06/2022

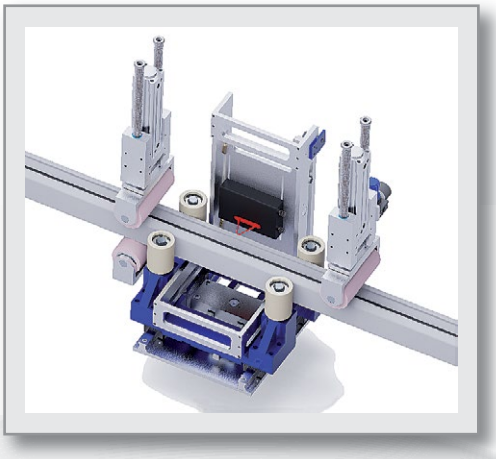
VERLAG
Cologne /Germany

EXTRUSION INTERNATIONAL

STEIN BLUE-LINE
for a sustainable future

EXPERTS IN DOWNSTREAM

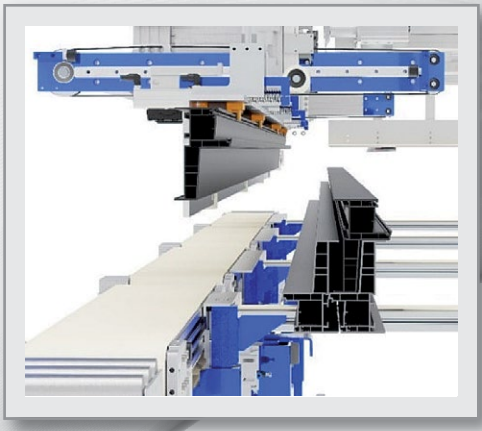
Stein Profile Stacker

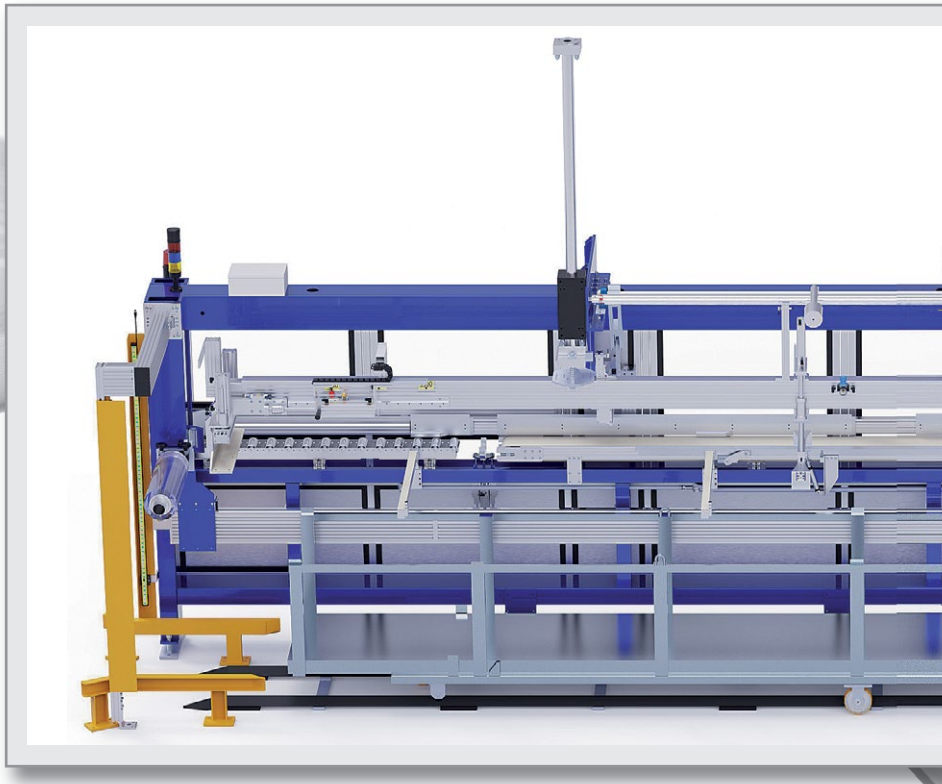


Profile length measurement during extrusion

Measuring sensors are used to determine the length of individual profiles before a profile layer is formed.

The measured length can be used to check and correct the cutting device of the extrusion line or for documentation (quality assurance) of the produced profile lengths.





Stacking of special profiles

Stein Maschinenbau offers technical solutions for stacking of heavy and large monoblock profiles.

Based on decades of experience, we can unusual profile geometries or special layer can be evaluated for their automated stacking.

Cassette spreader

With the help of a cassette spreader it is possible to realise the same packing density of the manual packaging.

Made in Germany

STEIN BLUE-LINE
for a sustainable future

EQUIPMENT FOR EXTRUSION

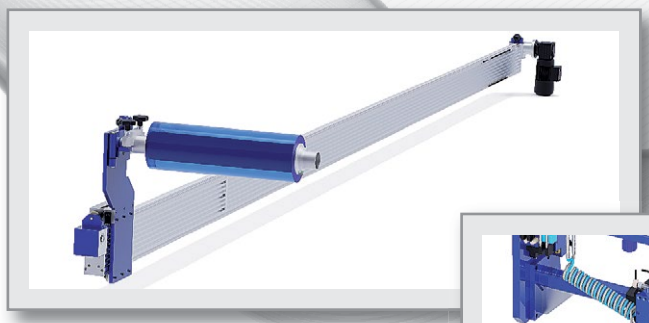
Stein Profile Stacker

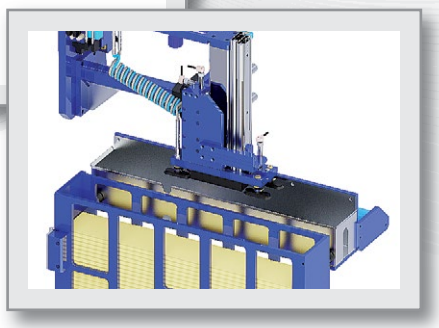
Weight determination during extrusion

With the help of special weighing units, individual profiles can be weighed before a profile layer is formed.
The determined weight can be used to optimise the extrusion.

Cassette handling

The handling system allows empty cassettes to be fed into the automatic stacker and the filled cassettes to be pushed out.





Profile interlayer

Endlessly laid as a foil between the profile layers or with individual strips laid on the layer.

STEIN

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www.stein-maschinenbau.de

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The joy of the plastics and rubber industry at finally being able to exchange ideas in person on a global level again after three years characterised K 2022 Düsseldorf and ensured an excellent mood among the 3,037 exhibitors

37

SML came with a world debut in stretch film manufacturing to K 2022: A patented triple turret winder for the PowerCast XL stretch film line. The W4000-4S-3T is the first winder in the market for manufacturing 2" stretch film hand rolls on a 4.5 m wide line

50

The Repro-Flex model from the Taiwan-based recycling machine manufacturer POLYSTAR has become one of the most popular models among recyclers due to its high level of efficiency and stability in recycling both soft and hard plastic scraps in a variety of forms. As of today, 1,200 Repro-Flex recycling machines are in operation worldwide

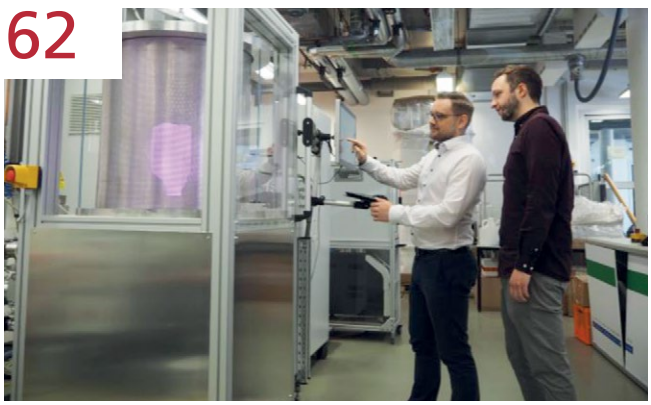
52

Ganesha Ecopet Private Limited has installed two Starlinger PET recycling lines in its facility in Warangal, Telangana state. Ganesha Ecopet plans to supply the produced rPET granulates under its newly introduced brand enterprise Go Rewise

Thousands of people visited the K 2022 in October. Between others, the Spanish firm Molecor was present in the event with the largest PVC-O pipe diameter in the world, DN1200 mm. Day by day, visitors were impressed by the pipe dimensions

56

IonKraft – a Spin-Off from the Institute for Plastics Processing (IKV) at RWTH Aachen University in Germany – has developed a silicon-based and fluorine-free barrier coating system, which offers the same function as the multi-material and fluorination approach, but since the coating thickness is well below 100 nm, the recyclability of a mono-material container is not inhibited



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Plastindia 2023
1 - 5 February, 2023
New Delhi / India
www.plastindia.org

ICE Europe 2023
14 - 16 March, 2023
Munich / Germany
www.ice-x.com

KOPLAS
14 - 18 March, 2023
Goyang / Korea
www.koplas.com

Chinaplas 2023
17 - 20 April, 2023
Shenzhen / PR China
www.chinaplasonline.com

interpack 2023
04 - 10 May, 2023
Düsseldorf, Germany
www.interpack.de

PLAST 2023
05 - 08 September, 2023
Milan, Italy
www.plastonline.org

SCHWEISSEN & SCHNEIDEN
11 - 15 September, 2023
Essen, Germany
www.schweissen-schneiden.com

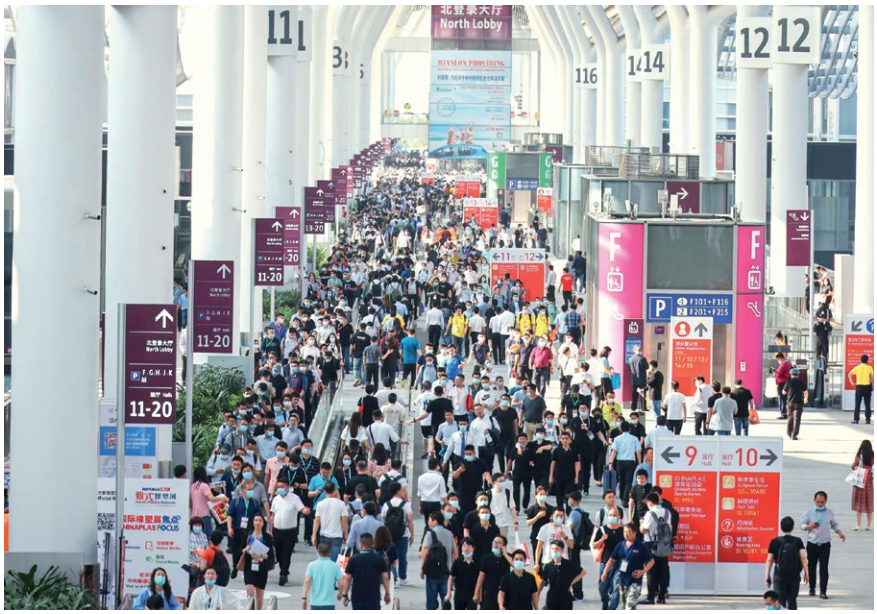
POWTECH
26 - 28 September, 2023
Nuremberg / Germany
www.powtech.de

Interplas
26 - 28 September, 2023
Burmingham / UK
interplasuk.com

Fakuma 2023
17 - 21 October, 2023
Friedrichshafen / Germany
www.fakuma-messe.de

SPE Thermoforming Conference 2023
24 - 26 October, 2023
Cleveland, Ohio, USA
https://thermoformingdivision.com

CHINAPLAS 2023



CHINAPLAS 2023 will be held at the Shenzhen World Exhibition and Convention Center (SWECC) on April 17-20, 2023

■ Many companies in Asia are export-oriented nowadays, fueling the expansion of international trade in the region. The Regional Comprehensive Economic Partnership (RCEP), entered into force on 1 January 2022, is set to create the largest free trade bloc in the world among the 15 signatories, and shall further provide an impetus to Asian production. CHINAPLAS will be staged at the Shenzhen World Exhibition and Convention Center (SWECC), Shenzhen, on April 17-20, 2023. This flagship event for plastics and rubber industries shall help buyers unlock the RCEP opportunities, and plug into the prosperous prospects brought by the Guangdong-Hong Kong-Macao Greater Bay Area (GBA).

Under the theme of "A Brighter and Shared Future, Powered by Innovation", CHINAPLAS 2023 will bring together the most innovative plastics solutions and relevant market trends in one place with an exhibition area of 380,000 sqm. Buyers from all over the world shall discover a well mixture of global and Chinese technologies, covering a wide range of application industries that are transforming the end market.

The 15 signatories to the RCEP agreement, including China, 10 ASEAN member states, South Korea, Japan, Australia, and New Zealand, allows preferential market access for specific products in selected RCEP markets. Businesses in the region will now benefit from tariff elimination on more than 90% of goods over time. These products range from plastics and mineral fuels to miscellaneous food preparations and beverages, and other chemical products. With this fresh impetus injected by the RCEP, Asia is growing into the global manufacturing hub.

According to the statistics from the United Nations, Asia's industrial value-added rose significantly from US$2.7 trillion in 2000 to US$9.4 trillion in 2019, whilst Asia's share of world industrial value-added expanded from 35.9% to 50.9%. Among them, the share of China rocketed from 6.4% to 24.9%, while the share of ASEAN also went up from 2.8% to 4.8%. Focusing on the 15 members of the RCEP, they had a combined share of 40.2% by 2019, compared to 29.4% in 2000. Data revealed by Chinese Customs shows that, in 2021, imports and exports between China and the other 14 RCEP members totalled RMB 12.07 trillion (up 18.1% by year), accounting for 30.9% of China's total foreign trade value. Thanks to the liberalization under the RCEP, such development is expected to grow further in the next decade and create tremendous prospects for plastics and rubber industries.

Shenzhen together with Hong Kong in GBA shall generate synergy to expedite the global expansion of companies. For Shenzhen, with the strong policy support from the Central Government, it is expected to further grow into a center of innovation, entrepreneurship, and creativity. Hong Kong, with its strengths as an international trading hub, has long been a premium business platform to handle outbound investments from the mainland, including those to ASEAN and other RCEP members. These advantages shall give Shenzhen and Hong Kong a unique significance in such global expansion.

In April 2023, CHINAPLAS will return to Shenzhen, the gateway city to the GBA and RCEP, as well as the thriving innovation and technology hub in Southern China, converging different end markets and quality suppliers to foster collaborations and inspire innovations. The upgrading technologies and ever-smarter solutions in CHINAPLAS 2023 shall better assist the industry not only to capture these emerging opportunities in RCEP and GBA, but also to react fast in the rapidly changing market like now.

It is expected that there shall be more than 3,900 renowned exhibitors in CHINAPLAS 2023, including 9 country/region pavilions from Austria, France, Germany, Italy, Japan, Switzerland, United Kingdom, United States, and Taiwan region. The 18 theme zones, located at Machinery Halls and Chemical & Raw Material Halls, shall cover injection molding solutions, extrusion machinery, 3D technologies, recycling technology, smart manufacturing solutions, bioplastics, composites and high performance materials, thermoplastic elastomers & rubber, etc.

A lot of can't-miss concurrent events will be organized during CHINAPLAS 2023

CHINAPLAS has become a preferred platform for the plastics and rubber industries to debut new products and solutions, and showcase innovative materials and machinery technologies. Not to mention the cutting-edge technologies and practical solutions from all over the world, many strong-rising Chinese technologies from local suppliers growing towards "Professionalization, Refinement, Specialization and Innovation" will also be introduced. Buyers from different application industries, such as automotive, building materials, electronics & electric, medical & healthcare, new energy, packaging, recycling, and sports & leisure, shall be excited about the technologies and solutions presented in the fairground.

Besides the showcase, a lot of can't-miss concurrent events, including but not limited to a variety of seminars on the circular economy, smart manufacturing, and design & innovation, will also be organized during CHINAPLAS 2023, making it a weighty occasion to explore the breakthrough and advancement of plastics and rubber industries.

Adsale Exhibition Services Ltd.
www.chinaplasonline.com

CHINAPLAS has become a preferred platform to debut products and showcase innovative technologies

Collaboration

■ Solvay has teamed up with French start-up Ostium in a joint project designed to enable the mechanical recycling of end-of-life single-use surgical instruments molded in glass-fiber reinforced Ixef® polyarylamide (PARA) from Solvay's portfolio of specialty polymers.

The initiative is the first for valuable polymers to be recycled and upcycled from used healthcare devices, proving that the medical safety provided by high-performance polymers such as Solvay's Ixef® PARA in single-use surgical instruments, can be reconciled with the need for greater sustainability and resource efficiency.

"Our customers in the healthcare industry must meet strict regulatory demands, while at the same time striving to minimize the carbon footprint of their products and support the reduction of hospitals and clinics' end-of-life waste," says Claire Guerrero, Global Marketing Manager Sustainability at Solvay. "We identified a gap between these challenges, which prompted us to forge this unique collaboration for developing a breakthrough recycling process for used surgical instruments that are commonly disposed of by incineration rather than reclaiming their high material value. By controlling every step in the loop from the original Ixef® PARA to the upcycled PARA compound, we will be able to ensure its high quality, purity, and performance for demanding downstream applications and can make a significant contribution to a more sustainable polymer economy."

Ostium Group, a French start-up specializing in the design and manufacture of instruments for hip, knee, shoulder, and trauma orthopedic surgery, will supply hospitals with new custom surgical kits made with Ixef® PARA and collect the contaminated instruments after use. This will also promote the replacement of metal surgical instruments with lightweight polymer designs and help medical facilities reduce their time and cost for sterilization, and disposal as well as lower their carbon footprint.

The partnership with a regionally recognized leader in the treatment and recycling of waste from healthcare activities with infectious risks, was key to developing a

(Photo: Solvay)

dedicated mechanical process to clean, sort, and grind the collected material, delivering high-quality polymer feedstock that can be used in the production of new polymers. In this way, end-of-life surgical instruments can become part of a circular ecosystem that prevents the loss of valuable material and reduces the consumption of fossil resources.

Finally, Solvay is evaluating upcycling options and how to integrate back this recycled feedstock into new high-performance PARA compounds. Initial trials have shown that the recycle-based PARA compound provides a very high level of performance, with up to 85% of flexural properties and no loss in excellent surface appearance when compared with the virgin grade, with the additional advantage of a lower carbon footprint.

In view of regulations in place in the healthcare market with constraints on the use of recycled materials, Solvay is targeting open-loop downstream solutions in which the recycled material will find a second life in high-end markets such as automotive and sports and leisure equipment.

Ixef® is a registered trademark of Solvay.

Solvay
www.solvay.com

Stretch Cast Film from Recycled Material – Expertise Pooled to Offer Efficient Solutions

■ Gneuss and COLINES® have worked together to offer manufacturers of stretch film the possibility of using recycled polymer.

COLINES® offers a special, proven cast & blown film extrusion process for handling recycled material, with the help of the Gneuss RSFgenius Melt Filtration System from Gneuss, COLINES® has already proven this process with up to 40 % recycled content in the manufacture of 10 µm stretch film.

The constant melt pressure offered by the Gneuss RSFgenius Melt Filtration System is a major benefit when processing recycled material and the efficient self-cleaning function of the RSFgenius means not only no production disturbances and of course not production interruptions whatsoever. Further, the Gneuss RSFgenius Melt Filtration System operates fully automatically and only rarely needs any attention – another key advantage in the highly automated COLINES® extrusion process.

Gneuss Kunststofftechnik GmbH
www.gneuss.com

COLINES® spa
www.colines.it

PLAST 2023

The organization of PLAST-International Exhibition for the Plastics and Rubber Industries which will take place from 5 to 8 September 2023 at the Fiera Milano exhibition centre in Rho-Pero has started its journey.

One year before the inauguration, PLAST secretariat has definitively put in motion the organizational machine of the Milanese event, activating the registrations for new exhibitors. On the other hand, 30 thousand square meters have been already reserved by approximately 600 exhibitors of PLAST 2021, which has been postponed to 2023 due to the pandemic. PLAST 2023 was officially launched at the K 2022 in Düsseldorf.

The last edition of this international trade fair, organized by Promaplast srl in 2018, hosted over 1,500 exhibitors on a net area of 55 thousand square metres, and welcomed at least 63 thousand visitors from all over the world.

PLAST 2018

AMAPLAST: A Più Srl
www.a-piu-srl.com
www.plastonline.org

Acquisition Completed

■ The acquisition of the engineering company Herbold Meckesheim, has formally been completed. Herbold Meckesheim will be integrated with Coperion's recycling product lines into its new Recycling Business Unit that plans to offer complete solutions for plastics recycling processing.

Coperion will combine its strengths as an international industrial and technological leader with Herbold Meckesheim, a specialist in mechanical recycling of plastics and plastic waste, and together they will form a united business approach. Herbold Meckesheim will continue to operate at its existing location and retain its name. Both companies will combine their capabilities in the field of recycling and integrate to build modular systems and plant solutions that cover a broad sector of the circular economy, as well as large sections of the globe with their combined sales and service network.

The Recycling Business Unit plans to offer complete, innovative solutions leveraging both Coperion and Herbold Meckesheim's complementary technologies. From mechanical processing — shredding, washing, separating, drying, and agglomerating of plastics — to bulk material handling, feeding and extrusion, as well as compounding and pelletizing, this Business Unit encompasses the complete process chain.

With their combined global service network that supports installations and startups, competent and rapid service is also available on site. Additionally, state-of-the-art test centers for product development as well as customer trials are available to customers. Before interested parties make significant investments, they can undertake in-depth testing of every process step in the test labs.

Werner Herbold, CEO, Herbold Meckesheim GmbH (left) and Markus Parzer, President, Polymer Division, Coperion (Photo: Coperion GmbH, Stuttgart)

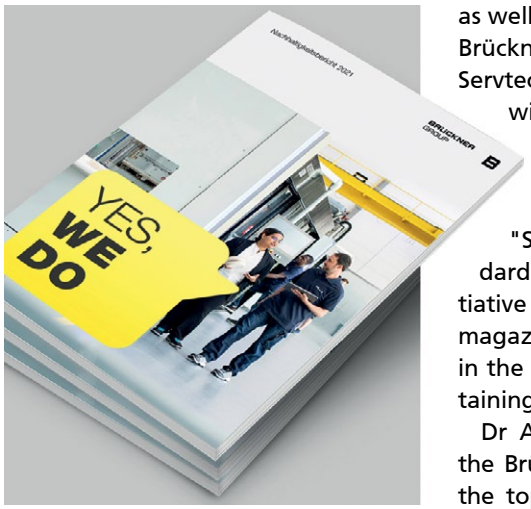
The Recycling Business Unit plans to offer complete plants and systems for recycling PET, polyolefins, film, or rigid plastic. From mechanical processing to solvent-based and chemical recycling to complete solutions for highly automated to modular recycling lines, offering complete systems helps us deliver additional value to our customers. Engineering and service during the equipment's entire operating life is also available.

