processed plastic flakes are then ready for subsequent sorting or extruding.

“This process gives our customers a highly reliable means of processing plastics,” explains Martina Schmidt. “Closed-loop recycling helps them to achieve better-

quality recycle and reduces the burden on the environment.”



Vecoplan's Cleanic Introduces a further step in plastics processing: Cleaning.



Material that has been pre-shredded and freed of ferrous metals is moved from containers to the conveyor system.



After cleaning, the material is ready for downstream processes.

Oak Ridge National Laboratory Scientists Designed a Recyclable Polymer for Carbon - Fiber Composites to Enable Circular Manufacturing

Oak Ridge National Laboratory scientists designed a recyclable polymer for carbon - fiber composites to enable circular manufacturing of parts that

boost energy efficiency in automotive, wind power and aerospace applications.

Carbon - fiber composites, or fiber - reinforced polymers, are strong, lightweight materials that can help lower fuel consumption and reduce emissions in critical areas such as transportation. However, unlike metal competitors, carbon - fiber composites are not typically recyclable, meaning wider adoption could present waste challenges.

“Our goal is to extend the lifecycle of these materials by making reuse possible without sacrificing performance,” said ORNL's Md Anisur Rahman.

The team's approach incorporates dynamic covalent bonds that are reversible, enabling both carbon fiber and polymer recycling. The new polymer **maintained mechanical strength in six reprocessing cycles**, a sharp contrast to previously reported polymers.

“ORNL's carbon-fiber composites enable fast processing and can be repaired or reprocessed multiple times, opening pathways to circular, low-carbon manufacturing,” said ORNL's Tomonori Saito.

Reasechers of Oak Ridge National Laboratory designed a recyclable carbon fiber material to promote low - carbon manufacturing. Credit: Chad Malone/ORNL, U.S. Dept. of Energy

Get The Right Information to The Right People at The Right Time

Scott Rogers at Noble Plastics is working on production - monitoring software to empower his shop - floor personnel.



Noble Plastics' employees are used to working with tablets to record downtime, production lots and QC checks. An in - house project would give them access to personal dashboards providing realtime analysis of whether their job's production at the current rate is likely to meet the output goal for the shift. The cloud - based system allows operators to seek immediate technical assistance if needed. (Photo: Noble Plastics)

As Scott Rogers sees it, most manufacturers are vexed by the same persistent trio of challenges: "productivity, supply chain, skilled workers." And in his view, two of those three are intimately linked: "The workforce has the biggest effect on manufacturing facilities.

They are the only autonomous systems we have today." Thus, as technical director of custom injection molder Noble Plastics, one of his major ongoing projects is to maximize the productive ability of his employees.

I've known Scott and his wife Missy (president of Noble Plastics) for 10 years or so. They

founded the company in 2000 in Grand Coteau, La. The firm has grown to include a second molding plant 10 miles away in Opelousas, La., and operates a total of 19 injection machines from 35 to 940 tons with a staff of over 60 people.

Scott and Missy are both engineers, and Noble is a very technology - oriented company. Scott tends to dig deep into areas of technology that interest him, and he has spent a lot of his time lately on software development for production monitoring.

His firm has experience with some of the most prominent names in plant monitoring – including Oracle and IQMS (now DelmiaWorks) – but he's still working on his own solutions to the fundamental need, in his words, "to get the right information to the right people at the right time."

He has a technical group working on the project, including a dedicated developer, several engineers and people skilled in analytics. "We've funded this internally for a couple of years now, and it's not cheap. The reason I got into this is not that I want to be a software company – I want to run a better plant."

Scott's approach to production monitoring is distinctive in at least a couple of ways. One is that his current focus is on the flow of information to people, not to smart machines or computers.

The second is that his focus is on getting information not to supervisors or managers but to people responsible for running machines. Too often, Scott says, monitoring systems treat workers as manufacturing assets, like machines.

"Anytime we start tracking what people do in a plant, it's easy to think of tracking employee performance. We want people to get the information they need relevant to their particular job as quickly as possible. It's no good to have information sitting out there in the cloud when too often the people who need the info are a few levels down from people who even know how to look for it."

As a result, he says, "We are creating an engine to recognize and route information to people who need it wherever they are." The information is cloud - based, and it is accessed in the form of a personal dashboard for each operator, using a smartphone or tablet. (Noble Plastics operators have used tablets for at least a decade to record downtime, production lots and QC checks.)

When workers log into the system, they select what work cell they will be responsible for on that shift. Their personal dashboard predicts that cell's goal for the shift in terms of number of good parts, allowable rejects and cycle - time range for that job.