Coperion GmbH
www.coperion.com

Herbold Meckesheim GmbH
www.herbold.com

First Sustainability Report

■ The companies of the Brückner Group in Siegsdorf are increasingly aligning their strategy, products and processes with the principles of sustainability. To this end, explicit sustainability management has been established in all companies over the past two years. All this is the basis of the Brückner Group's Sustainability Report, which has now been published for the first time.



The report covers the holding company with headquarters in Siegsdorf, as well as its four member companies Brückner Maschinenbau, Brückner Servtec, Kiefel and PackSys Global with their respective subsidiaries and all foreign locations. It consists of a performance section, which is based on the "Sustainability Reporting Standards" of the Global Reporting Initiative (GRI), and an accompanying magazine, which refers to highlights in the sustainability area in an entertaining way.

Dr Axel von Wiedersperg, CEO of the Brückner Group: "In many areas, the topic of sustainability is nothing new for us. As a family-owned company, we have always been committed not only to doing the right thing in the short term, but also to putting our actions into a wider context. We are convinced that lasting success is based on excellent, sustainable products, fair treatment of employees and business partners, and environmentally friendly actions. For this very reason, we are very pleased to present our first sustainability report to the public."

The reporting period of the current sustainability report is primarily the year 2020. In addition, data from the 2021 financial year and current developments from the first half of 2022 have been presented where possible. The next sustainability report is planned for 2024.

Brückner Group GmbH
www.brueckner.com

Strategic Partnership Delivers Best Practice Example of a Closed Recycling Loop for PET–Based Multilayer

■ Multilayer packaging based on polyethylene terephthalate (PET) can have a bright and sustainable future. This is the message of the strategic partnership of four leading technology companies, whose closed-loop recycling model is sparking new discussions on the role PET-based multilayer will play in tomorrow's packaging industry.

The European Green Deal requires all packaging to be reusable or recyclable by 2030 – a regulation that is perceived as particularly challenging for multilayer packaging, since its layers first need to be separated before entering recycling streams. However, that perception could be about to change. Sulayr, a recycling company operating in Europe, has successfully commercialized a multilayer recycling process that achieves 'closed-loop' status and enables PET to be reused with virtually zero waste. With this, a circular economy practice for PET containing packaging materials already exists, but this process can be improved and become more practical and effective, if the whole value chain works together with the target to make the separation of the layers easier.

Industrial adhesives specialist BASF, packaging machinery OEM Bobst and films expert Evertis are supporting Sulayr in this endeavour. Together, the companies form a strategic partnership combining expertise from across the entire packaging value chain. Their collaborative contributions are key to the success of this impressive recycling process, and its potential for adoption at a bigger scale.

At the core of the process is a multilayer film produced by Evertis, comprising PET and polyethylene (PE) layers, laminated with a BASF' Epotal® water-based adhesive and processed with a Bobst coater. Multilayer films are used for various packaging materials; after use, the waste is delivered to sorting facilities. Sulayr can use the so-called waste as raw material, ensuring a closed-loop. The company separates the multilayers and makes the PET available for re-use, with recycled PET delivered to Evertis and other film producers who then restart the cycle.

This is seen as an important step towards universal recycling of PET, enabling its continued use in a Green Deal-compliant packaging economy. The process can apply to post-consumer and post-industrial waste – meaning it has enormous potential to transform the entire PET-based packaging use model.

Sulayr has been able to separate different types of multilayers since 2009, but the speed and cost-effectiveness of the process depends on the debonding of the films. Miguel Ángel Arena, CEO of Sulayr, said: "Our technologies enable us to delaminate most types of PET-containing multilayers and bring the recycled PET back to the industry. However, we see a difference in the trays coming from the post-use phase to our facility. With BASF's water-based Epotal® adhesives for example, our separation process is simplified, because the adhesive allows a quick and easy separation with a high quality of the recyclates which is not the case with solvent-based adhesives for example. We are sure that a streamlined process can help scale up the recyclability of PET-based multilayers, giving the packaging industry a new way to meet its sustainability challenges."

One way to optimize the recycling process is to produce all PET/PE trays under specific conditions that facilitate easy separation. This is an area in which the partners are collaborating: before bringing a new laminate to market, Evertis for example, qualifies it to be recyclable in Sulayr's process, ensuring its layers can be separated easily.

The four partners emphasize that collaboration, as well as cutting-edge technology, is key to the success of the process.

BASF
www.basf.com
Bobst
www.bobst.com
Evertis
www.evertis.com
Sulayr
https://sulayrgs.com

New Member of the Group Management Board Appointed

■ After more than 30 years of service, Michael Heidemann will be leaving the Zeppelin Group at the end of June 2023.

Fred Cordes will take over his new position as member of the Zeppelin Group Management Board effective January 1, 2023. He has held various management positions at Zeppelin since 1995 and in 2017, as successor to Michael Heidemann, took over as Chairman of the Management Board of Zeppelin Baumaschinen GmbH and Head of the Construction Equipment Central Europe strategic business unit. In addition to his responsibilities on the Group Management Board, Fred Cordes will also continue to perform these tasks jointly.

"We are very pleased that we have been able to recruit Fred Cordes, an extremely experienced and highly competent manager and colleague, to the Group Management Board. He has been an important sales strategist and marketing specialist at Zeppelin for 27 years. With his in-depth industry experience, he meets all the requirements for successfully implementing the set goals," stated Andreas Brand, Chairman of the Supervisory Board of Zeppelin GmbH. Groundbreaking sales channels and digital offerings have been created in recent years under the leadership of Mr. Cordes, such as the construction equipment configurator and the Baggerbörse excavator exchange.

(© Zeppelin GmbH)

"Fred Cordes continues to demonstrate new pathways for the construction equipment business and we are proud to be successfully filling this important key role on the Zeppelin Group Management Board with good, internal succession planning. I look forward to rewarding collaboration in the future," adds Group CEO Peter Gerstmann.

Zeppelin GmbH
zeppelin.com

Cooperation

■ Milliken & Company is partnering with Finnish flexible packaging giant Huhtamaki Group to develop a more sustainable, mono-material laminate for use in tubes targeting cosmetics, toothpaste and other personal-care applications.

The results of this joint effort, designed to create a healthier future, have been on display at the K 2022 trade fair. Milliken displayed high-density polyethylene (HDPE) tubes produced using Huhtamaki laminates optimized with Milliken UltraGuard™ Solutions technology.

With the market's keen focus on recycling and circularity, it is more vital than ever to find technologies that can eliminate the typical metalized (usually aluminum) layers while maintaining the necessary barrier properties, especially against water vapor and oxygen transmission needed in personal-care applications.

By improving the barrier properties of HDPE film by up to 50 percent, UltraGuard Solutions contribute to sustainability by enabling more mono-material construction of popular products such as stand-up flexible pouches and tubes and making them ultimately more recyclable. These improved barrier properties also allow for downgauging of the polyethylene (PE) film, resulting in a lighter-weight end product and a reduction in the amount of resin needed to achieve the desired result.


Huhtamaki, Milliken partner to design for circularity (Photo © 2022 Milliken & Company)

Huhtamaki's work on this project fits in perfectly with its blueloop™ initiative for sustainable, flexible packaging. Huhtamaki blueloop is a product portfolio aiming to make flexible packaging circular by introducing a range of recyclable solutions with mono-material structures using polypropylene (PP), PE and paper. The blueloop program contains recyclable and sustainable laminate solutions, with dedicated criteria, to ensure the resulting mono-HDPE-laminate is fully recyclable and approved by RecyClass.

"The tube resulting from this joint development work is opaque with a silver shine, making it ideal for beauty product applications," said Dr. Detlev Schulz, Senior Manager – Sustainability and Business Development for Huhtamaki's Global Tube Laminates business. "White would work as well, offering outstanding moisture barrier and improved oxygen transmission for all who don't need a shiny silver option." The most likely end uses will be in 40 to 200 ml tubes.

Milliken & Company
milliken.com

New Brand Identity

■ As part of the revision of its corporate design, motan has carried out a comprehensive rebranding. For its 75th anniversary, the motan group is giving itself a new brand identity. Fresh and transparent, the company presented itself with a new logo, new slogan and a clear 2-brand strategy on a likewise newly designed exhibition stand at K 2022.

"What is important for our customers as well as the employees is that the sales structure will of course be retained and that the new brand identity will not have any organisational impact on the corporate structure," explains Carl Litherland, CMO of the motan Group.

As part of the revised umbrella brand strategy, among other things the company names were standardised and simplified. In principle, all companies of the group operate under the umbrella brand "motan". The parent company continues to be motan holding gmbh with headquarters in Constance. The clear structure that has now been created ensures a uniform orientation and positioning of the companies and contributes to a high degree of external transparency.

Thus, "colortronic" will no longer appear in the company names in future. In September last year, the final colortronic product was assimilated into the motan brand. This long process of integration which has taken place over the last 15 years has now come to an end. Over this time the companies have grown together culturally and organizationally to form a corporate group. Litherland emphasises that the sales and service organisation and tech centre at the Friedrichsdorf location remains open for business as usual.

Clarity and simplicity also apply to the naming of future companies, as Litherland explains using the example of Bolder automation GmbH, Limburg, which was acquired in July 2021. The company will be renamed "motan extrusion engineering gmbh" and fully integrated into the motan group. This will also involve the integration of the products into the motan portfolio. Important: The company offices of motan extrusion engineering gmbh remain in Limburg.

motan group with new brand identity (motan group)

The subsidiary specialises in the development and construction of control systems for continuous processes in the plastics industry, especially for extrusion and blow moulding. As before, sales will be handled by the motan sales companies.

motan has also tidied up its product portfolio. The future 2-brand strategy comprises the brands "motan" as a premium brand for customer-specific system solutions and "swift " for quickly deliverable individual products as well as for standard solutions in the systems business.

The establishment of the 2-brand strategy is accompanied by a renaming of the swift products. Irrespective of this, the various superordinate product lines (dosing and mixing, drying, conveying as well as controls) will remain unchanged. In terms of applications, motan continues to cover the most important areas of plastics manufacturing and processing with injection moulding, extrusion, blow moulding and compounding.

Regardless of the application, motan attaches great importance to the proven motan quality as well as to the well-known motan culture. The latter applies to customer care and consultation as well as to the internal culture.

"Zero Loss" – new slogan emphasises sustainability

Sustainability has long been anchored in the motan corporate philosophy. Among other things, the responsible use of available resources is at the centre of product development.

But the new slogan "Zero Loss" expresses much more in a short and concise way. In addition to ecological responsibility, for example by avoiding material or energy losses through appropriately designed raw materials handling systems, "Zero Loss" encompasses numerous other aspects in the sense of economic as well as social responsibility. Plant availability makes a significant contribution to high productivity, for which, in turn, innovative technical solutions are a prerequisite besides service. These include, for example, the digitalisation of the production process chain or the integration of intelligent sensor technology to avoid potential losses. In this respect, motan is pursuing the goal of a sustainable, future-oriented company policy with "Zero Loss", which in turn benefits the entire company.

motan Gruppe
www.motan-colortronic.com

New Headquarters for Sub-Saharan Africa

■ In the presence of the South African Environment Minister, the ALPLA Group opened a state-of-the-art production site in Lanseria near Johannesburg. In the new headquarters for Sub-Saharan Africa, the internationally active plastic packaging specialist is merging five previous locations in South Africa under one roof. All ALPLA technologies, processes and materials are combined in the Lanseria plant and the first apprenticeship programme of ALPLA in Africa will start at the beginning of 2023.

35,000 square metres of covered production, administration and storage space, another 12,500 for future expansion, and 30,000 square metres of roof area equipped with solar panels: with the new plant in Lanseria, ALPLA is setting the course for further growth in Sub-Saharan Africa.

Important visitors at the opening of ALPLA's new headquarters for Sub-Saharan Africa in Lanseria on 12 October: ALPLA CEO Philipp Lehner welcomed the South African Environment Minister Barbara Creecy and the Premier of Gauteng Panyaza Lesufi

"All of Sub-Saharan Africa is on the upswing, the markets have enormous potential. Our investment in South Africa is a clear commitment to the continent. In this way, we are increasing our competitiveness and guaranteeing the long-term regional supply of safe, affordable and sustainable packaging solutions," explains ALPLA CEO Philipp Lehner. "Here in Lanseria we concentrate our expertise, optimise production processes, use state-of-the-art equipment and create energy-efficient operations," adds Mike Resnicek, Managing Director Sub-Saharan Africa at ALPLA. The plant has one of the largest solar installations on a privately owned manufacturing building in South Africa.

The new location in the industrial area north of Johannesburg combines and builds on the five previous plants in Harrismith, Denver, Isando, Kempton Park and Samrand. The departments, employees and machines were relocated step by step. Around 350 employees will start working in Lanseria and their number is subject to further growth. The new plant will produce bottles, closures and special packaging for the food, personal and home care, chemical, cleaning agent and pharmaceutical industries – a total of around 3.5 billion pieces per year.

ALPLA uses six different technologies, including injection and compression moulding, injection stretch blow moulding and extrusion blow moulding. In addition to international corporations, ALPLA also supplies smaller local companies with plastic packaging solutions. "The new plant with its modern equipment meets all international quality standards, is operated efficiently and increases flexibility. Our customers in the region will benefit from this service in the long term," says Javier Delgado, ALPLA Regional Managing Director Africa, Middle East and Turkey.

With the new plant in Lanseria, ALPLA is also promoting its own training of specialists and has established a dual education and apprenticeship programme. This dual system of practical and theoretical training based on the Austrian model is already in operation at the ALPLA locations in Germany, Mexico, India, Poland and China. From 2023, the first 12 South African apprentices are to begin their training in the plastics technology and machining technology trades in the 'Future Corner' training centre in Lanseria.

At the new plant in Lanseria, ALPLA uses state-of-the-art technology and machinery to produce high-quality bottles, closures and special packaging – around 3.5 billion units per year in total (Pictures, Copyright: ALPLA)

ALPLA
www.alpla.com

New BOPP Film Capacity for Sub-Saharan Africa

The demand for high-quality packaging film is constantly rising in the heart of Africa, especially in Nigeria, the most populous country in Africa. Taking this into account, Nigeria's leading producer Tempo Paper Pulp & Packaging Ltd. (Ota, Ogun State), has recently started their second BOPP film line, 8.7m wide, with an annual capacity of 42,000 tons per year.

Dr. Seun Obasanjo, CEO of the Tempo Group, says: "With our second BOPP film line, we are significantly increasing our yearly production capacity from 33,000 to 75,000 tons of high-quality films for the local packaging industry, which has come to expect the best from Tempo. Our state-of-the-art BOPP line from Brückner Maschinenbau is designed to meet the trends for recyclability and ultrahigh barrier films, also by manufacturing thicker films with advanced properties for monolayers. This enables us to fulfil new market demands and requirements."

Tempo's future plans include a further BO film lines expansion, a second CPP film production line and more metallizers. Tempo Group's Deputy Managing Director Nassos Sidirofagis adds: "Our goal is to offer our customers a broad product diversity. In a sense of "one-stop-shopping" they should be able to find their packaging solutions at one place – at Tempo. And our investment strategy is long-term. We are already thinking of several investments to consolidate our position in the market. I am quite sure that Tempo together with Brückner can achieve this goal.''

Brückner Maschinenbau GmbH & Co.KG
www.brueckner.com

Anniversary – 25 Years of Working for a Better Future

■ Together with customers, business partners, employees and companions from all over the world, Next Generation Recyclingmaschinen celebrated its 25th anniversary at the newly built plant in Feldkirchen/Donau, Austria, on September 16.

Since its beginnings in 1996, NGR has been one of the technological pioneers in the field of sustainable plastics recycling. Driven by the mission "working for a better future", the company has been building and developing customized recycling machines for Post Industrial Recycling, Post Consumer Recycling and PET Improvement for more than 25 years now.

A lot has changed since the company was founded. Early on, the recycling specialists focused on internationalization and today deliver technologies from Upper Austria to the entire world. Fueled by the global demand for resource conservation, NGR has grown strongly in recent years, has continuously developed and has more than doubled the size of the plant in Feldkirchen. The headquarters now employs 180 people regionally, working on intelligent solutions for the plastics industry. "We couldn't have done it without support," agree COO, Erich Fürst and CTO, Günther Klammer. "It was time to celebrate our 25th anniversary and thank our customers, partners, highly motivated employees and all supporters. "And what better way to do that than with a big gala, the jubilarians thought, and invited everyone to celebrate together at the newly built plant at the company's headquarters in Feldkirchen/Donau.

Successful celebration in the assembly hall

The newly built assembly hall was transformed into a gala stage. The festively decorated location did not suggest that heavy recycling machines had been manufactured here just a short time before. Punctually at 6:00 p.m., the founders and owners welcomed the 500 international guests and let presenter Nina Kraft elicit deep insights into the beginnings


(Photo: NGR)

of the company. One of the founders, Gerold Barth, recalled how the first recycling machine was assembled on his parents' farm. "With little capital, but all the more enthusiasm and passion, we worked around the clock on our idea," Barth reminisced. Josef Hochreiter, CEO of Next Generation Group described another important milestone for the company, recounting how a sailing trip around bays and beaches littered with plastic waste led to the development of new technologies for recycling post-consumer waste. Afterwards, the management thanked all companions as well as the entire staff for their commitment and dedication and gave an outlook on the company's future plans.

NGR company certainly does not want to rest on its laurels and has already developed the next generation of highly efficient recycling machines for a better future. "After all, the more cost-effective, high-quality and energy-saving the reprocessing succeeds, the more plastic will actually be recycled," the specialists are sure.

Next Generation Recyclingmaschinen GmbH
www.ngr-world.com

Single-Point Concentricity Extrusion Tooling

■ Guill Tool & Engineering introduced a new single-point concentricity extrusion crosshead that uses micro-fine adjustment screws for precise concentricity adjustment. The precision of concentricity reaches 0.008" or finer per revolution. This single point concentricity adjustment is a unique Guill innovation for the extrusion of thin-walled jacketing and precision ID/OD tubing. One adjustment bolt controls 360° of adjustment.

Features of the single-point crosshead include a patented cam-lock deflector for quick changeovers, with a residence time of one minute at .5 lb/hr material flow, optimized usage with extruders measuring ½" and ¾", and a max die ID of .250."

Additionally, the Guill single-point crosshead offers great flexibility to its users. It not only accepts both vacuum and micro-air accessories, but is also ideal for pressure and sleeving applications. Fluoropolymer designs are available upon request.

Guill Tool & Engineering
www.guill.com

New Interim Director for Sales, Marketing and Service

■ In addition to his current function as Director of Sales at SIKORA, Holger Lieder took over the interim responsibility for the areas Marketing and Service. In his function he directly reports to the CEO, Dr. Christian Frank.

Dr. Jörg Wissdorf, who was previously responsible for the areas of Sales, Marketing and Service as a Member of the Executive Board, is taking on new professional challenges. "We would like to thank Dr. Wissdorf for his great commitment over the past two and a half years. He has initiated important change processes and successfully implemented many projects. We wish him all the best personally and professionally", says Prof. Thomas Sikora, Chairman of the Supervisory Board of SIKORA AG.

Holger Lieder has many years of experience in Sales and has a comprehensive technical understanding of SIKORA technologies and market requirements. "We are pleased that with Holger Lieder we could win a very experienced manager within the company for the interim responsibility", says Prof. Sikora. "Mr. Lieder knows the customers and their needs very well and we are convinced that the successful progress and growth of all business areas will continue under his direction", Prof. Sikora further explains.

SIKORA AG
www.sikora.net

Holger Lieder takes over, in addition to Sales, the position of the interim Director of the Service and Marketing departments at SIKORA AG

New Dual Leadership

■ KIEFEL Packaging, the Upper Austrian subsidiary of the Freilassing-based mechanical engineering company KIEFEL, has been under dual management since September 1, 2022. Andreas Staudinger took on the duties of the previous managing director Robin Roth in spring and now heads the location as Chief Sales Officer (CSO) jointly with Christian Töscher as Chief Operations Officer (COO).

Kiefel would like to continue the positive business development of the site, especially regarding tools and automation solutions. "KIEFEL Packaging GmbH in Micheldorf develops highly innovative tool and automation solutions for our machines for processing plastics and natural fibers," emphasizes Thomas Halletz, CEO of Kiefel. "With the new dual leadership on site, we can further strengthen the location and jointly accelerate the progress of advance technological development projects."

KIEFEL GmbH
www.kiefel.com

From left: Christian Töscher (COO) and Andreas Staudinger (CSO) are the new dual managers of Kiefel's Austrian site (© KIEFEL GmbH)

New Chief Marketing Officer

■ Davis-Standard announces the appointment of Anthony Toklo as Chief Marketing Officer. In his new role, Tony will assume global responsibility for Davis-Standard's marketing, communications, and branding initiatives.

"Tony's technical and commercial background coupled with more than 20 years of experience make him uniquely qualified for this position," said Giovanni Spitale, Davis-Standard CEO. "His industry knowledge, leadership ability, and success in implementing market growth strategies will be advantageous to our organization. We are pleased to have him on our senior leadership team."

Davis-Standard, LLC
www.davis-standard.com

Anthony Toklo

Subsidiary Opened to Grow Within the Indian Market

– Focusing on Expanding the Rubber Business Unit

■ India is a steady growing market and is becoming more important for TROESTER. With the increasing market share in India, TROESTER has decided to establish the subsidiary "TROESTER India Pvt. Ltd." based in Chennai (Tamil Nadu). With this new organization TROESTER shows active presence in the local market, especially to provide high quality service to their customers, to strengthen their project management activities and technical support with experienced supervisors, electricians and software experts.

Dr. Peter Schmidt, Saravana Kumar, Markus Wachter (left to right)

TROESTER has installed more than 45 extrusion units in the Rubber Business Division over the last years, in addition to the developed base of ex-HF and is present at all Indian tire manufacturer, spread over 20 plants across the country. TROESTER has achieved excellent results thus far – thanks to strong market partnerships. The focus will be on expanding this business area in terms of providing sustainable and innovative service solutions.

The company was able to hire Saravana Kumar as Managing Director TROESTER India Pvt. Ltd.. Saravana has been active in the Indian tire industry for over 18 years and is well known among industry partners and customers. The contract was successfully signed by all parties on site in the past month. TROESTER President Dr. Peter Schmidt and General Manager Markus Wachter already shared the news of TROESTER's expansion in the market during the "Global Tyre and Rubber Conference 2022" held at Chennai, with many of their key Indian customers. This was received with pleasure and encourages TROESTER's way forward.