Whenever they look at their dashboard, they will see it color coded with green indicating “On Track,” yellow indicating that their shift production goal is “At Risk,” and red signifying that the goal is “Not Achievable.”

assessment of operating efficiencies and indicates the maximum and minimum anticipated result based on current efficiency and the nominal standard. If the operator is ahead of schedule, the maximum level could be greater than 100% of the expected standard. In such a case, Scott points out, an operator or technician might be tempted to extend the cycle slightly – for instance, to reduce the chance of a part sticking in a cavity. The Arc of Uncertainty would adjust to show whether that change increased the probability that shift - end results might undershoot, not overshoot, the standard.

A vital element of the system is that it allows an operator to send a message asking for assistance. “Ask anyone, ‘Have you ever had trouble finding the right person to fix this? How often have you heard, ‘Oh, man, I saw that alarm and I forgot about it.’”

The goal is to act right away to solve problems – stuck parts, water or oil leaks, material problems. We’re asking ourselves what we can do to make sure people don’t waste their time on unproductive

things. That’s not only bad for the company but for individuals. Nobody gets fulfillment from wasting time.”

Scott and other managers have their own dashboards that show how each cell is performing. “We want to predict when a job will be finished and whether we will have met our goals.” When the software technical group meets, they come up with suggestions like, “Here’s something we really want to track.”

According to Scott, the company’s molding manager wants better notification of when a job is within a few hours of finishing, in order to prepare for the next changeover. “We need the operator to verify the part counts so we don’t end up short or with overage. And are our reject counts accurate?”

Read: How Production Monitoring Can Make You a Better Processor

This production monitoring project prompts Scott to envision another long-term goal. “What we really need is more data for industry benchmarking of OEE (overall equipment efficiency), machine utilization by clamp tonnage, cycle times for different materials, breakdown of cycle time by phases such as clamp opening and closing, downtime and scrap by age and type of machine. For example, tracking machine age vs. performance would be valuable for calculating ROI.

“With this data, I could wake up each morning and see how I’m doing. But it would take a collective effort of probably at least 50 molders. By my research, I’d say most molding machines are in shops of no more than 40 presses. Small companies can’t generate Big Data on their own. But working together and combining data anonymously would help everyone and wouldn’t hurt anyone. It’s not giving anything away.” But the end result would be valuable to all.

Related Content

- **How to Properly Maintain Aluminum Injection Molds**

Aluminum and steel tools have some important differences, but also one key similarity: Routine maintenance will extend the mold’s life and boost the quality of its output.

- **Moldmaking in Mexico: A New Frontier**

Advancing beyond repairs and maintenance, there is a growing Mexican moldmaking segment, giving local supply and support to the country’s burgeoning automotive sector, among others.

- **High - Tech Blow Molding at Agri-Industrial Plastics**

This family - owned custom molder stands out in its use of advanced computer and automation tools to claim a niche in large, complex, and multi - layer parts.

North American Tooling Spend Forecasted to Reach \$8.3 Billion in 2025

Harbour Results' latest study says current automaker profits will fund an increased number of new vehicle launches in coming years.

The automotive vendor tooling spend in North America will increase 13.4%/yr over the next three years, culminating in \$8.3 billion in spending in 2025—significantly higher than 2022's estimated spend of \$5.7 billion. Those figures from industry consultant Harbour Results Inc. (HRI; Southfield, Mich.) and its recently released Harbour IQ study on the current state of the automotive vendor tooling industry.

HRI points to several factors fueling the growth in tooling spending. First, despite a drop in North American vehicle demand from 15.8 to 13.7 million units, most automakers are experiencing record profits per vehicle sold, with these additional monies funding investment in technology and new vehicles.

To wit: from 2023-2029 the number of vehicle nameplates in the region will grow 18% from 210 to 249. Additionally, battery electric vehicle nameplates will grow from 20% of the mix in 2023 to 46% of the mix in 2029. “New nameplates generate new vehicle launches, which require more tools,” Harbour notes. In addition, Harbour says the Detroit Three automakers, who purchase most of their tools in this region, are planning to source tooling for

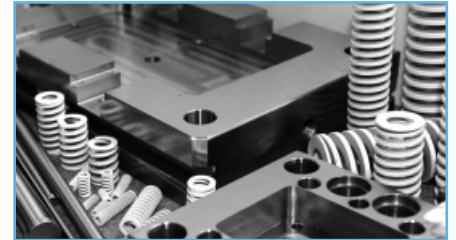
all new full-sized pickup trucks and SUVs in 2024/2025 and 2026, which significantly increases the tooling demand. The Harbour IQ study shows that the discrete number of tools will increase with a compound average growth rate of 14% from 2022 to 2025.