"I am humbled and energized to work together with the extraordinary talents of the industry. The potential of this industry, opportunities for TROESTER to deliver to our customers and the growing demands are exciting. Our customers seeking service solutions in a sustainable and innovative way will be the major driver and added value for our company. With TROESTER already having a strong base in India, TROESTER India shall focus on constant improvement of our deliverables with new talents onboard" says Mr. Kumar on taking on his new role with TROESTER.

TROESTER President Dr. Peter Schmidt & Managing Director Saravana Kumar

TROESTER GmbH & Co. KG
www.troester.de

Investment Accelerated with New Recycling Plant to Support Circular Economy

■ GCR Group has announced the plan to open a new dedicated recycling plant in Castellet i La Gornal, Barcelona, Spain, enhancing the group's capability to serve increased global demand for its CICLIC range of recycled polyolefins (R-polyolefins). The 200,000 Tonnes (200kT) plant, commissioning in 2023, when fully operational in 2025, will be one of the largest of its kind and is a significant step for the group; the capacity for CICLIC combined with that for the GRANIC® range of sustainable mineral-filled masterbatches and compounds will reach 500kT. GCR has a global reach, exporting 85% of its sales to over 100 countries.

GCR strongly believes collaboration on the developing of new products and applications is essential to accelerate the circular economy. The company hosts the 'co-creation' process across the value chain, where brand owners, converters, and suppliers can come together to practically test ideas and create precisely-defined sustainable solutions.

Whilst many announcements support the circular economy, this investment will enable GCR to host a leading position in Europe and reflects a long-term vision created more than 20 years ago when GCR Group was founded and a

GCR accelerates investment with new recycling plant to support circular economy

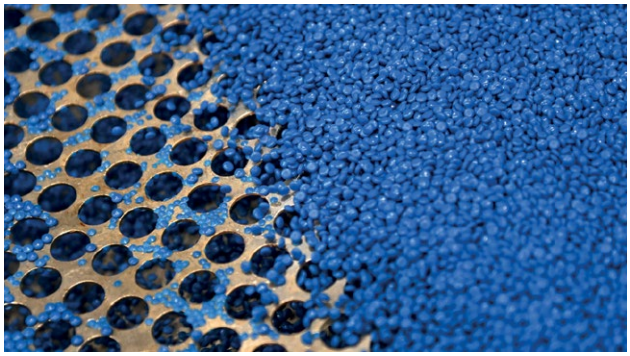
track record of continuous investment in that vision. This long experience in materials technology, innovation, and a relentless focus on quality and consistency enables GCR to partner with companies to deliver practical and realistic answers to sustainability questions.

When brand owners think about using recycled plastics, they are often concerned about issues such as consistency of supply, traceability and whether the mechanical performance can match the virgin polymers they currently use. For many development engineers, reaching future internal and external sustainability targets is increasingly challenging. However, GCR's existing CICLIC up-cycled products and 'co-creation' approach to customisation can solve these problems.

The CICLIC -polyolefins are based on up-cycling fully traceable waste streams and can deliver similar and consistent material properties as the virgin plastic. By replacing virgin plastic with these grades, Carbon Footprint certification can be 60 to 80% lower without compromising performance and quality. GCR believes companies facing sustainability challenges can find the answers through GCR's products and long experience.

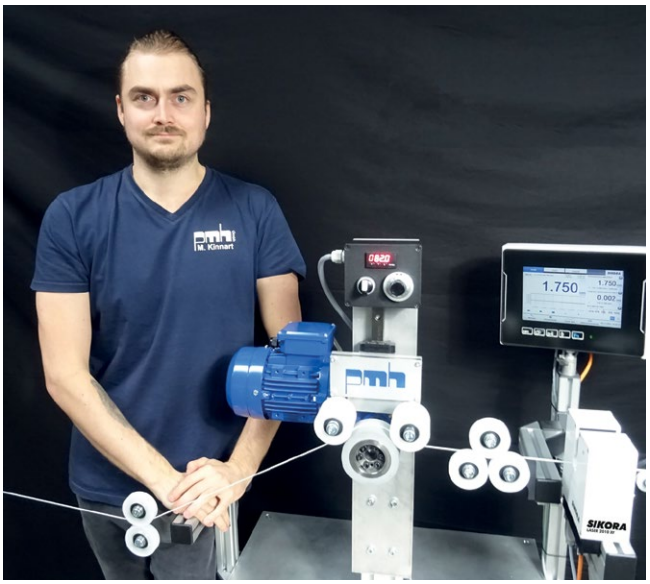
GCR's extensive experience in polymer materials technology helps develop customised solutions in partnership with suppliers and end customers in a collaborative partnership. The new production plant is complemented by a recently opened Innovation Hub with 'Co-creation' space, enabling the development of new formulations and the production and testing of compounds on a pilot plant.

GCR
gcrgroup.es



Quality Control of Filaments

■ PMH GmbH is a German manufacturer of individual extrusion lines with over 30 years of expertise. In addition to standard extrusion lines, the plant in Königswinter, Germany, also manufactures complete filament lines in which filaments for the 3D printer industry are produced. To ensure the highest possible quality in the production of the filaments, PMH equips its lines with measuring and control technology from SIKORA.



Michael Kinnart, Technical Director at PMH GmbH, at the filament line with integrated diameter gauge head, LASER 2010 XY, from SIKORA

Especially in the production of high-quality filaments, for example for 3D printing of medical technology, manufacturers are increasingly focusing on quality assurance. Filaments are thermoplastics that are assembled as wire on spools and used in the 3D printing manufacturing process. PMH manufactures complete extrusion filament lines, consisting of extruder, water bath, haul-off and winder, for filaments with diameter ranges of 1.75 mm or 2.85 mm. For customers who require quality control, PMH offers measurement and control of the filament line by means of a 2-axis laser measurement as standard. For this purpose, one LASER 2010 XY from SIKORA is used per filament line. The gauge head based on laser technology precisely measures the diameter of the filaments. In combination with an ECOCONTROL 600 processor system, the filament dimensions are visualized and automatically controlled, ensuring a high-quality filament. This inline quality control prevents, for example, feeding errors and possible clogging of the 3D printer.

"The demand for the use of measuring technology in the production of high-quality filaments is unbroken," says Michael Kinnart, Technical Director at PMH GmbH. "All the more, we are pleased to have found a reliable partner in SIKORA, who has a suitable solution for our customer needs, which can be easily integrated into our complete lines."

Sikora AG
www.sikora.net

pmh gmbh
www.pmh-extruder.de

25th Anniversary

■ This year, Pfeiffer Vacuum Components & Solutions is celebrating its 25th anniversary. The company has one of the largest storage facilities for vacuum components in Europe. The portfolio includes standard vacuum chambers as well as customized vacuum chambers and solutions with wide-ranging functions, which are manufactured using the latest technologies. On a site totaling 12,660 square meters, a workforce of around 140 people contributes to the success of the company.

In the words of Guido Hamacher, Managing Director of Pfeiffer Vacuum Components & Solutions: "We are proud that our company has developed steadily over recent years and has invested in new technologies. In the past two years, in particular, we were able to attract many sizable projects from customers in Germany and internationally. Our products are used in a range of exciting applications. These include semiconductor chip manufacture, space simulation systems, energy storage, hydrogen tanks and forensic systems for detecting fingerprints."

Pfeiffer Vacuum Components & Solutions is a wholly owned subsidiary of Pfeiffer Vacuum Technology AG, a company which stands for innovative vacuum technology,

Pfeiffer Vacuum Components & Solutions GmbH in Göttingen, Germany

Pfeiffer Vacuum employs over 3,500 people worldwide and has 10 production sites and more than 20 sales and service companies.

Pfeiffer Vacuum GmbH
www.pfeiffer-vacuum.com

"Triple–Play" in Sheet Extrusion Machinery Maintenance Program for Flat Dies, Chrome Rolls and Feed Screws

■ Processing Technologies International (PTi) announced the release of its next generation flat die servicing system – uCAMS™ (Universal Cleaning Assembly and Maintenance System). Introduced in 2021 the original uCAMS™ was developed to be the foundation of any offline die maintenance program, serving as a single manifold flat die servicing system capable of accommodating a variety of die widths. An enhanced design evolving from the original concept (patent pending) has brought even greater effectiveness to servicing flat dies with the upgrade for maintenance of chrome rolls and feed screws, called uCAMS™ Plus. This enhanced design transforms the functionality of the flat die service system into a multi-purpose "triple-play" for sheet extrusion related critical component maintenance and service, unmatched throughout the industry.

Mobility, ease of use by a single operator and safe accessibility continues to be a significant advantage of PTi's uCAMS™. All previous features included in the original uCAMS™ have evolved into the newest generation including a hand wheel mechanism for splitting flat dies and trunnion supports coupled with rollers that permit rotating die halves 180 degrees with ease (See picture 1).

Available in three models – 1500S, 2000S and 2500S, uCAMS™ accommodates servicing flat dies ranging from 710 to 2,500mm widths via its unique adjustable trunnion supports, eliminating the need for multiple, width-specific carts and/or trunnions.

This unique design feature allows uCAMS™ users to maximize application flexibilities by permitting effortless width adjustments to take place via the turn of an adjustment wheel, thereby allowing for precise placement and alignment of the die in the trunnion upright cradles that are integral to the unit. Furthermore, digital width position indicators coupled with special threaded mechanisms prevent unwanted position changes from occurring and accommodates a variety of die widths to be serviced with quick and easy set-ups.

Picture 1: Die secured into uCAMS™ trunnion uprights and opens fully via means of a handwheel

Sold as an add-on upgrade to the base system, uCAMS™ Plus transforms into a servicing station for chrome rolls and feed screws, increasing the purpose of the system threefold. With the addition of special uCAMS™ Plus components, the system is converted for the purpose of servicing chrome rolls and feed screws (See picture 2).

Picture 2: uCAMS™ Plus for servicing chrome rolls and feed screws

uCAMS™ Plus upgrade is comprised of two (2) pairs of A-frame and feed screw roller support assemblies, each of which features stowage cradles that keep the components organized when not being used. By mounting the A-frame supports via means of toolless quick-pins to the upright die trunnion support cradles of the uCAMS™ frame, the unit is now able to service chrome rolls. Additionally, the A-frame supports feature recessed bronze rollers used to protect the chrome roll journals from damage when rotating in the supports during service activities. Similarly, by mounting the feed screw roller assemblies onto the A-frame supports via toolless quick-pins, the unit is easily converted into a feed screw service station. The maximum weight limits for uCAMS™ service components are 6000 lbs. for flat dies and chrome rolls and 2000 lbs for feed screws.

Processing Technologies International, LLC (PTi)
www.ptiextruders.com.

New 500 Series Rubber/Silicone Extrusion Crosshead

■ Guill Tool introduced the NEW 500 Series crosshead with MAGS gum space adjustment. The 500 Series is designed specifically for the flow characteristics and unique processing challenges of elastomeric compounds. One of the key features engineered by Guill on this new crosshead design is the mechanically assisted gum space (MAGS) adjustment system. This new method of gum space adjustment allows the operator to make an effortless adjustment from a single point using a common socket wrench. No more need to struggle with multiple nuts and bolts in order to adjust gum space, which leads to faster adjustments. The visual indicator on the core tube allows the operator to see how far the gum space has been moved, making those adjustments much more accurate and repeatable.

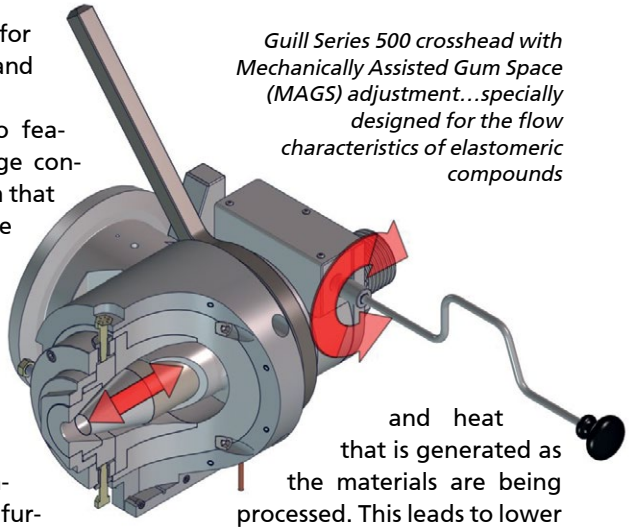
The hardware-free and patented cam lock design of the NEW 500 Series from Guill means no time is wasted unbolting and re-securing fasteners for disassembly and re-assembly. Only half of a rotation of the cam nut is required to loosen and automatically extract the deflector from the head body, which is another time saver. Also, with no undercuts on the deflector, there are no material hang-ups when extracting the deflector, allowing for faster and easier cleaning and changeover.

The NEW 500 Series also features the latest Center-Stage concentricity adjustment system that significantly reduces pressure on the tooling, allowing easier and more precise concentricity adjustments without loosening the face bolts. Easy-Out inserts for the adjusting bolts also allow simple replacement of locked or damaged adjusting bolts, which further saves on repair and downtime.

Another innovative feature of this new rubber/silicone crosshead is a cast aluminum liquid-fed cooling sleeve that allows the user to switch out the cooling jacket in the event of a line obstruction, again reducing downtime compared to traditional integrated cooling systems.

The NEW 500 Series crosshead with MAGS gum space adjustment is a drop-in replacement on most existing NRM lines, however this crosshead design can also be adapted to fit any extruder design or line layout.

The addition of a newly designed flow inlet channel reduces the shear and heat that is generated as the materials are being processed. This leads to lower head pressures allowing the material to move through the head in a much more balanced and even flow.



Guill Series 500 crosshead with Mechanically Assisted Gum Space (MAGS) adjustment…specially designed for the flow characteristics of elastomeric compounds

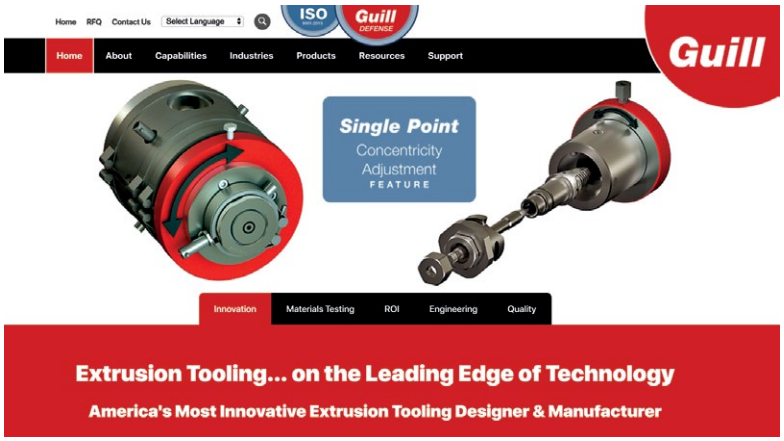
All crossheads supplied by Guill are furnished with a tool kit for assembly and disassembly as well as a detailed operator's instruction manual. The engineering team at Guill will gladly assist users in the implementation and operation of the NEW 500 series crosshead.

For a video of the NEW Guill 500 Series crosshead with MAGS gum space adjustment, please go to: *https://youtu.be/jeNovmMtcBs*

Guill Tool & Engineering Co., Inc.
www.guill.com

Newly Designed, Information-packed Website Released

■ Guill Tool & Engineering just rolled out a new website. The new site offers a detailed look at the company's entire product line, which offers a wide-range of standard and custom designed extrusion tooling, including crossheads, in-line heads, rotary heads and extrusion tips & dies.



The site includes a full listing of all product and specifications with calculation tools to compute annual cost of lengthy concentricity adjustments and crosshead replacement analysis, plus calculators to compute drawdown, feet per minute and pounds per hour. The website includes charts and tables with detailed data and a full library of downloadable literature organized by industry. Guill markets its equipment worldwide and is currently seeking new representatives in select countries.

The Guill website is mobile phone friendly and offers the convenience of allowing users to request a quote online.

The new website has already been awarded the 2018 American Web Design Award from Graphic Design USA.

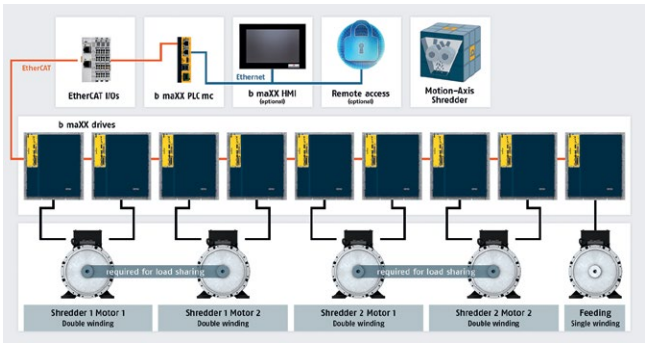
Guill Tool & Engineering
www.guill.com

Ready-Made Subsystem for Industrial Shredder Control

■ Industrial shredders crush materials made of plastic, wood, metal, and waste to a required size. Depending on the requirements, each shredder is made up of different components, which are to be operated efficiently without damaging the machine. In addition to robust hardware, an extensive software package is needed to control the shredder. However, the software programming requires appropriate know-how and ties up the manufacturer's capacities.

With the Motion-Axis Shredder software template, the automation specialist Baumüller in Nuremberg is introducing a template for the recycling branch to the market. It saves developers lots of time, particularly during a project's start phase, and they can fully concentrate on the process programming. The template contains a large number of the required machine functions as well as motion modules for actuating the servo motors, templates for the machine visualization, and functions such as EtherCAT diagnosis, commissioning mode, load balancing, and water cooling control.

Improved diagnostic options: Among other things, the user interface can be used to call up the current template status or to check the interface values



Preprogrammed and can be integrated immediately: With the Motion-Axis Shredder software template, it is possible to control high-performance shredders with up to two crusher units, each with two dual-winding motors as well as a motor for the feed (Photos: Baumüller)

The already programmed subsystem contains frequently needed machine functions for crushing and can be easily loaded into the shredder control system. The movements then merely have to be parameterized. The machine programmer no longer has to worry about the basics during development. For the machine builder, this means a faster time to market, and significantly reduced development expenditure.

The software package is suitable for single and twin-shaft crushers, with and without feeder, and can be integrated into different hardware concepts.

Baumüller Gruppe
www.baumueller.com

Agreement on the Production and Procurement of Pyrolysis Oil from Mixed Plastic Waste

■ BASF has concluded a framework agreement for the purchase of pyrolysis oil from mixed plastic waste with ARCUS Greencycling Technologies. The two companies want to contribute their respective know-how to the value chain in order to return plastic waste that is not recycled mechanically in the sense of a circular economy and reduce CO2 emissions. ARCUS will supply BASF with pyrolysis oil and expand its capacities in the coming years. BASF will use the oil in its production plants as a raw material for the production of Ccycled™ products.

The ARCUS process demonstration unit built in Frankfurt is the first of its kind on a commercial scale in Germany and produces pyrolysis oil from mixed plastic waste that is not recycled mechanically. "With the guaranteed purchase of the oil produced, ARCUS can build further plants with higher capacity and thus make a significant contribution to closing material cycles together with BASF," said Daniel Odenthal, Chief Operating Officer of ARCUS Greencycling Technologies. The agreement foresees the take-up to be increased to up to 100,000 tons of pyrolysis oil per year.

The agreement is another building block in the expansion of BASF's ChemCyclingTM business, which focuses on the chemical recycling of non-recycled post-consumer plastic waste on an industrial scale. BASF will feed the pyrolysis oil supplied by ARCUS into its production network in Ludwigshafen, replacing fossil resources. The proportion of recycled raw material is allocated to products manufactured in the Verbund using a mass balance approach. The attribution is checked by an

independent auditor. The products that bear the name suffix "Ccycled™" have exactly the same properties as conventionally manufactured products. Customers

can therefore process them in the same way and also use them in applications that place high demands on quality and performance.

BASF SE
www.basf.com

ARCUS Greencycling Technologies GmbH
www.arcus-greencycling.com

More Sustainable Flexible Packaging Formats Containing 50% Post-Consumer Recyclate

■ Borealis announces that two separate collaborations with long-standing value chain partners have resulted in new, fully recyclable flexible packaging formats, which incorporate 50% post-consumer recyclate (PCR). The use of new low density polyethylene (LDPE) PCR grades developed and produced by mechanical recycling expert Ecoplast, a member of the Borealis Group, have made it possible to achieve a 35% carbon footprint reduction in raw material production when compared to virgin polyolefins, whilst maintaining the same film thickness as with virgin materials. Co-operation in the spirit of EverMinds™ is accelerating plastics circularity by fulfilling industry demand for sustainable flexible packaging solutions with lower environmental impact.

Application development with partners Plastotecnica and ACMI results in fully recyclable multilayer collation shrink film with appealing optics and pack stability (Photo: © Borealis)

Plastotecnica, a major European producer of polyethylene (PE) packaging; and ACMI SpA, a leading Italian manufacturer of high-tech and flexible bottling and packaging lines and machines, worked together with Borealis to incorporate more PCR material into the multilayer shrink wrap of a beverage multipack. In developing the application, the partners were able to identify the ideal material solution to achieve optimal mechanical and packaging performance (particularly pack stability) whilst obtaining outstanding film optics and printability: the soon-to-be-launched LDPE PCR grade Ecoplast CWT 100VL with very low gel content; BorShape™ FX1003, a mechanical booster based on the proprietary Borstar® technology; and Anteo™ FK2715, a key ingredient for ensuring higher performance and more sustainable multilayer applications. The result is a fully recyclable film containing 50% PCR and a 35% lower carbon footprint in the raw material production process. The shrink film packaging trials were conducted by ACMI.

As a member of the Rani Group, a leading Nordic producer of smart packaging solutions, Rani Plast used its film and production expertise to work together with polymers experts at Borealis to develop a film structure for more sustainable flexible packaging used for tissue paper products such as kitchen roll (paper towels) and toilet paper. As an improved version of its predecessor NAV 101, the soon-to-be-launched Borealis LDPE PCR grade NAV 101L is best in class when it comes to balancing gel performance and circularity. Manufactured using household post-consumer and commercial waste, its gel content is significantly lower in order to provide excellent processability. It also offers excellent printability and optics. Combined with the Borstar® technology-based mechanical booster BorShape™ FX1003, the grade delivers optimal mechanical performance, thus enabling the incorporation of more than 50% PCR content without increasing film thickness. Finally, Anteo FK2715 provides enhanced sealing, good optics and reinforced stiffness performance.

Borealis AG
www.borealisgroup.com

Acquisition

■ Walki Group has signed a definitive agreement to acquire 100 % of the shares in folian GmbH. Since 1999, the family-owned company has been providing forward-looking flexible packaging solutions for blue chip brands in the food industry. The company specializes in the production of high quality converted flexibles using flexographic printing and other downstream finishing services.