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There's a “bright future of the automotive tooling industry,” according to Laurie Harbour, HRI president and CEO, despite major changes in the market around shifts from internal combustion engines (ICE) to battery electric vehicles (BEV). “Although we are seeing growth within the industry, it is important to note that North American tooling spend per vehicle for BEVs on average is lower than ICE vehicles by about 30%, so although we are seeing the tooling spend and number of tools sourced go up over the next few years the average spend per tool is decreasing. So, it will be important for mold and die companies to focus on improved efficiency and throughput.”

HRI's most recent Manufacturing Pulse Study, conducted in August, found that 45% of tool shops said they were optimistic or very optimistic about the future and predicted ending the year at 83% utilization. The

industry's top concern remains finding talent and the increasing cost of doing business.



New vehicle launches in coming years will require new tooling, leading to growth in the North American automotive tooling market, according to Harbour Results.

Photo Credit: stock image

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Shawnee State University Plastic Engineering Program Earns Accreditation

The Accreditation Board for Engineering & Technology certification makes the university's program one of just four bachelor's programs in the world with this designation and the only program of its kind in the state of Ohio.

Shawnee State University's (SSU; Portsmouth, Ohio) Plastics Engineering Technology (PET) program recently received accreditation from the Accreditation Board for Engineering & Technology (ABET).

Adam Miller, chair of the Department of Engineering Technologies and Associate Professor of PET, said in a release that the accreditation was granted in part due to the program's educational quality, indicated by such things as alumni professional achievement, high employment rates, industry partnerships and advisory board engagement.

A 2009 graduate of the PET program, Miller said many students in the program are often sought after by major companies before graduation, including those who undertake internships with industry leaders.

The PET program has had partnerships with several industry leaders including

Milacron, Krauss Maffei, Advanced Composites, DME, iMFLUX, Stanley Electric, and others, leading students to internships and the donation of materials and equipment.

The PET program will be hosting its annual Plastics Day for prospective students on Friday, Dec. 2. The event allows high school students and their parents to meet industry alumni, learn about manufacturing pieces in the lab, and explore a career field that is the largest business industry in Ohio.



Shawnee State University Plastics Engineering Technology program received accreditation from the Accreditation Board for Engineering & Technology (ABET).

Photo Credit: Shawnee State University

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15 Ways to Raise Blown Film Productivity (Without Breaking the Bank)

Blown film processors, many of them small enterprises with a single plant or a single costly line, may have limited resources, in both capital and manpower, to devote to optimizing their productivity. Yet avenues of improvement are open for even the most over-extended entrepreneur.

And some of the most effective modifications cost little more than a phone call or a small change in procedures. The 15 tips presented here include ways to optimize areas of your operation from employee training to better customer communications.

15 Things to Know About Servo - Driven Injection Machines

Drive technology for injection molding machines has been continuously evolving, and servo motors have become widely used in a variety of roles. Here's what molders need to know about today's servo drives in terms of cost, performance, maintenance, and training.

Complete End-to-End Pet Preform Production

Husky's new HyPET Complete is a connected production cell for molding preforms developed to address ongoing challenges faced by food and beverage packaging producers.

At Gulfood Manufacturing 2022 in Dubai, Husky Technologies debuted the HyPET Complete—a full manufacturing cell for the production of PET preforms billed by the company as the industry's only complete, end-to-end, connected production system. Husky says HyPET Complete is built around its latest generation of HyPET systems, including those tailored for the production of rPET, and it includes a purpose-built drying solution, optimized energy management, enhanced melt control, automated mold cleaning, integrated part quality inspection, and more.

The company says this complete cell will help food and beverage packaging producers better deal with current market issues, including rising energy and material costs; supply chain fluctuations; skilled labor shortages; and demands to be more sustainable.

HyPET Complete applies an end - to - end approach incorporating factory planning and tooling lifecycle optimization, workforce training and development, a fully digitized delivery model and OEM parts, as well as the company's Advantage + Elite predictive remote - monitoring platform.

Designed to enable producers to navigate through today's most prevalent challenges, HyPET Complete is particularly relevant to producers who are looking for more energy efficient manufacturing processes and packaging materials, such as PET, to offset fluctuating costs.



Husky Technologies debuted the HyPET Complete at Gulfood Manufacturing 2022 in Dubai this November.

Photo Credit: Husky Technologies

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Let's take another look at this seemingly dull but oh-so-crucial topic.