"With this acquisition we continue to implement our value chain expansion strategy and to strengthen our presence in the prominent Central European market. With unique capabilities such as the use of water-based printing inks, folian compliments Walki´s extensive portfolio by offering lower CO2 footprint solutions in comparison with more conventional alternatives" says Leif Frilund, President and CEO of Walki Group.

"We are very pleased to join forces with the Walki team, with which we share the same vision about more sustainable packaging solutions and which is committed to our companies' long-term growth. We believe that by combining our market knowledge and strong customer focus with Walki's deep material know-how and R&D capabilities, we can provide even stronger benefits to our customers and a successful future for our employees," say Stefan and Manuela Muschter.

folian will support the continued growth of Walki's flexible packaging business and will become part of the global Business Area Consumer Packaging.

Walki
walki.com

Georg Menges Award 2022

■ Ulrich Reifenhäuser, CSO of the Reifenhäuser Group, was awarded the prestigious Georg Menges Prize 2022 at the 31st International Colloquium on Plastics Technology in Aachen from September 7-8, 2022. The prize recognizes individuals or groups who have rendered outstanding services to the transfer of research results into industrial practice. The sponsors of the award are the Plastics and Rubber section of Germany's Mechanical Engineering Industry Association (VDMA), together with PlasticsEurope Deutschland and the Association of Sponsors of the Institute for Plastics Processing (IKV) in Industry and Craft at RWTH University. The award is traditionally presented every two years during the colloquium organized by the IKV. Ulrich Reifenhäuser is the first businessman to receive the Georg Menges Award.

The award was presented by Professor Dr.-Ing. Christian Hopmann, Director of the IKV and Dr.-Ing. Herbert Müller, Chairman of the Board of the IKV Sponsors' Association. In his laudatory speech, Professor Hopmann highlighted Ulrich Reifenhäuser's great and successful commitment to the industry and his tireless search for optimal solutions that are sustainable in the best sense of the word, and praised him as a personality of integrity and integration.

Ulrich Reifenhäuser has been a member of the Reifenhäuser Group management since 1992 and is responsible for international line sales. Together with his brother Bernd Reifenhäuser, he manages the company in the third generation. Ulrich Reifenhäuser has been a board member of the VDMA Plastics and Rubber Machinery Association for more than 25 years and has been its chairman since 2010. During this time, he has built up an international network that is second to none. In 2020, he was inducted into the Plastics Hall of Fame, as was the award's namesake, and in 2022 he co-chaired the world's leading plastics trade fair in Düsseldorf for the seventh time in a row as "President of K show."

Presentation of the Georg Menges Award 2022. From left to right: Prof. Dr.-Ing. Christian Hopmann, Dipl.-Kfm. Ulrich Reifenhäuser and Dr.-Ing. Herbert Müller (Photo: IKV/ Dominik Fröls)

"This award and the recognition by the organizations behind it mean a lot to me," said Ulrich Reifenhäuser. "My passion for plastics has always motivated me to promote the importance and benefits of this material worldwide. At the same time, I am aware of the importance of a holistic and effective circular economy for plastics. Supporting and accelerating this process is my primary goal. In this respect, the K trade show was and is the ideal platform for demonstrating new approaches to how we as an industry can produce and use plastics more efficiently and, above all, more sustainably. This year we will show how circular economy can succeed and what CO_2 savings potential plastic – as an unbeatably light and high-performance material – has."

Reifenhäuser Gruppe
www.reifenhauser.com

Course Portfolio with New Topics

■ The SKZ is growing. In 2023, the so-called Modellfabrik will go into operation, allowing the most modern production processes to be mapped. Numerous new areas in the form of pilot plants and laboratories are available for research. Therefore, there will also be no lack of input for the educational formats. The range of topics for professional development at Europe's largest plastics institute will grow in 2023 to include topics such as thermosets, regulations for food packaging and blown film extrusion.

"The content of our courses is constantly being revised. In the industrial environment, it is simply a basic requirement to always convey the current state of the art. That's why innovative topics from our research are also incorporated directly. Personally, I am very much looking forward to the new courses on blown film extrusion, which we will also be able to hold with practical exercises thanks to a new facility in 2023," explains Matthias Ruff, Head of Sales at SKZ. In addition to the basics of thermosets in material science and processing, special topics such as filled microcapsules in plastic compounds will also be covered. The SKZ is thus growing in its range of further education courses in order to update and expand the educational standard of specialists.

SKZ – KFE gGmbH
www.skz.de

The new SKZ education catalogue (Image source: SKZ)

K 2022 – Trade Fair Results Fulfil Highest Expectations

The joy of the plastics and rubber industry at finally being able to exchange ideas in person on a global level again after three years characterised K 2022 Düsseldorf and ensured an excellent mood among the 3,037 exhibitors. The companies reported extraordinarily good leads and a marked willingness to invest among trade visitors, mentioning promising new customer relations and the conclusion of numerous, in part, spontaneous business deals.

"K in Düsseldorf has once again fulfilled highest expectations. It continues to be the most international, complete and innovative trade fair of the global plastics and rubber industry," says Erhard Wienkamp, Managing Director at Messe Düsseldorf, delighting at the good results and adding: "The trade fair has impressively demonstrated just how valuable face-to-face networking, chance meetings and physical brand and product experiences are. We are very satisfied to see that K 2022 succeeded in sending out strong signals as an innovation driver of the industry and that our exhibitors did business with a high number of international customers with great decision-making powers."

176,000 trade visitors from all continents travelled to their most relevant sectoral event in Düsseldorf. At over 70% the proportion of international guests at K 2022 remained at a constantly high level.

(Photos: Messe Düsseldorf, Constanze Tillmann)

The verdict from Ulrich Reifenhäuser, Chairman of the Exhibitor Advisory Board at K 2022, is also very positive: "After hardly any trade fairs could take place worldwide also on a national level over the past three years, K 2022 was all the more eagerly anticipated as the world's No. 1 trade fair of the plastics and rubber industry and succeeded in providing fresh impetus in all sectors of our industry. The many, in part, unexpected concrete contract negotiations held at the trade fair speak for themselves!"

The current unpredictability and uncertainty of events does make for a tight situation in the sector overall, but this did not do any harm to exhibitor commitment and visitor interest, quite on the opposite: "Especially now in turbulent times and where the plastics industry is undergoing transformation towards the circular economy K 2022 was the ideal place to jointly and actively chart the course for the future," sums up Ulrich Reifenhäuser.

It was especially the wealth of new technology developments that raw materials producers, machine manufacturers and plastics processors presented for implementing the circular economy, resource conservation and climate protection that thrilled the trade visitors. Commenting on this Ulrich Reifenhäuser says: "It can be clearly felt that all companies have embraced the need to take on social responsibility and think about plastics in a sustainable way from the beginning of the process chain. The variety of solutions, machinery and products for transformation towards a circular economy presented at K 2022 was incredible."

The trade visitors at this year's K travelled from 157 nations to the Rhine. Next to Germany, those European countries strongly represented on the visitors' part included the Netherlands, Italy, Turkey, France, Belgium, Poland and Spain. With 42% of visitors coming from overseas, the reach of K is as high as usual among the international trade audience. While visitors from the East Asian region, in particular, were less well rep-

resented than at K three years ago due to the currently more difficult conditions in those countries on account of quarantine regulations, numerous visitors from the USA, Brazil and India were welcomed at K 2022.

For around two thirds of all visitors polled machinery and plant construction ranked first in terms of interest. 57% and, hence 5% more than at K 2019, said they were interested in raw and auxiliary materials, with recyclates and bioplastics being particularly popular. For 28% semi-finished products and technical parts made of plastics and rubber were the main reason for coming (multiple responses possible). Over 70% of all visitors come from top and middle management.

Top marks were given by visitors to K 2022 for the completeness of its ranges and its mapping of the entire supply chain. 98% of all professionals stated they had fully achieved the goals associated with their visit.

During the eight trade fair days it became clear that this year's K was right on target with its selection of hot topics, circular economy, climate protection and digitalisation. In terms of investment intentions, machinery and equipment for processing and recycling stood out at 43%. The focus was particularly on sustainability, but also on circular economy and energy/resource efficiency in production. Around 40% of decision-makers said they were looking into the topic of decarbonisation.

The K specials, which also focused on the three hot topics, were also very well received. The official special show, 'Plastics Shape the Future', focused on the economic, social and ecological challenges and potential solutions around the K guiding topics in high-calibre discussions and lectures, and this show was well attended throughout. The Circular Economy Forum, where the VDMA and 13 of its member companies impressively demonstrated the importance of technology in the implementation of the circular economy in the plastics industry, scored points with the international audience with live demonstrations and a great deal of well-founded knowledge as well as detailed information on the topic.

The next K Düsseldorf will be held from 8 to 15 October 2025.

www.k-online.de

Engineering at the Highest Level

New die plate technology enables stable pelletizing of LCP by using an underwater pelletizing system for the first time

The pelletizing of LCP (liquid crystal polymers) has always been a big challenge. ECON engineers faced this problem and proved their technological leadership once again. The result is a breakthrough and milestone in the world of pelletizing. The groundbreaking further development of the patented Thermal Insulation Technology enables the pelletizing of LCP with an underwater pelletizing system for the first time in history.

LCP pellets – conventional technologies

The ECON technology ensures an easy and repeatable start-up process. "Long-term trials have shown that the Thermal Insulation Technology 2.0 is ready for 24/7 production," mentions Dominik Neumann (Head of R&D). By using the new technology, a very low pressure of 25 bar is built up at the die plate, which allows operation without using a melt pump. Compared to conventional technologies, the uniform pellets, with an outstanding smooth surface, increase the quality significantly. In addition, a very small amount of fines is produced.

In addition to LCP, the Thermal Insulation Technology 2.0 enables the continuous pelletizing of other high-temperature plastics, such as PPS and PEEK. "ECON welcomes interested customers to test their very own high-temperature polymer at any time in our technical center to prove the results to themselves," emphasizes Gerhard Hemetsberger (CSO).

LCP pellets – ECON Technology

ECON GmbH
www.econ.eu

Speed BOPP Line at K Show Contracted

A.J. Plast, one of the leading film manufacturers in South-East Asia, and Brückner Maschinenbau have one of the longest partnerships in the BO industry. Their current joint project is already Brückner's 15th film production line: a 5-layer, 10.4 metre wide BOPP line with a line speed of 600 metres per minute and an output of 7.5 tonnes per hour.

The project impresses with high production efficiency and takes an important step towards zero emissions, energy saving and carbon reduction. The technology used will not only drastically reduce energy consumption, but also reduce water consumption. The newly designed double air heat exchanger in the kiln process preheats fresh air and takes energy recycling to a new level.

A.J. Plast owner Kittiphat Suthisamphat says: "With our new line we increase productivity and reduce our energy consumption at the same time. That's two of our major goals for our future film production focusing on environmental sustainability – and with Brückner at our side we will reach them."

Xaver Sedlmeier, Sales Director at Brueckner Group Asia-Pacific: "We are very proud of this new project. In close cooperation we have designed a film stretching line that is completely tailored to the needs of A.J. Plast and the needs of the markets. It is always a pleasure to master challenging projects with the A.J. Plast team."

A.J. Plast owner Kittiphat Suthisamphat (right), Helmut Huber, Managing Director CSO, Brückner Maschinenbau (left)

Brückner Maschinenbau GmbH & Co.KG
www.brueckner.com

Circular Economy Solution – Whole Plant Equipment

Everplast is a supplier of plastic extrusion machines and has been in the plastic machinery industry for more than 30 years. The company is committed to providing their customers with customized and suitable equipment according to their needs. In the face of the coexistence of global business and environmental issues, Everplast has also made these issues their corporate development goal. Now the company is sharing the latest technology with the industry, and it is using their machine technology to improve customer satisfaction and production efficiency.

Everplast has customers and services in more than 100 countries around the world. With 2,100 sales records and thousands of applications for plastic extruders, the company can provide everything from big tube production lines to tiny guidewires for heart surgery. Everplast can meet the needs for their customers, whether it is a custom-made order for an academic unit or a whole plant equipment planning.

In recent years, environmental protection and sustainability have become mainstream in the world. To keep up with customers and the world, Everplast continues to research and develop technologies for extrusion molding of recycled materials such as: abandoned PET cloth + PP into a car trunk mat, waste wood + PE/PP into construction materials, waste coffee grounds into boardwalks, recycled slag and oyster shell powder slurry for 3D printing.

Solutions that bring the customers into circular economy – WPC extrusion production line

The use of waste wood chips and rice husk creates a higher environmental value for this type of waste. Compared to all-wood products, WPC products have a longer life, better weather resistance and lower maintenance costs. In addition, Everplast is continually developing extrusion technology for different materials. The company collaborated with their Japanese customer to develop an extrusion production line that can recycle waste gypsum board and turn them into new materials for use in sectors such as construction, interior decorating, art and design.

By using this solutions, the customers can solve the problem of waste, but also achieve the goals of recycling and circular economy.

In recent years, Everplast has been dedicated to the developing of different types of 3D printers for various applications and materials, including general plastic raw materials and engineering plastic raw materials. It is a new way for companies to develop new products, whether those are industrial parts or decorative objects.

Thanks to the pellet extrusion system, the printing speed of Everplast's 3D printer can increase by 70% compared with filament printing, substantially shortening the development time and reducing energy consumption. The company expects to offer fast and stable 3D printers and become an important global supplier.

All equipment Everplast makes are tested before leaving the factory to ensure each unit functions properly. No matter if its domestic or foreign customers, Everplast provides after-sales service to support customers' needs.

Everplast
www.everplast.com.tw

Innovative Recycling Solutions Attract Visitors at K 2022

The EREMA Group's review of K 2022 in Düsseldorf is positive all round. And that applies to the interest shown by visitors as well as to the number of plants sold. With all the group's companies together on one trade fair stand, the EREMA Group presented its entire range of products and services more comprehensively than ever before. Together with partners from the plastics industry, they made recycling and the circular economy a tangible experience for visitors to the Circonomic Centre.

"Recycling and the circular economy have arrived one hundred percent in the plastics industry. This year's K showed that very clearly," says Manfred Hackl, CEO of EREMA Group GmbH. The decision to have all group companies exhibiting on the same stand proved to be a good one, because they were able to provide an excellent overview of their wide-ranging machine portfolio and each of their innovations. There was no indication at the EREMA Group's stand or in the Circonomic Centre of the fact that K had fewer visitors overall this year than in 2019.

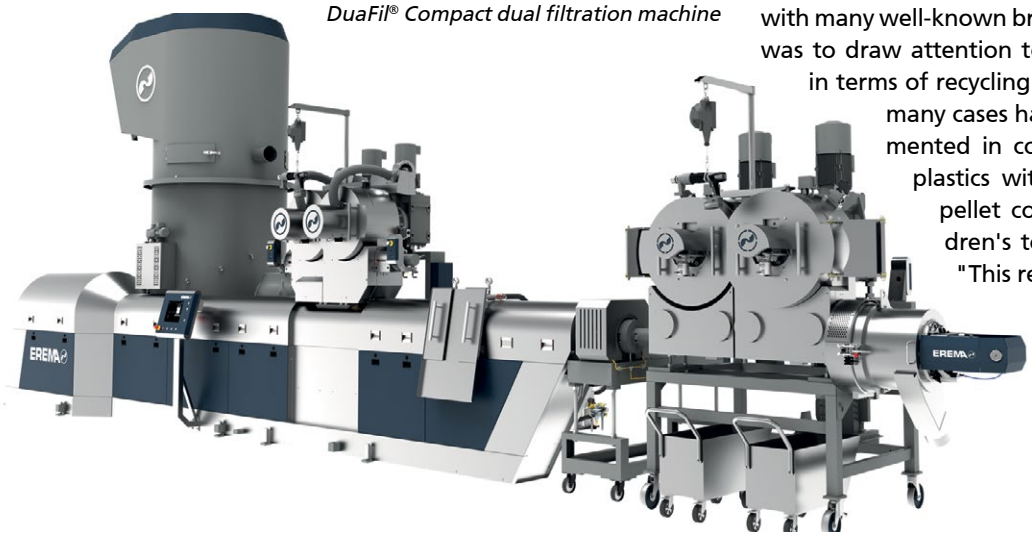
The absolute trade fair highlights included the INTAREMA® TVEplus® DuaFil® Compact double filtration machine, which EREMA presented for the first time, and the EcoGentle® plasticising unit. Both extrusion innovations achieve effective benefits for the quality of melt, recycled pellets, and final product, and set the benchmark in terms of energy efficiency for their post consumer and PET recycling applications. "We have already received the first orders for these two technologies, which confirms that we are meeting customer needs very well," says Hackl. This also applies to the READYMAC recycling machine made to stock by UMAC, which is an impressive, quickly-available all-rounder for standard applications, as well as to the new ALPHA XS edge trim recycling machine for the inhouse recycling segment made by PLASMAC. UMAC and PLASMAC are both EREMA Group companies.

The daily live recycling demonstrations and the exhibition with around 70 products made from recyclate attracted huge numbers of visitors to the EREMA Circonomc Centre at this year's K (Images: EREMA)

Other trade fair début appearances included the bottle-to-bottle application for the production of food contact compliant rPET pellets and new sizes of VACUREMA® technology plants, enabling throughputs of up to six tonnes per hour. On the VACUNITE® system – a combination of VACUREMA® Basic and VLean Solid State Polycondensation (SSP) – a larger series has also been added to the existing range. One of the new VACUNITE® 2621T 2.000 plants was ordered by an rPET manufacturer at the show.

It was not only the EREMA Group's trade fair stand that attracted visitors; the EREMA Circonomic Centre in the outdoor area also proved to be extremely popular. Twice a day, a total of twelve plastics streams of different degrees of contamination and bulk density were recycled live using an INTAREMA® TVEplus® machine. These live demonstrations, as well as the exhibition of around 70 products made from recyclate, were very well attended. The aim of the recycling machine manufacturer in the Circonomic Centre, together with many well-known brand partners from the value chain, was to draw attention to what is technologically possible in terms of recycling and the Circular Economy, and in many cases has already been successfully implemented in commercial terms. That is because plastics with one hundred percent recycled pellet content can now be found in children's toys as well as in food packaging. "This really opened the eyes of many visitors, and will help us implement new circular economy projects even more quickly in future," says Manfred Hackl.

One of EREMA's recycling extrusion innovations: INTAREMA® TVEplus® DuaFil® Compact dual filtration machine



EREMA Group GmbH
www.erema.com

Strategic Partnership

From left to right: Reto Maeder, Managing Director and Co-Owner of maku AG, Bernd Reifenhäuser, CEO of the Reifenhäuser Group, and Uwe Gaedike, Managing Director of Reifenhäuser Extrusion Systems, at K 2022 (Pictures: Reifenhäuser)

Reifenhäuser Extrusion Systems (RES) – the Reifenhäuser Group's business unit specializing in extrusion components – announced a strategic partnership with maku AG at K 2022. The aim of the cooperation is the joint marketing and further development of the automation system designed by maku for coextrusion adapters and slot dies.

The so-called PAM system (precise, autonomous, mechatronic) is available immediately and exclusively as an automation option for new Reifenhäuser dies and adapters, as well as for aftermarket dies across all manufacturers. PAM enables producers in the field of flat film and sheet production as well as extrusion coating to precisely control the entire hot part (coextrusion adapter and die) via the line's control panel. This is significantly faster and more accurate than conventional control by hand or expansion bolt automation. It enables faster start-up of good production, higher output with lower energy consumption, and thus significantly improved overall equipment efficiency (OEE). The decisive advantage lies in the use of motorized manual adjustment bolts that replace conventional thermal expansion bolts. Reifenhäuser presented the system for the first time at the K 2022.

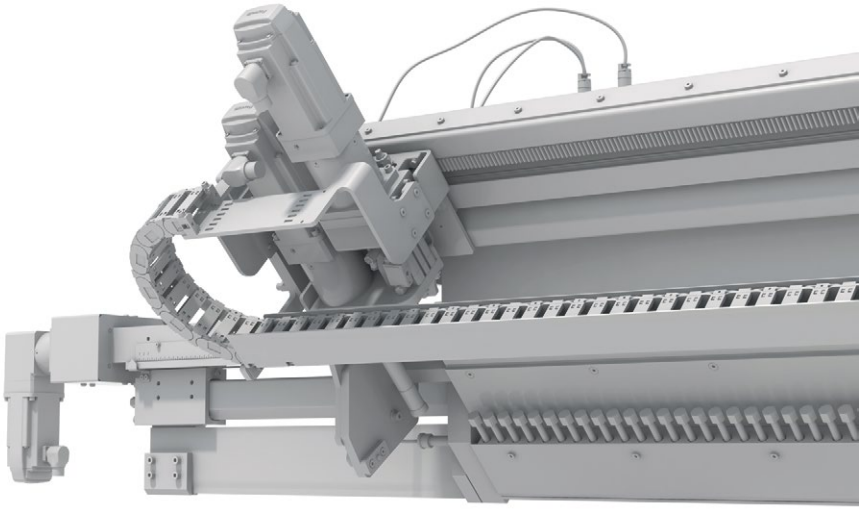
Uwe Gaedike, Managing Director of Reifenhäuser Extrusion Systems, explains, "The technology and experience of maku ideally completes our hot part competence. As RES, we manufacture extruder, coextrusion adapter and die completely in-house and thus know the entire extrusion process. With the automation option, we can now offer our customers a perfectly coordinated overall system that is second to none. Together with maku, we will establish the technology in the market and continuously develop it further. The special thing about this is that we also offer it as part of our refurbishment portfolio for all lines in the market."

Reto Maeder, Managing Director and Co-Owner of maku AG, adds, "We are very pleased to have found a strong partner in Reifenhäuser to now market our technology even more effectively globally. Together we will exploit the full potential of our cross-process know-how and create clear competitive advantages for our customers. This is nothing less than the best hot part competence combined with the highest possible level of automation in the market. At the same time, maku AG will continue its classic retrofit business on existing dies unchanged. Reifenhäuser's worldwide service network puts us in a position to offer our system to even more customers outside Europe."

Reifenhäuser Gruppe
www.reifenhauser.com

maku AG
www.maku-ag.ch

The decisive advantage of PAM dies lies in the use of motorized manual adjustment bolts that replace conventional thermal expansion bolts



Digital Offensive Launched

Countless producers of films and nonwovens could be more productive today if they fully exploited the enormous potential of digitalization. Reifenhäuser presented therefore a digital offensive at K 2022 to help all producers get started with digitalization. In doing so, the company is focusing on the empowerment and independence of customers – and is deliberately turning away from the usual vendor-centric approaches. Instead, Reifenhäuser offers easy-to-implement, open digital solutions designed to help producers of films or nonwovens worldwide to increase their production efficiency (OEE) independently and sustainably. All customers, regardless of company size, thus benefit from a new dimension of process transparency that for the first time includes all line manufacturers and line types of a production.