Positioning Wedges for Precision Fixing of Mold Inserts

Hasco's new Z1855/... positioning wedges allow users to change mold inserts in injection molding tools easily and lock them in place.

Hasco says its new Z1855/... positioning wedges are easy to install and remove thanks to extraction threads in the through-holes. Free corner radii additionally simplify assembly because the installation geometry can be carried out more easily. To adjust the fixing tension and release the wedge, the Z35/... central headless screw is used.

By using two positioning wedges, Hasco says molders can achieve exact fixing in two axes for tool inserts. The inserts are fabricated from cold work steel 1.2842 to give them maximum wear resistance. By enabling fast and accurate fixing of mold inserts, Hasco says the new positioning wedges Z1855/... can reduce set-up times.



Hasco's Z1855/... positioning wedges allow molders to lock mold inserts into place. Photo Credit: Hasco



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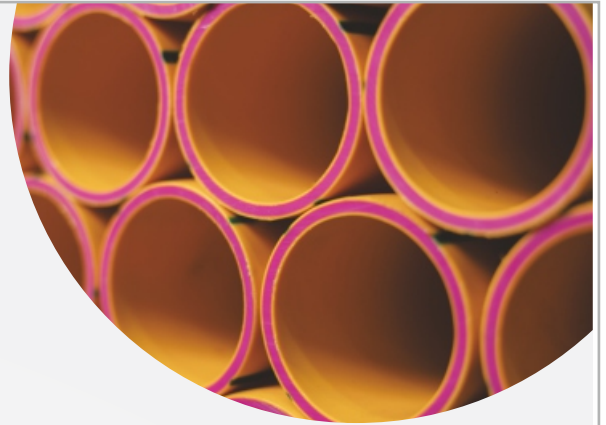
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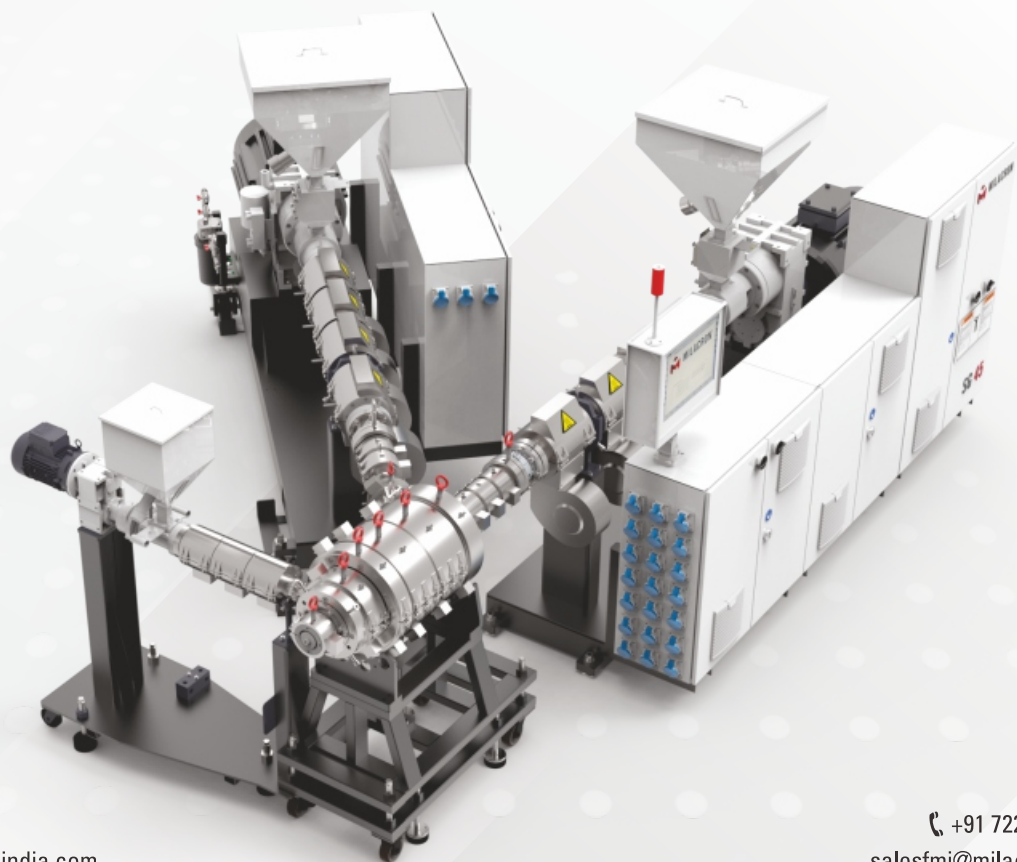
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