The core of the digital solution is the so-called c.Hub, a middleware that ensures the secure exchange of data between different IT systems, applications, extrusion machines and line controls. This includes Reifenhäuser systems as well as third-party systems. The c.Hub becomes the single point of truth for all production-relevant data by merging and harmonizing production data streams. The central advantage is that all users can access all data from anywhere at any time and document them securely. The data is collected and stored on premises without interfering with the production process. The producer retains full control over the data at all times.

"So far, digitization in our industry has mostly failed due to heterogeneous factories with machines and peripherals from different vendors and of different ages and types, as well as applications that are not connected with each other," says Daniel Kajan, Director Product & Operations at RE:, a Reifenhäuser Group subsidiary specializing in digital products for extrusion line operators. "Without looking at the big picture, however, production is inefficient and error-prone. Unnecessary complaints, material loss and downtime are the result. Only a cross-vendor solution maps the production reality of our customers and thus offers real benefits," Kajan continues.

Reifenhäuser enables cross-manufacturer data exchange between all line types and systems – and thus creates more transparency in production (Picture: Bettina Jopp-Witt/VM Verlag)

To enable customers to easily connect all their equipment in production, Reifenhäuser offers out-of-the-box connectors for the most important industrial protocols. They enable fast and complete acquisition of all production data. The associated ExtrusionOS software provides user-friendly applications and dashboards that help monitor, manage, store and analyze this data. Line operators can, for example, monitor the condition of their connected equipment and adjust it optimally based on the knowledge gained. They also have the option of monitoring defined thresholds and KPIs and, if desired, receiving notifications when thresholds are exceeded. This enables users to act faster and more efficiently, thereby significantly reducing errors and customer complaints. Legal requirements such as compliance with EFSA-relevant threshold values when processing recyclate for direct contact with food can be monitored and documented securely.

"Our open digital ecosystem helps line operators capture all production data from the first meter to the last meter of the roll, easily gain insights from it, and benefit from their data in the long run," Kajan explains.

The digital package can either be purchased together with Reifenhäuser machines or retrofitted on existing lines and servers.

Reifenhäuser Group
RE: GmbH
www.re-digital.io

26 Companies Presented R-Cycle at K 2022 –

Product Passport Enables Circular Economy for Plastic Products

R-Cycle – the digital product passport for plastic products – enables all stakeholders in the value chain to easily exchange recycling-relevant information in an open standard format across company boundaries and make it accessible for various applications, such as improved waste sorting. A total of 26 leading companies and organizations presented R-Cycle at K 2022 as part of a joint booth in the Circular Economy Forum.

Looking at today's waste streams, recyclable products – especially plastic packaging – cannot be sorted with sufficient accuracy for high-quality recycling. With R-Cycle, production machines read and record relevant data in a digital product passport, route it through the value chain, and make it retrievable via appropriate marking (e.g., QR codes or digital watermarks) on semi-finished and final products. In this way, waste sorting lines can easily identify recyclable packaging and form recycling-friendly and single-variety fractions. This is the basis for obtaining high-quality recyclates and building a functioning circular economy.

In addition to improving product sustainability, manufacturers also increase their process efficiency and product quality by using the digital product passport. Accurate information about source materials accelerates and optimizes production, while capturing proprietary product characteristics adds value for customers in the downstream value chain.

"Data exchange is the key to an efficient circular economy," Dr. Benedikt Brenken, Director R-Cycle, explains. "The data is already available at the individual stations of the value chain. They just need to be transmitted, aggregated and made usable via an open standard. This is exactly what we offer with R-Cycle."

R-Cycle was developed to market maturity by various technology companies and organizations along the entire lifecycle of plastic products and can be networked with all systems (e.g., PPS, ERP) and production facilities: from film, blow molding or injection molding machines to processing, packaging and filling machines to waste sorting and recycling lines. The traceability technology behind R-Cycle is based on GS1 standards – the leading global network for cross-industry process development and a founding member of R-Cycle.

R-Cycle captures all recycling-relevant data along the entire value chain via digital product passports (Photo: Bettina Jopp-Witt/VM Verlag)

R-Cycle is an interoperable infrastructure offered as software-as-a-service. In addition, an open community exists for interested companies, institutions or stakeholders who want to use, support or further develop R-Cycle. Members gain access to a broad network of application-experienced partners and know-how in digitalization and sustainability. The goal is to realize individual applications, generate benefits by networking the value chain and jointly establish R-Cycle worldwide. Interested companies can obtain all information about membership at: www.r-cycle.org

R-Cycle was awarded the prestigious "Sustainability Award" in the category "Driving the Circular Economy" in September 2022. The award was presented during this year's "Sustainable Packaging Summit" in Lisbon. The event is the leading international forum for sustainable packaging.

The digital product passport can be accessed via the digital watermarks hidden in the printed image of this All-PE pouch (Picture: R-Cycle)

ProData GmbH
www.r-cycle.org

Successful K Fair

K 2022 was a complete success for Next Generation Recyclingmaschinen GmbH (NGR). In addition to numerous completed orders, a great deal of global interest in the innovative PET recycling process of the Upper Austrian machine builder was generated. More and more brand owners worldwide rely on the LSP technology of NGR for the processing of post-consumer PET.

K trade fair was a great success for NGR

Driven by the mission statement "working for a better future", NGR presented its future-oriented technologies in the market segments Post Industrial Recycling, Post Consumer Recycling and PET Improvement at this year's K trade fair.

During the eight days of the fair, a large number visited booth to experience the future of plastics recycling live. "K 2022 was a complete success for us. The interest of trade visitors in our technologies was enormous," says a delighted Gerhard Ohler, CEO of the company, confirming that this interest resulted not only in a large number of inquiries, but also in an equally considerable number of orders in all three market segments.

As the world's leading trade show, this year's K trade show was once again the industry barometer for current trends and future developments in the plastics industry.

For Günther Klammer, CTO of NGR, the current developments in the industry are very pleasing: "Worldwide, more and more brand owners are focusing on the standards of tomorrow and are using our LSP technology for the processing of post-consumer PET. We are finding that Liquid State Polycondensation is a real game changer in PET improvement and is rapidly gaining popularity due to its better energy efficiency and outstanding cleaning performance. We believe it will soon become the widely accepted standard for bottle-to-bottle PET recycling."

NGR has been the leading manufacturer of LSP technology for years. Back in 2011, the machine builder decided to take a new approach to PET recycling. With the LSP process, a completely new way of processing PET waste back into food-grade material using an extremely efficient process was developed under the product name P:REACT. While conventional PET processing methods change the material properties in the solid phase of the plastic, requiring many hours, the decontamination of the material in the LSP process takes only minutes. In the LSP process, all impurities are removed from the PET melt while still in the liquid phase, which guarantees simultaneous upgrading of the plastic and recycling to the highest standards of the brand owners.

In direct comparison to conventional systems, NGR's LSP process offers an energy-efficient and, in terms of melt quality, better physical cleaning process.

Approvals by the FDA (Food and Drug Administration – USA) and the EFSA (European Food Safety Authority) certify that the LSP-Process is the most suitable recyclate for 100% contact in food packaging.

Trio of managing directors with owner Josef Hochreiter, left to right: Erich Fürst (COO); Josef Hochreiter (CEO der NEXT GENERATION GROUP); Gerhard Ohler (CEO); Günther Klammer (CTO). "Anyone who wants to set tomorrow's standards today and benefit from our many years of experience in PET recycling should opt for a system from Next Generation Recyclingmaschinen GmbH," the trio of managing directors, consisting of CEO Gerhard Ohler, CTO Günther Klammer and COO Erich Fürst, emphatically agree. (Photo: NGR)

In addition to the high mobility of the molecules in the liquid phase, the enormous surface area of the material strands contributes to the extensive cleaning. As a result, the quality of resulting material far exceeds the safe limits set by EFSA and FDA.

Due to the extraordinary cleaning performance, the processed PET can be recycled many times with no disadvantages, thus saving further valuable resources compared to Virgin PET or energy as with other packaging materials such as glass or aluminum.

While other manufacturers are now also working on LSP solutions for PET processing, the specialists from Upper Austria have already sold more than 50 systems in over 20 different countries and gained the critical experience and process knowledge in the process.

"Of course, it was initially a big risk for us to rely on a different technology," Günther Klammer notes. "But we always believed in success and have learned a lot over the years. We are now in a position to offer mature and completely developed solutions for our customers. Whether for film production, spun yarn production or beverage bottle preforms, our systems are running and we are thus a decisive step ahead," explains the CTO.

Next Generation Recyclingmaschinen GmbH (NGR)
www.ngr-world.com

Stretch Film Line with a Patented, Brand-new Triple Turret Winder Presented on K 2022

SML comes with a world debut in stretch film manufacturing to K2022: A patented triple turret winder for the PowerCast XL stretch film line. The W4000-4S-3T is the first winder in the market for manufacturing 2" stretch film hand rolls on a 4.5 m wide line. SML's new "three-turrets-in-one-frame" concept enables significantly higher production speeds for maximum output quantities – especially at the lighter 2" rolls.

"The PowerCast XL with the new turret winder W4000-4S-3T has yet to meet its match. The possibility to manufacture also 2" rolls on that 4.5 m wide increases the product diversity and productivity of our PowerCast stretch film line significantly," says SML Product Manager Thomas Rauscher. Until now, it was only possible to run 2" hand rolls on lines up to 3 m width, thus the new development boosts the output of hand rolls by about 50 %. As before, 3" hand rolls, machine rolls and jumbo rolls an also be manufactured, with ease, with this new solution.

"The trigger to develop a new winding system for 2" hand rolls for our 4.5 m wide PowerCast XL line came right from our customers. As a starting-point for our development works we took the proven double turret winder W4000-4S", Thomas Rauscher explains. The technical basis of the new winder W4000-4S-3T is the patented 'three turrets-in-one-frame concept'. Compared to other winders for wider lines, the three winding shafts with 1.5 m each are relatively short. This guarantees very stable production processes and allows significantly higher production speeds, especially at hand rolls.

Heat–resistant C–PET Light Cup Promotes Circular Economy

SML has joined forces with its partners Sukano AG and Kiefel Packaging B.V. The result of their common R&D is a C-PET light cup that combines transparency and recyclability as well as suitability for thermoformed hot-filling or microwavable products. Further advantages include short cycle times during thermoforming and a high stiffness. The newly developed C-PET light can thus be a reasonable option for manufacturers looking for an economic and easy-to-recycle alternative to PP and PS.

Transparency for recyclability

"Because easy recyclability is becoming increasingly important, we opted for a transparent C-PET solution at an early stage of our joint research and development work" says Max-Phillip Lutz, Product Manager at SML. Compared with other coloured PET or PP and PS products, the recycling process of C-PET light is considerably easier. C-PET light film can be smoothly reprocessed in existing facilities together with other post-consumer or post-industrial PET materials.

Max-Phillip Lutz, Product Manager at SML, at the K 2022 exhibition stand

Alternative to PS and PP

In general, C-PET is temperature resistant up to 220°C. However, this is not necessary for many applications and limits the output in thermoforming. In contrast, C-PET light was developed to withstand a maximum temperature of 100°C. The new C-PET light enables the manufacturing of transparent thermoforming products for hot-fill applications up to 100°C at output volumes comparable to those of conventional A-PET processes. Especially the shorter cycle times during thermoforming are an economic advantage compared with conventional C-PET.

Adjusting process technology

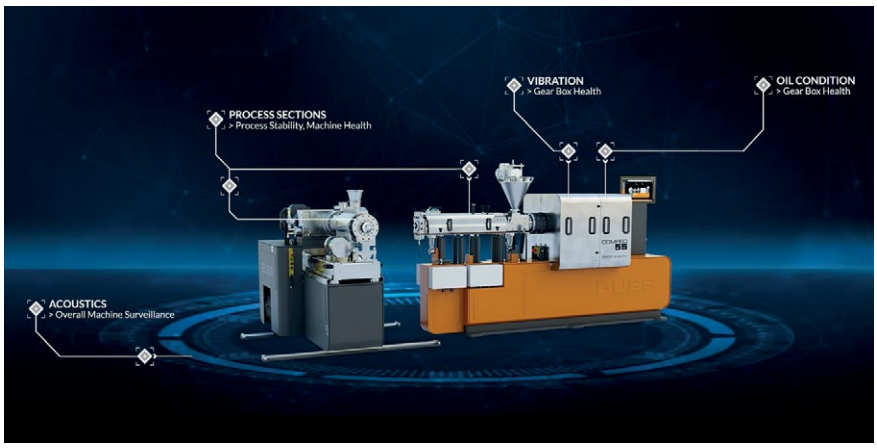
All three project partners shared their specific expertise and their profound experience in their respective areas in order to improve every single step in all processes. The main technical challenges were to find the optimum dosage for the additives, to adjust the formulations and the process technology during film production, and to find the right parameters for the thermoforming process.

SML
www.sml.at

Pioneer in Digitalization, Focus on System Engineering

At K 2022, BUSS will be explaining the possibilities of its digitalized machine monitoring project, which is designed to extend machine service life and uninterrupted production runs, identify maintenance needs at an early stage and avoid unforeseen downtime. BUSS will also be presenting its wide-ranging expertise as a partner in plant engineering for all aspects of compounding. Another focus will be the addition of a laboratory version to the versatile COMPEO co-kneader series.

Condition-based monitoring, the ongoing acquisition of parameters indicating the status of individual components and entire assemblies in a machine or plant system, is the foundation of the new SenseHUB service from BUSS. Sensors for acquiring process section, vibration data or other metrics elucidate the condition of the manufacturing system at critical points on machines such as kneaders, discharge and dosing units, pelletizers, heaters and coolers. Following data analysis, the user can call up the visualized results in the SenseHUB dashboard on the BUSS service portal. This BUSS service carries out monitoring, evaluation, and planning of any necessary repair work in direct consultation with the customer. Not limited to the compounding unit of the BUSS co-kneader, the SenseHUB service will be extended to additional sensor data for the evaluation of the machine health, ensuring maximized production uptime.

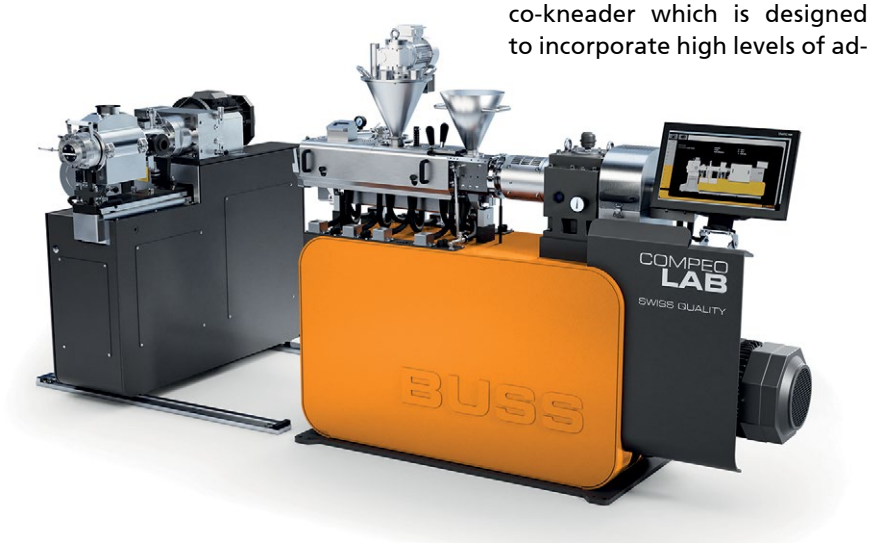


Continuous, sensor-assisted monitoring of machine status and cloud-based data analysis are the foundation of the new SenseHUB service from BUSS that helps customers extend machine runtime and avoid unplanned downtime (Images © BUSS)

Where required, BUSS can supply greater complexity in the form of complete systems for various applications and is increasingly designing and implementing custom applications as a one-stop shop supplier working hand in hand with selected manufacturers. Depending on the scope of the project, such systems may include not only material dosing, kneading, discharging and pelletizing but also a variety of other components, such as filters, coolers, materials handling systems, quality control systems, clean room design and more.

The cornerstone of any system supplied by BUSS is a COMPEO series co-kneader which is designed to incorporate high levels of additives gently and thoroughly into base materials. The modular machine design is so flexible that a specially configured compounding line is available for any application at any temperature up to 400°C and for all plastics, ranging from thermally sensitive thermosets to demanding engineering thermoplastics.

New COMPEO LAB compounder with detached twin-screw discharge unit



The latest addition to the family of the series of five production units with throughput levels, depending on application, of 100 to over 12,000 kg/h is the new compact, user-friendly COMPEO LAB laboratory compounder for throughputs of 50 to 100 kg/h for development, process optimization and small production campaigns. It offers all the advantages of the large COMPEO co-kneaders, including the combination of two-, three- and four-flight screw elements, and provides precise and reliable scale-up of process parameters to production conditions.

BUSS AG
www.BUSScorp.com

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VM Verlag GmbH
Cologne, Germany

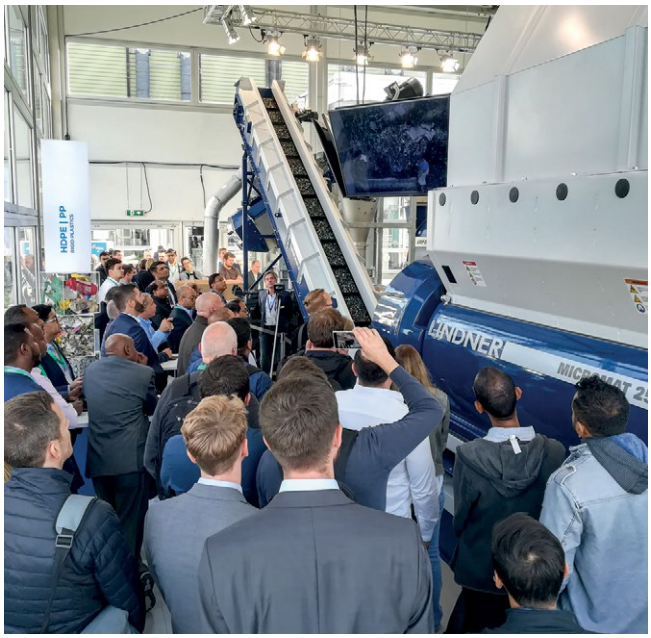
www.smart-extrusion.com

Innovative All-in-one Recycling Solutions for More Throughput, Efficiency and Superior Recyclate Quality

Recycling specialist Lindner showed all-in-one solutions for efficient plastics recycling at K 2022 in Dusseldorf in Hall 9 and in the outside area as part of the VDMA Circular Economy Forum. In three daily demonstrations, different post- consumer rigid plastics were shredded live – and for the first time also wet washed. Working together with Engel there was yet another first: shredded rigid plastics were injection moulded and turned directly into new pallets on site.

As a pioneer in plastics recycling, Lindner knows what the recycling and circular economy wants: higher throughputs, short downtimes and maximum energy efficiency. The increased demand for quality recyclates also requires first-class washing components that can be added as modules depending on the degree of contamination. This can be achieved thanks to product innovations and the perfectly coordinated upstream processes of shredding – washing – sorting. As one of the few recycling specialists, Lindner offers all-in-one solutions to efficiently optimise these steps to process rigid plastics, films and PET.

Whether post-commercial or post-consumer, films make up a lot of the world's waste. Different degrees of contamination require adapted washing and drying processes. This is the only way to produce high- quality recyclates. The specific features of Lindner's new Jupiter BW series ensure an increase in efficiency and quality. The new shredder setup is specially designed for film recycling. "Thanks to the Jupiter BW, we have succeeded in reducing the percentage of fines produced during shredding by 44% – as comparisons with other shredders have shown. The bad fraction to be disposed of by the recycler is thereby greatly reduced and more material is retained in the recycling stream," explains Stefan Scheiflinger-Ehrenwerth, Head of Product Management at Lindner Recyclingtech. "The precise cut shreds films to an optimal size of A4/A3 for downstream NIR systems. This makes the downstream sorting processes so much more productive and efficient."



At the VDMA outdoor area, post consumer hard plastics were recycled live three times a day with the new Micromat HP shredder series, the friction washer Twister and the mechanical dryer Loop Dryer (All pictures; copyright: Lindner Recyclingtech)

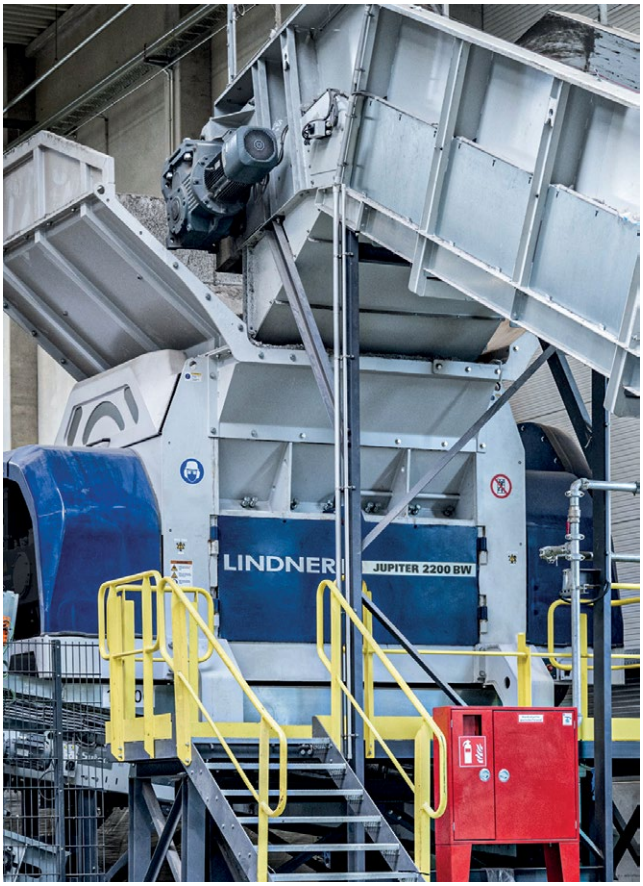
The novelty at K 2022: Lindner's Micromat HP series. Micromat series shredders have been used successfully in

plastics recycling for many years. The new series impresses with its powerful, gearless direct belt drive, the adjustable safety clutch that protects against non-shreddables and the unique adjustable knife system. The new model makes it possible to increase the throughput, leading to the improved productivity demanded by the market – the throughput for processing recyclable bales, for example, was raised from 3 t/h to 5 t/h. Another new feature is the automatic belt tensioning system, or ATB, which guarantees an optimal operating point, making the process more energy efficient and almost eliminating the need for maintenance – both welcome developments considering energy costs and the shortage of skilled labour that also affect the recycling industry.

The demands placed on recyclate quality and throughput are increasing. Energy costs are to be reduced. Overall, these are no easy tasks considering the rising energy costs and the fact that plastics are increasingly extracted from waste streams, meaning that heavily contaminated input materials are finding their way into plastics recycling more and more. Lindner provides the solution to these challenges with no less than two new products: the patented Rafter-type pre-washing system and the new EcoDry thermal dryer.

As part of the VDMA Circular Economy Forum, Lindner once again showcased its products in the outside area at K 2022, this time with three live demonstrations daily. The new Micromat HP shredder, the Twister friction washer and the mechanical Loop dryer demonstrate the process stages of shredding, washing, drying with integrated water treatment processing post-consumer rigid plastics. As a special highlight, the shredding of post-consumer plastics, called dolly pallets, provided by Engel, took place daily. Together, Lindner and Engel showed how, with a residual moisture of <1% and a uniform particle size of 8 mm, homogenous and clean plastic flakes can be directly processed further in a two-stage injection moulding process.

In partnership with the other plastics recycling leaders Erema, ExxonMobil and Engel, visitors could also learn more about the Atando Cabos project in Lindner's outside area. The company Comberplast in Chile clears the coasts of broken fishing nets and ropes, turning them into new products such as crates for tulips or a well- known brewery. A demanding shredding task, considering that fishing nets and ropes are designed for robustness and durability and that the collected materials contain many abrasive substances such as stones and sand. Lindner's Micromat was commissioned remotely in 2020 during the pandemic and has been supporting Comberplast in the daily production of new precious materials ever since.



The new Jupiter BW series from Lindner has a shredder set-up specially tailored to film recycling. The exact particle size of A4/A3 perfectly meet the requirements of the NIR systems and the fines are reduced by up to 44%

Lindner-Recyclingtech GmbH
www.lindner.com

After the bale opening, the films are shredded to an exact size of A4/A3. This enables downstream NIR systems to optimally recognise materials and sort them more efficiently

The percentage of fines in film recycling with conventional shredder parameters

The special shredder set-up of the new Jupiter BW series reduces the proportion of fines that are unusable for the recycler, and which have to be disposed of, by 44%

Quality Control in Extrusion Lines with X-Ray Technology

For over 20 years, SIKORA has been internationally known for its reliable and safe X-ray measuring systems. For single-layer applications, SIKORA has 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 ECO-CONTROL PURE, a processor system with a high-resolution 15" touchscreen display, the measured values are clearly displayed for further analysis.

The new X-RAY 6000 PURE is used for single-layer measurement of hoses and tubes

The X-RAY 6000 PURE is a cost-effective, safe and powerful alternative to conventional measuring technologies. The system allows 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. For measuring up to three layers, SIKORA also offers the X-RAY 6000 PRO.

The Sikora team at the stand at K 2022 in Düsseldorf/Germany (Pictures: Sikora)

SIKORA AG
www.sikora.net

Innovative Recycled Resin Solution

The Brazilian company Plastiweber, that develops sustainable solutions for plastics, presented at K 2022 its polyethylene resin with one 100% of recycled content. During the trade fair, the company showed to strategic players of the international market the values of the high-performance solution, which promotes social and environmental benefits, reduces the impact of residues, and has multiple capacity of recycling and applications in new packaging.

The plastic resins proceed from a circular ecosystem that is composed of more than 50 actors, such as cooperatives, environmental projects, brand owners and retail companies. Through Plastiweber's technology, all the materials provided by the company's partners are processed, transformed, and benefited, resulting in different types of resins composed by linear low-density polyethylene (LLDPE) and by low-density polyethylene (LDPE).

Plastiweber's Special Projects Manager, Lucas Pellenz, was one of the company's representatives at the event. He believes that K 2022 was strongly focused on sustainability and recycling. "All of the leaders and representatives of the plastics industry are worried about those questions and, during the event, have presented future perspectives and solutions for the segment. Plastiweber's part is to stand up for the relevance of plastics in the transition for a circular economy. The European and international markets want to buy certified post-consumer resins and products with a

Lucas Pellenz at K 2022 Trade Fair

high percentage of recycled content. Even though the production of recycled resins is high, the guarantee that they are post-consumer resins and have recurrance of quality and supply is something that worries the clients. With the exchange of experiences we had at the fair, we believe that Plastiweber can supply this need for PCR solutions, using our 'know-how' of packaging to help the market to have high applicability of PCR resins in its packages. This is possible thanks to the technology we have developed throughout the years", Pellenz says.

Fourteen companies from Brazil were at the event, and nine of them work with raw materials. Plastiweber offers to the market three types of resins that can be used as a complement to produce recycled shrink wraps or virgin ones.

In 2022, its packaging made out of 100% recycled content won the WorldStar Award, given by the World Packaging Organization, in the category 'Packaging Materials and Components'. The company has also recently achieved the RecyClass certification for Recycling Processes, an European initiative that validates the pre and post-consumer plastic value chain.

With 25 years of experience, Plastiweber is also the first recycling company in America to receive the European certificate EUCertPlast, which attests the traceability and quality of recycled plastics that are produced around the world.

Plastiweber
www.plastiweber.com.br

Focus on Reducing Resource Consumption

The most important exhibition for the international plastics industry has been a success for the Vienna-based machine manufacturing company. "This year's K show has been sensational for us. Everybody is happy to get together personally and talk about the developments in the sector after all the restrictions due to the pandemic", said Hermann Adrigan, Head of Sales at Starlinger, summing up the exhibition. "A lot of customers, among them many long-time business partners, visited us both here at our booth in Düsseldorf as well as in Austria during our Open House in our factory which took place at the same time." The number of deals closed during the exhibition shows that many companies in the sector are willing to invest. "For us, K 2022 equals K 2019 in this respect", confirmed Adrigan. "Both here in Hall 16 as well as at the booth of our division Starlinger recycling technology in Hall 9 we sold a number of projects already in the course of the exhibition."

A main attraction for many customers was the conversion line for AD*STAR woven polypropylene block bottom valve sacks at the Starlinger booth in Hall 16: It produced AD*STAR sacks with a share of 22 % recycled content at a speed of 140 sacks/minute.

At K 2022, Packem Umasree, a joint venture of Brazilian big bag producer Packem S.A. and the Indian big bag producer Umasree Texplast, invested in Starlinger production equipment for heavy-duty fabric made from rPET for their plant in India (©Starlinger)

Also, big bags made of 100 % recycled polypropylene and 100 % recycled PET supplied by Starlinger customers drew a lot of interest. With the "Circular Packaging" concept for big bags initiated in 2019 Starlinger offers a model for a closed packaging loop for packaging producers.

"Sustainability plays a major role in almost all inquiries we receive nowadays", explained Adrigan. "As machine manufacturers we have been putting the reduction of resource consumption – be it energy, be it raw materials – in the central focus of our technical developments for decades. Now, also recycled material can be processed on our lines without loss of quality. Packaging producers know: If you want to produce woven PP or PET sacks in a sustainable way, Starlinger is the place to go."

*Note: AD*STAR® is a registered trademark. AD*STAR® sacks are exclusively produced on Starlinger machinery.*

Starlinger & Co Ges.m.b.H.
www.starlinger.com

Solutions for Polymer Processing

PEARLO® X– Series

The PEARLO® X Series Underwater Pelletizer has been specially designed to process spherical pellets at high rates and with low production cost. This most efficient and automated system can be used in the production of raw materials, like polyolefins, large capacity compounding and high rate engineering plastics. The PEARLO® X Series can reach production rates of up to 80.000 kg (176,000 lbs.) an hour.

The operational benefits of the PEARLO® X-Series include liquid-heated die plates with a diameter that more than 2,000 holes can be provided. The die plates include tungsten carbide nibs for resistance against wear and corrosion. The cutting tools and the cutting chamber have been revised to optimize the cut, pellet cooling and pellet shaping as well as the thermodynamic conditions. The cutting chamber has a unique two-piece geometry allowing good access and easy start up. Water flow into the cutting chamber is optimized throughout a bidirectional orientation ensuring excellent cooling and pellet extraction even on sticky and low viscosity grades or difficult to process modern materials at high rates. This feature provides homogeneous pellet heat history and crystallization as all pellets experience the same residence time in the cutting chamber. The cutter hub is a self-aligning design which allows for optimum misalignment compensation. The cutter blades are designed for sequential cutting reducing pellet sticking further and allowing a blade tip speed of 30 m/s.

Comprehensive recycling solution

MAAG's expertise in downstream equipment enables the company to meet the rigorous demands of the virgin polymer industry.

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 our proprietary control system.

Dry Cut Strand Pelletizing for demanding pelletizing applications

At this year's K in Düsseldorf, three exhibits from the field of dry cut strand pelletizing will be exhibited at the MAAG booth. The focus is on simplified handling and process optimization – which should make the production of plastic granules even more sustainable.

As a flexible all-rounder for masterbatch and compounding applications, a further developed PRIMO S under the name SI, will be on display. The machine comes with a revised base frame, which simplifies the integration of downstream equipment and machine handling. With the open design, the area under the machine is completely visible and accessible from all sides. The cutting head, as a unit with the base plate, drive and sound insulation hood now

Photos: Messe Düsseldorf, Constanze Tillmann

sits directly on four custom-made vibration dampers. Thus, the entire cutting head including attachments is completely decoupled from the base frame. In addition to the base frame, the acoustic hood has also been revised. As a result, the entire machine looks slimmer and the noise level is further reduced.

The granulator is driven by an intelligent gear motor with integrated frequency converter and mini-PLC.

Under the name EBG, MAAG is presenting a strand pelletizing system for highly filled, hydroscopic and water-sensitive compounds. EBG scores with a high degree of automation, gentle material processing and excellent product quality.

With a third exhibit, MAAG allowed its customers to immerse themselves in the virtual world through an AR model of a JSG900 pelletizing system.

Die plates for highest quality requirements

For the first time, a complete AMN Central Injection System (CIS) consisting of a 1500 mm diameter die plate with a central water injection and sword shaped knives will be displayed at the MAAG Group booth at K-Show. CIS was designed to improve pellet cooling and ejection; and is an effective solution for high melt index or peroxided polymers.

Centrifugal Drying Innovation

The eXsoTM centrifugal dryer now includes additional features that add value and improve performance for drying underwater and wet cut strand pellets.

The innovative design of the eXso dryer includes features and enhancements that were developed to increase reliability, reduce changeover time and improve product quality. A defining feature is its 3-door housing, which allows greater access and visibility to the interior of the unit. This allows for faster and more effective cleaning and lowers the risk of cross-contamination. In addition, eXso required 23% less floor space compared to centrifugal dryers of similar capacity.

MAAG Pump Systems AG
www.MAAG.com

High-Energy K 2022 Yields Substantial New Orders

The electric atmosphere of K 2022 resounded at Davis-Standard's exhibit with meaningful customer interactions, hundreds of quality leads, and multiple customer orders. Davis-Standard's team reported a high-level of excitement throughout the show, with customers arriving to discuss new projects, industry trends, and active participation in Davis-Standard's live demonstrations of new technology, such as DS Activ-Check™ and the EDI® Prodigi die.

"This K show was exceptional in terms of foot traffic, customer engagement, and the synergy among our Davis-Standard team from different locations," said Giovanni Spitale, Davis-Standard's President and CEO. "The opportunity to engage meaningfully and in person with so many of our customers was simply wonderful. We are thrilled and humbled to participate in this year's K show in such a big way."

Davis-Standard's team reported significant interest in equipment for composite and micro-duct tubing lines for heating and plumbing, EV battery tempering pipes and hoses, greater automation for irrigation lines, sheet for EPET and multi-layer processes, and BOPP films, among others. Customers were focused on solutions that boost efficiency, improve recyclability, increase production capacity, and align automation and digitalization with personnel availability and capabilities. The DS Activ-Check™ cloud-based solution for preventative maintenance and process optimization was well received along with the Davis-Standard systems integration of the EDI® Prodigi die, providing more response and automatic profile control for cast film, sheet, and extrusion coating applications. Davis-Standard's aftermarket services to improve processing and profitability were also a hot topic of conversation during the show.

"We are grateful to everyone who came by our exhibit during the show," added Spitale. "It was good to see you. We appreciate your current and potential business and look forward to serving you."

Davis-Standard, LLC
www.davis-standard.com

High-Strength Synthetic Nonwoven Now Made With a Recycled Content of 10 Percent

Inhouse recycling is nothing new, but it is worth taking a closer look when it comes to the complex recycling of high-strength PP nonwovens for civil engineering. The shredder-extruder combination from PURE LOOP produces such high quality recycled pellets that the customer can now use a recycle content of up to 10 percent in nonwoven production.

It is impossible to imagine the construction industry without geosynthetics. PP nonwovens, for example - mechanically bonded continuous fibres made from specially UV-stabilised polypropylenes – are often used in blanket form as barriers, screens and filters, and their strength extends the service life of construction projects. Whether for road construction, or as barrier on glaciers or against weeds - there are myriad applications.

This type of PP nonwoven can now be recycled using PURE LOOP ISEC evo technology. The customer is TenCate Geosynthetics, part of the Canadian company Solmax. The European company with locations in Austria, France and the Netherlands is specialised in the development and production of geotextiles for modern civil engineering applications.

The edge trimmings and production rejects generated during manufacturing used to be recycled at the Linz site, but not fed back into the company's own production process. "It wasn't an issue at the time because the recyclate was sold. But in the meantime, it has become clear that reselling our valuable production waste is not an ideal solution, especially in view of the rising raw material prices. That is why we investigated the market to see which recycling technology would make it possible to produce recylate that meets our production quality," says Jürgen Gruber, Head of Marketing (Europe/Middle-East/Africa) at TenCate Geosynthetics.

"The demands on us were high," recalls Patrick Wiesinger, project manager at PURE LOOP. "The PP nonwoven is highly tear resistant, which means its a very challenging recycling process. Our ISEC evo machine conserves the quality of the production waste really well during recycling, so we were able to achieve the specified increase in quality for the recyclates."

Even when you need to process production remnants on 5-metre-wide rolls, it's no problem for the PURE LOOP machine ISEC evo 302 E. The synthetic non-woven material is drawn in, shredded and processed into recyclate, before it can then be fed back into production. From the left: Günther Sebera (Head of Purchasing, TenCate Geosynthetics Austria), Gundolf Sabathiel (Plant Manager Linz, TenCate Geosynthetics), Patrick Wiesinger (Project Manager, PURE LOOP) and Jürgen Gruber (Marketing Director Europe/Middle-East/Africa, TenCate Geosynthetics) (Pictures, credit: PURE LOOP)

Wide range of material shapes

Another advantage of PURE LOOP technology is the wide range of shapes in which the production scrap can be delivered for processing. "At TenCate, one of the ways production scrap is delivered is on huge rolls. I'm talking about a width of up to 5 metres," emphasizes Patrick Wiesinger. "Our ifeed technology with double feed ram system and singleshaft shredder offers the ideal conditions for direct processing of these large rolls - and without the need for prior preparation of the input material by employees before the material is fed into the recycling process." With the ISEC evo recycling machine TenCate can now manufacture its high-strength PP nonwoven product with a recyclate content of up to 10 percent.

TenCate Geosynthetics Austria manufactures the high-strength PP nonwoven fabric shown here. The edge trimmings and production waste are processed in an ISEC evo recycling plant to produce recycle material

"Thanks to the PURE LOOP technology, it is now possible to return the high-quality recyclates directly to production. It makes sense in terms of cost effectiveness and it is an important step for us within the company in view of the circular economy that the industry is striving for," explains Jürgen Gruber. Currently, production waste from the sister site in France is being repelletised for production, while waste from the subsidiary in the Netherlands is being processed at the PURE LOOP plant in Linz for test purposes. "We produce many other special plastics in addition to this PP nonwoven. If we achieve the same high quality of recycled pellets, then we are open to using the PURE LOOP technology for other materials as well," says Jürgen Gruber.

PureLoop GesmbH
Unterfeldstraße 3, 4052 Ansfelden, Austria
www.pureloop.com

Mixed Plastics – Separation Solution Already in Industrial Use for Decades

When recycling electronic scrap, automobiles and other consumer goods, the focus is usually on recovering the valuable metal fraction. Ferrous and especially non ferrous metals are the "object of desire" and are almost completely recovered from the waste streams by modern processing plants. What usually remains however, in addition to a certain proportion of non-recyclable residual materials and light fractions, is a mixed plastic fraction.
Plastic mixtures that consist of many different plastics are usually worthless. Only clean and pure fractions can be reused for high-grade new products.

Typical composition of mixed plastics

Mixed plastics often remain after valuable metal fractions have been separated. The volume share of plastics in electronic scrap, amounts for example to 15% of the total volume. In relation to the total quantity of electronic scrap materials recycled in Europe, this already amounts to several 100,000 tonnes per year.

Due to the mechanical processing technologies used for electronic scrap, plastic fractions are then very often interspersed with all kinds of undesirable foreign materials such as wood, glass, rubber, residual metals and others.

The largest problem with these mixed plastics is therefore the complexity and composition as well as the impurities, which hamper the processing of such fractions. Intensive evaluation has shown that, for example, more than 60 different plastics are found in electronic scrap, which can be more or less contaminated with additives, fillers, flame retardants, etc. A processing technology to achieve clean plastics must therefore be able to deal not only with the undesirable

Picture 1: Mixed plastics

Picture 2: Clean PS fraction

Picture 3: Fraction clean ABS

foreign substances, but also with a large number of different polymers.

Figure 1 shows that ABS, PS and PP, for example, make up the majority of plastic materials. The other plastics described above account for less than half.

It therefore makes sense to concentrate on the significant amounts of plastics during reprocessing. Recovery of plastics that are present in the low single-digit percentages is unlikely to be worthwhile.

Processing technologies

The "bulk plastics" in electronic scrap, for example, are PS, ABS and PP. These materials lie fortunately in density ranges that are accessible for the use separation processes based on density, such as the float-sink separation technique. This is a particularly economical process, which - assuming fractions are of appropriate density – results in concentrated plastic that can then be further processed by dry electrostatic processes.

For example, it is easy to separate polyolefins from a plastic mixture using a simple water separation stage. PS and ABS can be separated using water with a higher density (e.g. a salt solution). A salt solution in water then enables production of highly concentrated PP/PE and PS/ABS mixtures.

In particular, undesirable flame-retardant plastics go through this process into the heavy residual fraction, where PVC, glass, residual metals and other undesirable substances also end up. This residual fraction is thermally recycled, for example.

Processing of PS–ABS mixtures

PS and ABS are the "favourites" in terms of added value and yield - but only if these materials are available in high purity. ABS and PS in a non-separated mixed fraction can only be processed with great difficulty with the aid of expensive additives.

While optical sorting methods using infrared spectroscopy, or other methods, are still in the starting blocks due to the predominantly black colour of plastic mixtures, this type of separation has not been a problem for electrostatic separation technology, already for decades. Electrostatic separators can easily separate black ABS-PS mixtures into pure fractions.

Electrostatic plastic–from–plastic separation

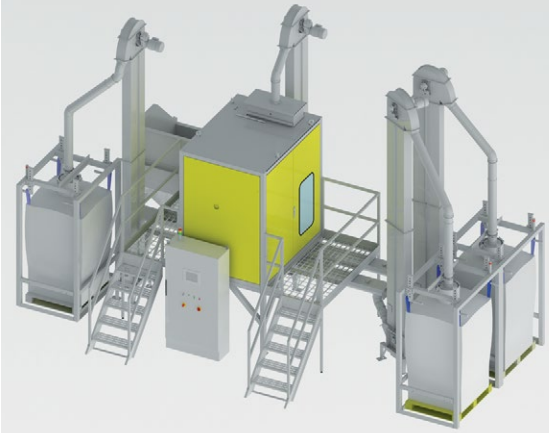
ABS and PS essentially differ in their electrostatic chargeability. When one of these two plastics in a mixture of the two is selectively charged in an electrostatic separator, the ABS becomes positively charged and the PS negatively, due to different "dielectric constants". As the charging is highly selective, subsequent separation in a high-voltage field results in very good purity of both products.

The prerequisite for your successful separation is that the ABS-PS mixture has the correct particle size of < 10 mm and is dust-free. The most important criterion, however, is the moisture content of the material. Only dry ground material can be sufficiently electrostatically charged.

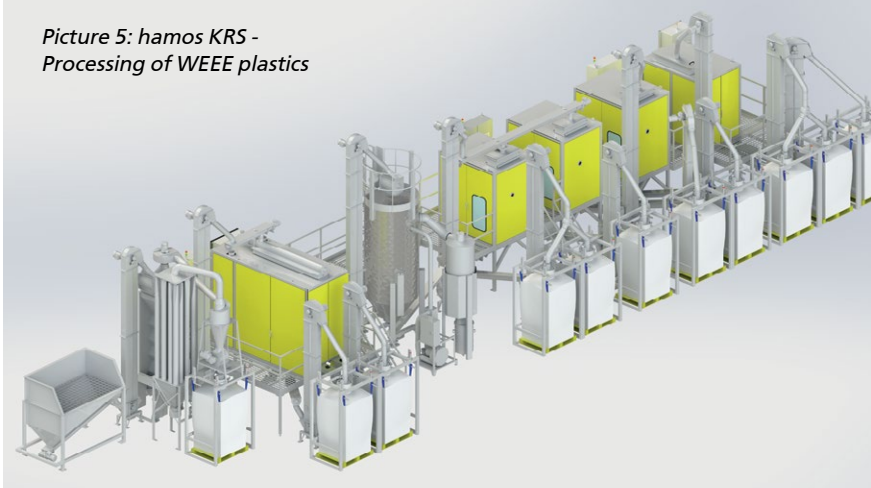
Electrostatic separators in practice

Electrostatic separators for plastic-from-plastic separation are supplied as complete systems including a charging unit and high-voltage electrode system for material separation. For technolog-

Picture 4: hamos EKS - Plastics / plastics separator



Picture 5: hamos KRS - Processing of WEEE plastics



Picture 6: hamos customer plant for mixed plastics

ical reasons, throughputs achievable with one unit are approx. 1,000 kg/h. Connection of several units in parallel enables larger amounts of material to be easily separated.

In the separation of ABS-PS mixtures, for example, the ABS is separated as a high purity fraction in a first separation stage. The PS is also recovered as a pure fraction in a subsequent second separation stage. Due to the special electrostatic charging unit, it is also possible to simultaneously separate a filled polypropylene fraction, as it is in the same density range as ABS and PS.

Foreign substances in a good product

When processing PS and ABS from car shredders or electronic scrap, it is found that after passing through the various separation stages, there are still small amounts of unwanted foreign substances such as wood or rubber in the ground material. It is essential to separate these substances to ensure subsequent processing into high grade compounds or even directly into products. While wood can be separated by melt filtration, rubber or other elastomer fractions pose more serious problems. Especially at high pressure in an extruder, these elastomers are pressed through the melt filters and lead to a reduction in the quality of the finished product.

Wood separation

Wood is usually moist and therefore conductive. For this reason, wood present in plastic can easily be separated with the help of an electrostatic separator of the "conductor/non-conductor separator" type, such as the hamos KWS equipment. A highly concentrated conductive fraction is obtained, which also contains rubber particles, cardboard and other unwanted conductive residues.

Rubber separation

Separation of an unwanted rubber fraction is more difficult. Since this fraction also contains silicones, chlorinated rubbers and other elastomers, special attention must be paid here to separating these foreign substances as completely as possible. The "hamos RSS rubber separator" is used for this purpose. This equipment succeeds in separating the undesired rubber fraction almost completely from ground material. Due to the physical characteristics of electrostatic separation, the rubber is mainly collected in the PS fraction, whereas the ABS fraction is already rubber-free after electrostatic separation. Therefore, only the PS fraction needs to be re-separated.

Summing up it is possible to separate pure and very clean PS, ABS and PP fractions with a combination of wet and dry processing methods, even from very complex mixtures of different hard plastics. Our customers running the hamos recycling systems for the separation of ABS, PS and PP already for many years.

Picture 7: Fraction wood

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Plastic Recycling on the Rise

It may be good for everyone to be in the plastic recycling business whether being a recycler or a producer.
New regulations in many countries now require producers to use a higher percentage of recycled content in flexible and rigid packaging products. The instability of raw material prices and supplies also forces plastic producers to better recycle their production waste. With the great importance of recycled-based plastic products, the global demand for plastic recycling is expanding. Recyclers are now purchasing more advanced technologies and much plastic equipment at once, as well as bigger pelletizing extruders.

Cutter-compactor recycling machine

A cutter compactor has a clear advantage, especially for larger-sized recycling extruders. Through natural heat and friction generated from the rotation, it can quickly compact and densify the light-weighted material into a more solid form to be fed into the extruder at a constant rate.

That's why the Repro-Flex model from a Taiwan-based recycling machine manufacturer POLYSTAR has become one of the most popular models among recyclers due to its high level of efficiency and stability in recycling both soft and hard plastic scraps in a variety of forms. As of today, 1,200 Repro-Flex recycling machines are in operation worldwide.

Post-consumer and Post-industrial Plastics Recycling Demand is Growing

Two-stage Plastic Recycling Machine Adds Flexibility for Recyclers

For recyclers who process washed and fully printed post-consumer waste, POLYSTAR offers an option of adding a second extruder to the Repro-Flex model. Also having a cutter compactor built in and operating with the same working principles, the two-stage model Repro-Flex Plus has a total of three degassing zones and two filtration steps throughout the entire recycling process. This model is also ideal for processing post-industrial laminated/multi-layered waste.

When processing post-consumer materials, the cutter-compactor reduces the ink and moisture level of the material coming from the washing lines, such as washed flakes (from film and woven bags) as well as regrind waste from milk and shampoo bottles. At the same time, it stabilizes the material being fed into the extrusion pelletizing line to ensure consistent production output and better pellets quality.

Plastic Recycling Machine with Cutter-Compactor Integrated

Double-stage Plastic Recycling Machine with Cutter Compactor Integrated

Shredder integrated plastic recycling machine Extruder can process Raffia in-house waste in one step

The reusability of recycled pellets has become more important than ever for plastic producers who recycle and reprocess their in-house waste. Besides packaging film producers, woven bag producers now also require higher quality recycling (minimal material degradation) to reduce production costs as much as possible.

The Repro-One recycling technology from POLYSTAR is a combination of shredder, extruder, and pelletizer in one machine. This one-step, powerful (shredder) yet gentle (low processing temperature) process produces the best possible pellets quality at the lowest operation cost, enabling the producers to reuse all of the pellets back in PP tape extrusion lines.

In India, the requirement for more advanced recycling machines is rising, especially for PP raffia, woven bags, and FIBC producers who need to process their internal waste. More than 105 Repro-One recycling machines have been installed in the sector of India alone, and 350 more around the globe.

Plastic Recycling System with Shredder Integrated

Less expensive to maintain, faster delivery

Lower maintenance cost is a key advantage of using a POLYSTAR. The cost of consumable parts is 2.5~3 times lower compared to European machine suppliers of similar built quality.

Plastic Machine Manufacturer in Taiwan

With the new (third) facility in Taiwan, POLYSTAR has been able to better serve their customers with faster machine delivery time and in-time spare parts support; keeping a large number of critical machine components in stock. For standardized machine models from POLYSTAR, the lead time is only 4 to 6 months.

As the demand for recycling machines remains strong, POLYSTAR continues to prepare in-stock recycling machines and spare parts to avoid long delivery times, providing their worldwide customers with simple solutions.

The Author: *Jack Lin*

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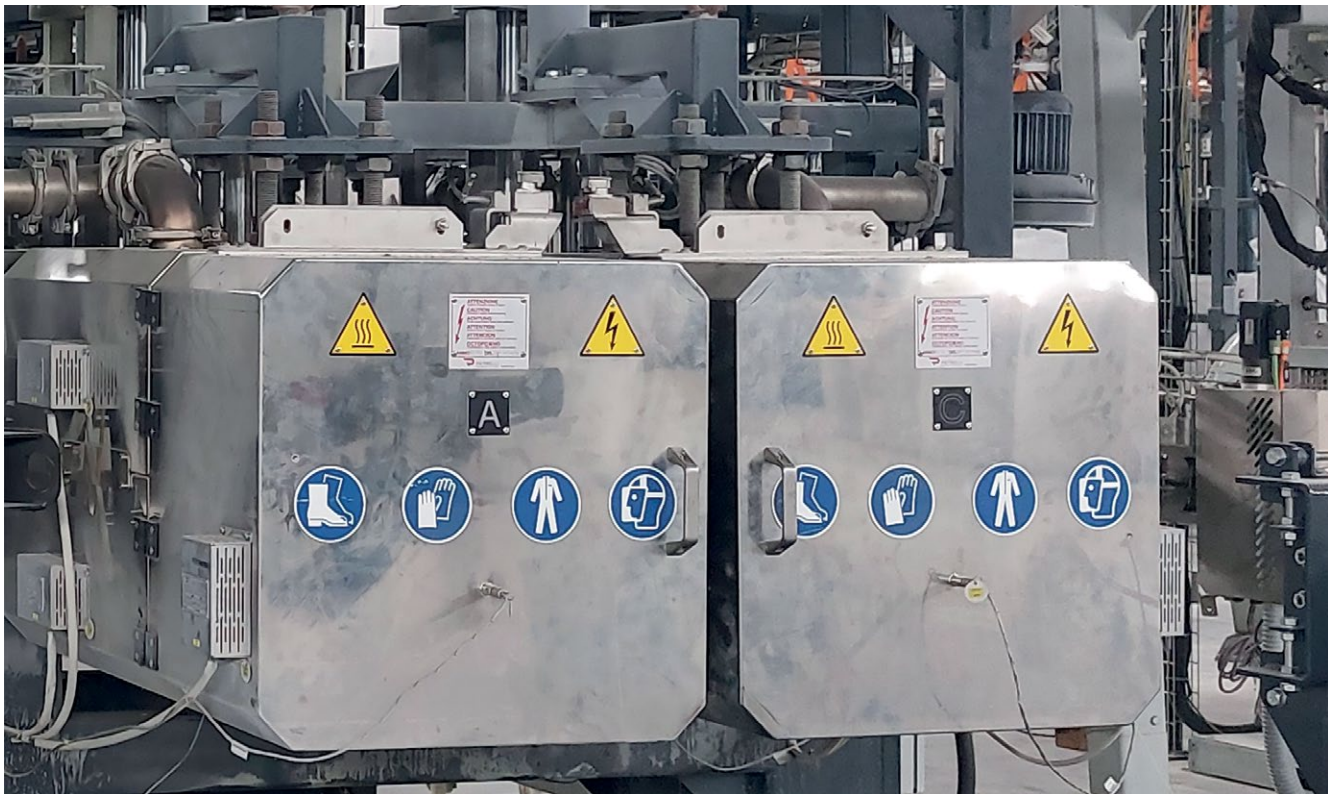
Bottle-to-Fibre and Bottle-to-Bottle – *Two Starlinger PET Recycling Lines for Indian Recycling Brand*

Ganesha Ecopet Private Limited, a subsidiary of Indian PET recycling pioneer Ganesha Ecosphere Ltd., has recently opened its new Warangal facility under the brand name Go Rewise where it produces rPET for filament yarns and fibres, as well as for food-grade packaging.



The RSC filter is a candle filter which Starlinger has developed especially for fibre and yarn applications. It ensures finest melt filtration down to 15 µm which is crucial in order to meet the quality requirements for polyester fibre production (Pictures © Starlinger)

The company has installed two Starlinger PET recycling lines in its facility in Warangal, Telangana state. Ganesha Ecopet plans to supply the produced rPET granulates under its newly introduced brand enterprise Go Rewise. Launched under the umbrella of one of India's rPET industry leaders, Go Rewise is committed to supplying highest quality rPET products that are produced in a resource-efficient process.

rPET for fibre applications

The first Starlinger recycling line, a recoSTAR PET 165 H-VAC, processes washed PET bottle flakes for the Go Rewise polyester filament yarn applications and reaches an output of approx. 14,000 tons per year. When using recycled PET for filament yarn production, it must meet highest quality standards. Thus, all foreign particles and polymers have to be removed before the extrusion process. To achieve optimum melt purity for extrusion, Starlinger has developed a special candle filter for fibre applications, called Rapid Sleeve Changer (RSC). It ensures finest melt filtration down to 15 µm and achieves a throughput of up to 2000 kg per hour. The filter elements can be changed without interrupting production, which significantly reduces melt loss and machine downtime.

Going food-grade

With the second Starlinger recycling line, Ganesha is producing food-grade rPET resins. "Through venturing into bottle-to-bottle recycling we want to close the loop and move from secondary recycling into primary recycling", said Prashant Khandelwal, Senior Vice President of Go Revise. "Bottle-to-bottle recycling reduces the need for virgin plastic and thus substantially decreases the plastic burden on the planet. It also uses approximately 80 % less resources – water, energy, et cetera – for producing a new bottle than it is the case with virgin resin. Earlier, brand owners used to be apprehensive about including rPET in their packaging product, but with the emergence of new technologies and strict regulations by governments the demand for rPET is increasing very fast."

The Starlinger recoSTAR PET 165 HC iV+ bottle-to-bottle recycling system installed at Ganesha's Go Rewise facility features an SSP (solid state polycondensation) reactor for food-grade decontamination of the produced rPET pellets. A positive EFSA opinion for the process has been issued end of June 2022. The line has taken up production in July 2022 and has an output of up to 1,800 kg of recycled PET pellets per hour. The food-safe rPET is supplied to environment-conscious and quality-focused brands which use it in their brand packaging.

Khandelwal describes the special challenges the company is facing with regard to food-grade applications: "Raw material quality is highly variable, especially in India. The scrap has all kinds of impurities and every batch that enters the factory is different. It has taken us 30 years to understand and master the art of handling such waste. With the world's best technologies, we can now achieve the quality needed for food-grade applications."

With the new PET bottle-to-bottle recycling plant, Go Rewise ranks among the first recycled PET brands in India to provide food-grade rPET for the local and international packaging market.

According to Khandelwal, the high acceptability by brand owners was one of the reasons Ganesha opted for Starlinger technology. "Starlinger's PET recycling technology has received several Letters of Non-Objection from the US FDA as well as positive opinions of Europe's EFSA for food-grade applications and is already well known among brand owners. The proven Starlinger quality, equipment reliability and technology standard, as well as efficient resource consumption while delivering best quality output were additional points," he stated.

With both new Starlinger lines operational, the rPET production capacity of Ganesha's Go Rewise facility currently reaches 40,000 tons per year.

Ganesha Ecosphere has a remarkable history in PET recycling," said Paul Niedl, Commercial Head of Starlinger recycling technology. "The company's founder Shyam Sunder Sharmma recognised the big potential that used PET bottles provide as a secondary resource at a remarkably early stage, making the company a trailblazer for bottle-to-fibre and now bottle-to-bottle applications. We feel proud to support Ganesha Ecosphere in reducing plastic waste and establishing a closed loop for PET bottle waste in India, a country with great potential in this sector."

Go Rewise supplies the food-grade rPET to environment-conscious and quality-focused brands

A PET recycling pioneer

Ganesha Ecosphere looks back on 30 years of experience in the PET recycling business and can be considered a role model regarding sustainable business activities.

Founded in 1987, the company started out as a yarn processing facility. It was among the first companies in India to start reprocessing PET waste to manufacture recycled polyester staple fibre (RPSF) and recycled polyester spun yarns (RPSY) in 1994.

By today, the group has established a large network of over 300 scrap vendors located across the country and operates four factories in India – two in Uttar Pradesh, one in Uttarakhand, and the recently opened one in Telangana. It also recently operationalised its first factory outside India in Nepal.

With over 500 customers and exports to more than 18 countries, the company ranks among the largest rPET producers in India with 130,000 tonnes per year and currently recycles around 16 to 18 % of India's total PET waste.

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Better Performance and Optimized Workflows for TPE Production

Key factors in upgrading the Maag underwater strand pelletizing system at HEXPOL TPE's site in Germany were the possibility of incorporating higher amounts of recycled content and making workflows much simpler. The resulting improvements will boost the corporate sustainability strategy and improve potential in production. "It's a must-have," comments process engineering manager Dominik Fehn.

HEXPOL TPE GmbH, based in Lichtenfels, Germany, specializes in the production of thermoplastic polymers (TPEs): rubber, thermoplastics, and elastomers. Certified to ISO 9001, ISO 14001 and ISO 50001, the company's product portfolio includes thermoplastic elastomers as well as soft PVCs, TPE compounds with TPS, TPO, TPV and TPU, additives, and masterbatches.

Looking to the future, HEXPOL TPE GmbH managing director Jochen Schneider says: "More recycled material and bio-based compounds will play an increasingly important role for us." He and his colleagues are also keen to see a general improvement in performance in the plastics industry. So managing director Schneider, process engineering manager Dominik Fehn and operations manager Markus Schirrmacher set out to find solutions to optimize the productivity of their existing lines. They focused on the challenge of producing high-performance, high-quality compounds meeting the specific needs of customers in demanding sectors.

HEXPOL TPE GmbH based in Lichtenfels, Germany, specializes in the production of thermoplastic polymers (TPEs) (All pictures, source: HEXPOL TPE GmbH)

An innovative pelletizing system to meet all requirements

HEXPOL TPE's search for high-performance solutions to meet its requirements didn't take long. It has had close links with Maag for a number of years. The vendor of pelletizing systems for polymer and compound production is a long-established supplier to the polymer manufacturer. Maag pelletizers have been running successfully on several lines at the plant in Lichtenfels for some time. So the cooperation between the two partners is built on deep-rooted trust and experience. HEXPOL TPE uses Maag dry-cut strand pelletizing systems for numerous pellets in its compounding operations, as well as its traditional-design underwater pelletizers.

And the long-standing customer is always interested in new developments that will improve performance, make production more flexible, and so equip it to meet the growing demands of the market. So when Maag launched PEARLO, HEXPOL TPE and its engineering expert were keen to find out more. The underwater pelletizing system is designed to process a wide range of polymers and thermoplastics, promising profitable production with throughputs of up to 42,000 kilograms per hour.

Underwater pelletizing with PEARLO

The key element of the PEARLO system is the cutting chamber. The knife configuration is based on a turbine; the water inflow and outflow are tangential. This means the product is advancing as it rotates. This cutting chamber geometry developed by Maag enables extruded plastics to be cooled and cut so that much higher outputs are possible with the same water quantities and the same input and output dimensions. The smart knife configuration also means that more knives operate simultaneously. The cut rate is also higher, so increasing throughput. The specific output limit has been greatly increased as a result.

"We had initial discussions about the new system at the K-Show back in 2016 when PEARLO was first launched, after which trials were run at Maag's technical center in Xanten," recalls process engineering manager Dominik Fehn. His colleagues were also quickly convinced of the machine's capabilities, as operations manager Markus Schirrmacher confirms: "We saw the benefits of the system right away, so we decided to buy a PEARLO in 2017."

The system's performance in practice proved them correct: "We've

The key element of the PEARLO system is the cutting chamber. Its knife configuration is based on a turbine; the water inflow is tangential

HEXPOL TPE process engineering manager Dominik Fehn is convinced by the Maag solution

been able to significantly increase the output of many of our products – actually even more than I would have expected," Fehn reports. The outputs of various polymers illustrate the better-than-expected results: "It's always highly product-dependent, of course, but we were nevertheless able to achieve significantly better performance with many compounds," Schirrmacher adds.

The PEARLO pelletizer improved HEXPOL TPE's pelletizing productivity right from the start, to such an extent that other components, such as the extruder and screw configuration, also had to be adapted. To improve the efficiency of the overall system, HEXPOL TPE decided to purchase a new extruder with higher motor power. Extending by two additional cylinder zones also provides greater flexibility for compounds requiring a longer process length.

Machine configuration delivers clear benefits for products and for staff

The wide-ranging advantages for HEXPOL TPE's products were only one aspect in favor of the Maag PEARLO pelletizing system. The HEXPOL TPE management is always keen to provide the best possible support to its workforce. Process engineering manager Dominik Fehn knows the everyday challenges in production well: "All the setup and cleaning phases, and each product cycle, are always hard work for our production colleagues," he acknowledges.

Cleaning is often necessary, for example, before producing compounds that come into contact with food. The entire system has to be dismantled for the purpose. The process includes dismantling each component, removing the screw elements, and cleaning and sandblasting inside blast cabinets. "This thorough cleaning is very time-consuming," Fehn explains. "The whole process takes about 15 hours."

Given those challenges, he was persuaded not only by the PEARLO underwater pelletizer's process benefits but also by the option to mount the machine suspended from above. In this top-mounted configuration, the floor under all the components remains freely accessible because the machine is suspended from an overhead rail system. Quick-adapter systems involve just one bolt, whereas twelve previously had to be detached and refitted. "That saves a lot of time: What used to take an hour now only takes five minutes," Fehn reports. Also, much less force is required when a machine weighing 400 kilograms can be pulled along suspended from the ceiling rather than being moved on rollers.

Maag offers two-axis machines that can be moved in two directions. This means production staff can clean and set up faster, and components do not have to be readjusted. "That's a major and crucial reduction in workload," Fehn states. In addition, the faster changeover times reduce energy consumption.

Impressive results lead to new growth projects

HEXPOL TPE has been able to surpass its limits and improve output with the newly installed Maag PEARLO underwater pelletizer. In fact, the company's production management team has been so impressed with the system that it has purchased another one. The Maag pelletizing systems will enable HEXPOL TPE to improve its performance and boost its coverage of market demand, while at the same time tapping into new markets with growth potential. "Our production portfolio is broad-based in order to realize as many development ideas as possible," Dominik Fehn explains. He is convinced: "The new Maag PEARLO will give us the additional push we need."

Seizing future opportunities

HEXPOL TPE sees both the challenges and the opportunities in the future of polymer processing. Managing Director Jochen Schneider and his colleagues have a vision of creating a Smart Factory in the future – aiming, for example, to reduce media interfaces by transferring process parameters directly and seamlessly from the ERP to the MES. Dominik Fehn is also looking at introducing Machine Learning, a component element of AI (Artificial Intelligence): "The extrusion line will be able to detect when there are product-specific deviations based on years of process analysis in polymer processing. The resulting algorithm will then automatically correct the necessary process parameters. The increasing digitalization and automation will further reduce employees' workload, and boost our production potential."

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Latest Innovations in PVC-O for the Conveyance of Water Under Pressure

The most important date of the plastic sector was placed during October. Thousands of people visited the largest plastic fair in the world, the K 2022, where were shown many novelties by the leader companies.
Between others, the Spanish firm Molecor was present in the event with the largest PVC-O pipe diameter in the world, DN1200 mm. Day by day, visitors were impressed by the pipe dimensions, which have never been seen before anywhere else.

One of the reasons why Molecor has achieved this large range of products is its continuous efforts in R&D as well as its commitment to the environment. Because of that, Molecor creates a more sustainable system for transporting water under pressure through its pipes and fittings, improving the quality of life for people everywhere in the world. Also in this way, Molecor brings affordable water within their reach through innovative, efficient, and sustainable solutions.

To understand how the company achieves these records, we must focus on the Molecor's technology, responsible of these diameters and nominal pressure. Nowadays, Molecor has five models of machines to manufacture PVC-O pipes; exclusive systems that manufacture the products without using boiling water during the process, that are present along the five continents.

This novelty is due to the exclusivity of Molecor, which is the unique company that can manufacture 1,200 mm pipes diameter around the world thanks to its M-OR-P 5012 system. This system is able of manufacturing a range of pipes from DN500 to DN1200 mm.

The previous machine that Molecor launched onto the market was the M-OR-P 3180 one, which allows to manufacture until 800 mm pipes diameter. Only nine years has separated both models thanks to the hard work of the company.

The other three machines that Molecor offers are the M-OR-P 1640, M-OR-P 2063 and M-OR-P 3163, which allow to produce pipes from DN90 to DN630 mm. On the other hand, Molecor is the only company able of manufacturing PVC-O fittings around the world.

The company has developed state-of-the-art technology which includes

a patented system that only needs air to manufacture PVC-O pipes and fittings, achieving important savings that contribute, at the same time, to optimize the use of natural resources.

The result of all this technological system is the new diameter of 1,200 mm, capable of transporting up to 2424 litres per second, that is 8728 m^3/h, with a velocity of 2,4 m/s. It means that we can use this pipe for supplying water between cities, replacing traditional materials and increasing the useful life of the actual networks.

Together with the new diameter, Molecor presented geoTOM®. The new application was well-received by the visitors, who could try on it also in the stand thanks to a device that was installed by the company.

geoTOM® was born to revolutionize the transport of water sector through the geolocalization of the pieces in a network. In other words, thanks to the new application, you will be able to determine where one pipe or fitting is, even if it is from other manufacturer, and, whenever you need, you will be able to find it easily thanks to the use of GPS in your smartphone. In addition, geoTOM® allows to work in team and make notices about incidents on the network, trying to get a quick response for them.

To make more complete this application, the ecoFITTOM® fittings and TOM® pipes have printed a QR code that offers complete technical information about them through geoTOM®.

Right now, geoTOM® is available for Android and Apple devices through Play Store and Apple Store.

The importance of the novelties is so that one of them was selected for the prestigious INOVYN Awards. They were presented and given at the end of its ceremony, which were placed on 20th October. Between more than fifty candidates, Molecor was awarded in the Silver category *"Value for Society"* with the new TOM® PVC-O DN1200 mm diameter pipe launched thanks to the continuous efforts of the company for providing the market with efficient solutions for the conveyance of water under pressure.

From the first day of the fair, Molecor was one of the centre of attention thanks to these two great novelties. Both were presented in an official way by the Chief Executive Officer of the company, Ignacio Muñoz, during a conference offered during the event, where there was a great audience. Together with the novelties, Ignacio showed the daily work of the company and its pillars; a work that will go on being developed to achieve new goals and to continue providing the market with the latest innovations within the water sector.

Molecor
www.molecor.com

Without Premixing to the Highly Filled PVC Pipe

Direct Dosing of Chalk Supports Sustainable Extrusion Process

Flexibility, process stability and minimized wear are only some of the advantages resulting from the production of PVC pipes with high filler content using the solution currently being presented by battenfeld-cincinnati. At its booth at K 2022, the extrusion specialist showcased the twinEX 93-34 parallel twin screw extruder model with a gravimetric dosing unit for processing up to 100 parts of chalk without premixing.

High proportions of filler chalk make PVC pipes, which are primarily used as sewer pipes, not only cheaper, but also reduce the use of fossil resources. At the K 2022, battenfeld-cincinnati presented the ideal solution for manufacturing PVC pipes with a high filler content. A basic PVC formulation and the filler material are fed separately to the production line. The individual components are then put together in a collection hopper and subsequently blended with each other in the cold mixer connected to it. After mixing, the finished formulation is passed on to the feed opening of the extruder via a vertical dosing unit. Both the mixing ratio and the entire material throughput are gravimetrically monitored and controlled. All containers along the chalk transport and chalk dosing line are equipped with agitators. Thus, the filler material is kept in motion along the entire route to prevent bridging. A twinEX 93-34 parallel twin screw extruder serves as processing unit for the PVC formulation. The processing unit features a specially adapted screw geometry with anti-wear protection to transport and plasticize the blend evenly and homogeneously. The advantage of this solution is its chalk content variability ranging from 30 to 100 parts, which can be easily adjusted at any time and at short notice to the formulation required for the specific product. A further benefit of direct gravimetric chalk dosing is the enormous process stability, which ensures a high-quality end product. Finally, the process eliminates the need for premixing of PVC and chalk in a heating/cooling mixer. This process change involves several benefits. Central heating/cooling mixers can be kept smaller in size, or any mixing capacities which become free can be made available to other production lines. De-mixing during material transport can be prevented, since the filler material is fed to the production line directly after transport.

TwinEX 93R-34 with inline addition system

With the combination of an extruder and a gravimetric metering unit shown at the fair, solid PVC pipes with filler content can be produced using a mono-layer pipe die. For 3-layer pipes with a filled middle layer and external layers without filler content, battenfeld-cincinnati offers the appropriate three-layer pipe dies and conical co-extruders. In this way, pipes up to 400 mm in diameter can be produced economically and resource-efficiently, which of course can also be recycled after the end of their service life.

battenfeld-cincinnati
www.battenfeld-cincinnati.com

Surface Treatment and Extrusion

It all begins with the simple fact that plastic film is non-absorbent. Also irrefutable, is that plastic film has become an integral part of our daily life, especially in packaging where it is printed, laminated, and converted. And this is where surface treatment plays a vital part. By changing the chemical construction of the surface layer, ink, lacquer, or any other liquid will adhere to the plastic.

"Adherence" and "adhesion" are terms that frequently appear in any text relating to filmic substrates and their ability to be printed, coated, and laminated. The issue relates to striking a balance between the surface energy of the liquid and the solid to which it is being applied. A mismatch results in poor adhesion, which is the reason that controllable corona treatment is essential for consistent performance.

The Vetaphone C modelrange is designed for modern blown film lines running at high speed or producing more complex substrates. Its construction allows more power to be added to the corona treatment process

Controlled corona

By applying a carefully controlled electronic discharge at close range to the plastic film, the chemical make-up of its surface layer is changed by breaking down the long molecule chains which then allows the liquid to adhere. By increasing the surface energy of the plastic film, which is measured in dynes, it is possible to perform a range of different printing and converting processes that would otherwise prove impossible. And, this process of surface treatment starts at the very beginning of plastic film manufacture, when it is extruded.

But, like most industrial processes, it is not straightforward. Different plastic film formulations have different dyne values and different processes demand different dyne levels to be successful. For example, materials like PP, PE-LD, PE-HD, and BOPP have a native dyne value from 29 to 32. Equally, dyne levels required for printing with solvent-based or water-based inks, or coating or laminating vary from 40 to 42 at the low end to 46 to 56 at the high end.

And it all starts with the extrusion process, which can raise dyne levels from 32 to 52 or more, whereas after extrusion, the polymer chains take 48 to 72 hours to post-crystallise, with additives like slip agents and those for anti-fogging migrating back to the surface and in turn affecting the adhesion level.

Securing correct treatment at extrusion is vital for two reasons: first, because dyne levels decline over time – typically 4 to 6 dynes over a period of 2 to 3 weeks before stabilising; and second, because subsequent "boost" or "bump" treatment may be required later, depending on the intended process, and this may not be possible if corona treatment during extrusion was poor.

The Blown film process

There are two separate types of film extrusion: Blown film and Cast film. In the Blown process the film is extruded vertically and wound into one flat tubular or two reels that are then converted by printing/coating/sealing into the final packaging product. The corona station is normally located at the top where the flattened tubular film is treated on the outside only. It is then split in two and can be fully treated again, or only on the inside, before being wound onto reels. On some extruders, the winder operates in both directions, so just one double-sided corona treater can be used.

The reels are then passed through a converting process where the welding takes place, and as corona treatment is notoriously the enemy of welding, because the oxidation generated by the corona process weakens the welding area, it is important to evaluate the likely effect in each case.

Blown extrusion is typically used for PE based materials. Product applications include pallet hoods, collation shrink film, stretch hoods, lamination film, deep freeze film, heavy duty film, protective film, and food packaging film. These are single layer up to normally 3 layers but can be up to 11 layers in the case of food packaging film.

The Cast film process

In the Cast film process, the substrate is produced from a flat die and wound as a single film after being side trimmed. Because the edges of the Cast film are thicker than the rest of the web they need to be cut off before entering the corona station and winder to prevent any damage to the rubberised rollers.

Cast film extruders have a higher capacity and faster running speed that their blown film counterparts, so they need a higher power corona treater to achieve the best results. This typically means a single-sided treater with an extended shaft, which can be motorised, and has a nip roller to prevent treatment to the reverse of the web. Usually, the corona unit is used as a pull station. Cast Polypropylene, normally called CPP and different to stretch film, is used for a wide range of packaging, and normally requires corona treatment.

The right way

It is a definite need for specialist knowledge to ensure the best results are obtained. As substrates become more complex to meet new packaging and safety criteria, the need for a detailed understanding of the surface treatment process and what it can offer becomes ever more important.

With more than 70 years of experience and research data, Vetaphone is in its ability to advise, educate and assist production personnel at every stage where surface treatment technology is required. It is a process that if managed correctly pays dividends throughout downstream processing from the moment of extrusion.

Vetaphone A/S
Fabriksvej 11, DK-6000 Kolding, Denmark
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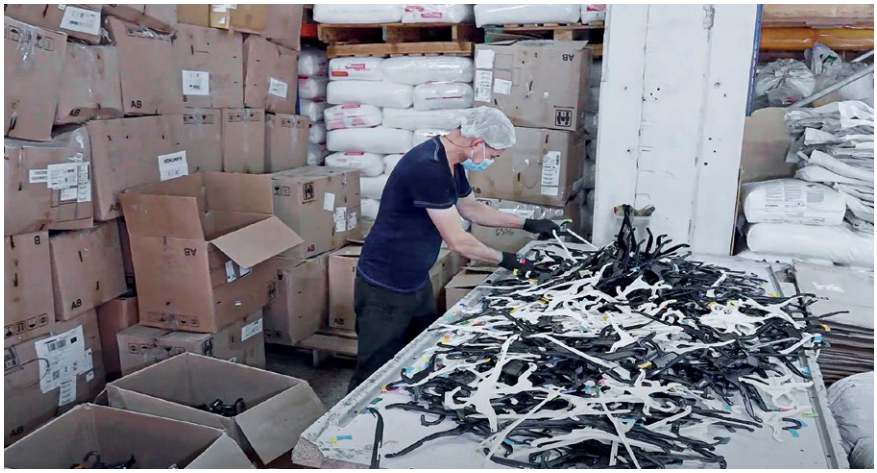
More Autonomy Through Clothes Hanger Recycling

The Colombian company Plásticos Ojara is located in the idyllic south of the city of Medellin. The company is well known in the region as one of the leading manufacturers of plastic clothes hangers. Thanks to the use of a WLK 4 single-shaft shredder, it is possible to recycle rejected products on-site and return the material to the production process. In this way, waste can be effectively avoided, the purchase of raw materials can be reduced, and previously unused residual plastic is given a second life.
For more than 40 years, Plásticos Ojara, which now employs around 200 people, has been an important supplier of hangers to the local textile industry. About 90% of the hangers produced are used by Colombian companies. The other 10% is exported to Ecuador, Panama, El Salvador, Guatemala, and the Dominican Republic.

Always concerned about sustainability, the Latin American company was looking for a way to further optimize production and at the same time make it even more environmentally friendly. Those responsible at Plásticos Ojara decided not to dump rejects in the future, but instead to reintegrate the raw material into the manufacturing process. The cycle begins with an industrial shredder.

Following recommendations from partner companies, the choice finally fell in favor of WEIMA's proven German mechanical engineering. Installation and commissioning went smoothly. Thanks to the comparatively short delivery time, the WLK 4 shredder was soon able to start work – and excelled with high throughput rates.



Sorting of broken plastic hangers

The WLK 4 single-shaft shredder has a working width of 600 mm and an electromechanical drive with WEIMA's own WAP gearbox in combination with a V-rotor and a generously dimensioned hopper in logspacer design. This prevents feed material from forming bridges. As a rule, it is operated with a throughput of approx. 350 kilograms per hour, but a higher throughput is also possible with continuous feeding. The rotor cutting blades can be flipped several times when worn, which drastically reduces

Recycling division of Plasticos Ojara

Almost ready for shipping

Shredding of plastic clothes hangers

WEIMA WLK 4 single-shaft shredder for plastic scrap at Plasticos Ojara

The plastic clothes hangers recycling loop

the machine's maintenance costs. The shredder can be operated intuitively via the touchscreen display.

Up to 30% of the manufactured clothes hangers are made from recycled plastic

Plásticos Ojara uses only polypropylene (PP), polystyrene (PS), and polyethylene (PE) to produce hangers. Around 250,000 kilograms of these materials are processed every day, most of which come from the company's own production. Waste generated in the production process (e.g. during start-up and shut-down) is shredded by the WLK 4, then granulated and returned to the manufacturing process to produce new hangers. Around 30% of the clothes hangers are now made using regranulate. In addition to recycling in-house waste, the company also collects old clothes hangers from surrounding customers or stores.

By creating an internal recycling line with WEIMA shredding technology, Plásticos Ojara has now become even more independent of external influences. Expensive raw material purchases are reduced to a minimum. This creates new scope for entrepreneurial activity and further opportunities to optimize production. Storage areas that were previously allocated become available again. Intralogistics expenses for waste handling are reduced. Thus, Plásticos Ojara is a Colombian flagship for the local recycling economy.

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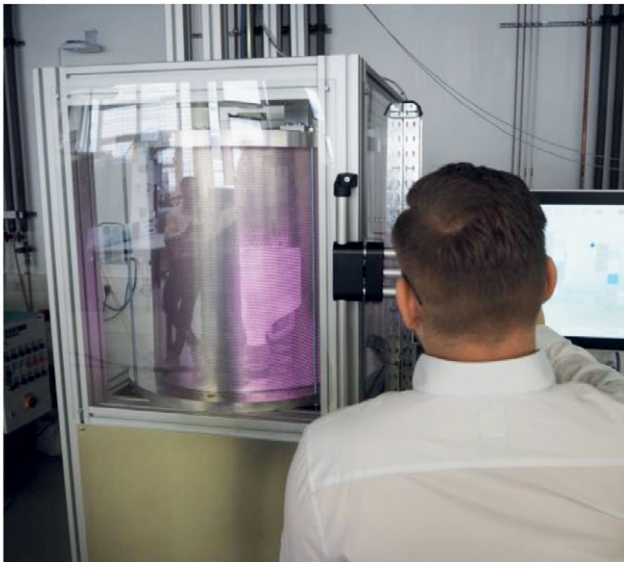
100% Recycable and Fluorine-free Barrier Coatings for Bottles and Canisters Using Plasma Technology

Many sensitive or hazardous products have high barrier requirements on their packaging to guarantee adequate product protection. These requirements are currently often met using multi-material or fluorinated plastic containers. Multi-material containers combine inexpensive packaging plastics with expensive barrier plastics which is a challenge for recycling. Fluorination processes create per- and polyfluoroalkyl substances (PFAS), so called ''forever chemicals'', which do not degrade in the environment.



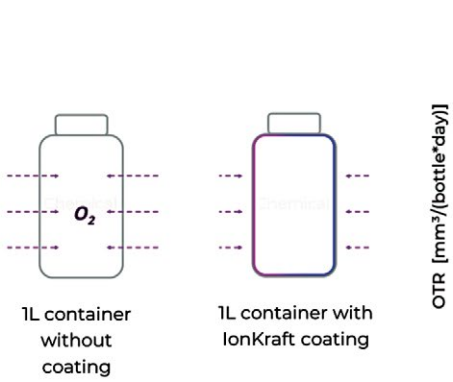
According to the EU plastic strategy & EU Circular Economy action plan, all plastic packaging must be fully recyclable in 2030. But recyclability is still the major challenge for barrier plastics and is preventing many companies to meet the EU and Global commitments and legislative targets.

A recent study by the US Environmental Protection Agency (EPA) on fluorinated high-density polyethylene (HDPE) containers showed, that they are likely to leach per- and polyfluoroalkyl substances (PFAS) into pesticides and other liquid products that are stored in them. This suggests, that PFAS from fluorinated containers inevitably spread to the environment and the human body.

In the EU, the Chemicals Strategy for Sustainability (CSS) towards toxic-free environments under the European Green Deal dedicated special attention to PFAS, considering numerous cases of environmental contamination. A restriction proposal on all PFAS is being prepared by the Dutch National Institute for Public Health and the Environment (RIVM). The aim is to ban all non-essential use of PFAS, as stated in the EU CSS as well as in a request from the European Parliament and Council. A use-case is therefore essential, for example, if no safer alternative is available.

IonKraft – a Spin-Off from the Institute for Plastics Processing (IKV) at RWTH Aachen University in Germany – has therefore developed a silicon-based and fluorine-free barrier coating system, which offers the same function as the multi-material and fluorination approach, but since the coating thickness is well below 100

Source: https://cen.acs.org/articles/100/web/2022/09/EPA-confirms-fluorinated-containers-leach.html#:~:text=September%208%2C%202022&text=Plastic%20containers%20made%20of%20fluorinated,US%20Environmental%20Protection%20Agency%20suggest.



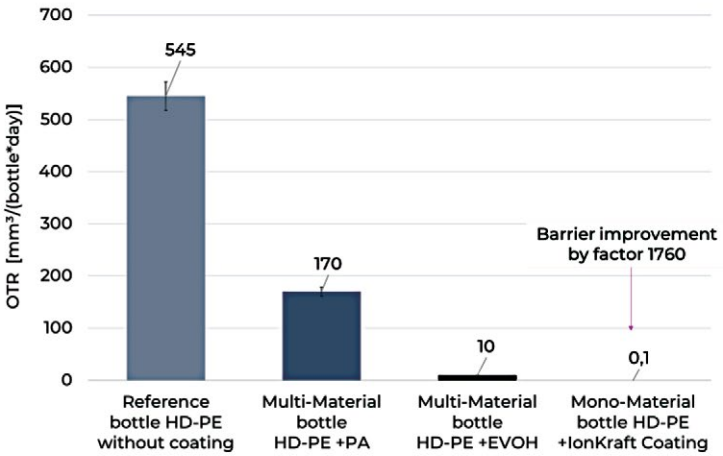


Image 1

nm, the mono-material container remains fully recyclable. Their coatings offer gas, solvent, and water vapour barrier, while also providing protection against aggressive corrosive substances. They are food safe and can be applied on any plastic material.

Plasma process and technology – What is a Plasma?

Plasma is one of the four fundamental states of matter. It is often described as ionised gas, because it contains a significant portion of charged and freely as well as arbitrarily moving particles. The properties of a plasma are essentially defined by the interactions of charged particles. Continuous elastic and inelastic collisions between these freely moving particles can lead to further ionisation processes. If certain so called monomer gases are excited to a plasma, these ionisation processes lead to the formation of reactive particles, which can be adsorbed on surfaces to form a coating. This process of plasma assisted coating application is called plasma polymerisation or plasma-enhanced chemical vapour deposition (PECVD).

Plasma–enhanced chemical vapour deposition (PECVD)

Plastics are produced by conventional polymerisation, a chemical process in which monomers are bonded together forming long molecule chains (polymers). Plasma polymerisation, on the other hand, is a non-specific polymerisation of fragments formed in a plasma, resulting in a polymer structure that consists of partially old and new functional groups from a gaseous monomer. These molecule fragments formed in the plasma can recombine in the plasma bulk and are then adsorbed on a substrate surface to form a coating.

The properties of the coatings are highly dependent on the plasma process parameters, namely process gas mixture and mass flow, plasma energy density, process pressure and coating time.

For temperature-sensitive substrates such as plastics, only low-temperature plasmas can be used. One way to technically generate a low-temperature plasma is to ignite the plasma under low-pressure conditions. Typical technical low-pressure plasmas are operated in the pressure range of a few pascals, so that the process temperature is only slightly above ambient temperature due to the increased mean free path length of the gas particles, regardless of the process gases used.

IonKraft uses microwave excitation to form the plasma, as particularly high deposition rates can be achieved.

Performance of the IonKraft coating technology

In the following, exemplary results on gas and solvent barrier as well as a demonstration of the corrosive resistance of the IonKraft coatings against alkaline solutions are presented. In these examples, the coatings were applied on 1 liter HD-PE bottles.

Oxygen Transmission Rate (OTR)

The oxygen transmission rate (OTR) is the steady-state rate at which oxygen gas permeates through a substrate at specified conditions of temperature and relative humidity. The OTR is a key performance indicator for the gas barrier of the coatings.

The graph (image 1) shows benchmark measurements comparing the OTR values of 1-litre bottles from HD-PE with IonKraft coating against uncoated containers and multi-material systems with Polyamide (PA) and Ethylene Vinyl Alcohol (EVOH) as barrier plastics.

It can be seen, that the IonKraft-coatings have the potential to even outperform the oxygen barrier of multi-layer systems with EVOH.

Chemical stability as proven by retention of oxygen barrier

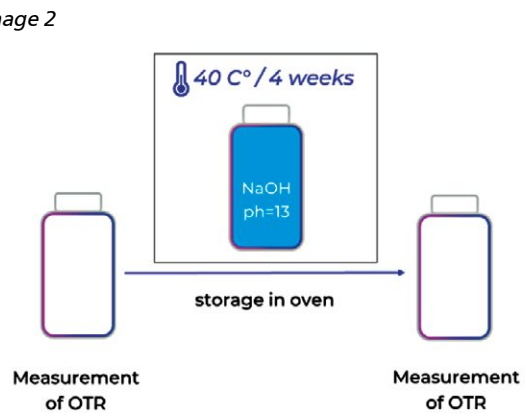
One key aspect for the wide application of the IonKraft barrier technology is the chemical stability of the coating against corrosive media.

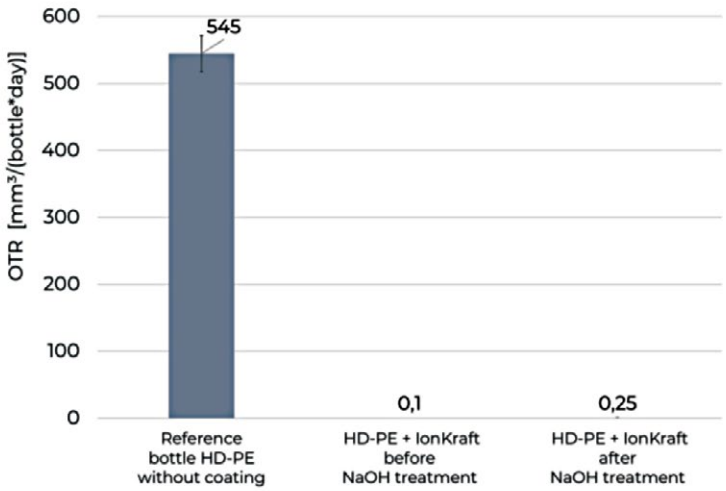
To demonstrate chemical resistivity, a test was performed using caustic soda with pH = 13 as corrosive testing liquid. 1L HD-PE bottles were coated and the barrier against oxygen was measured. The same bottles were then filled with aggressive caustic soda and stored at 40 C° for 4 weeks. After that, the OTR was measured again and the barrier values increased only slightly, which clearly indicates that the coatings remained stable and intact (Image 2).

Solvent Barrier

The key performance indicator for barrier against solvents is the weight reduction due to migration loss. IonKraft examined their coating system in collaboration with

Image 2





different companies in accordance with the test regulations for packaging from the European Agreement on the International Carriage of Dangerous Goods by Road (ADR). The ADR demands a permeation test for the storage of liquid substances with a flash point < 61 C° (e.g. solvents like benzene, toluene, xylene). In this permeation test, the containers are filled either with a customer's original product or with the standard liquid "hydrocarbon mixture (white spirit)" and stored for 28 days (23 °C/50 %rh). The weightloss due to permeation of the filled liquid must not exceed a value of 0.008 g/(l · h).

However, many companies have higher requirements for the barrier, which means a higher storage temperature and lower migration loss over the same or a longer testing period. IonKraft conducted tests with different testing liquids at a higher temperature of 40 °C to demonstrate coating performance. The results are shown in the graph, image 3. A high barrier effect against all tested liquids can be seen. In this test the permeation rate of the ADR test liquid white spirit is roughly 0,0000298 g/(l · h), which is considerably below the EU requirement.

Production technology

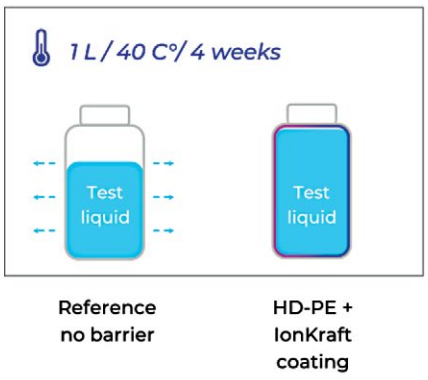
Besides validating of the performance of the coating with partners form the packaging and chemical industry, IonKraft developed a prototype coating production system, which can coat containers of various shapes and sizes from 1 to 20 litres.

Furthermore, in cooperation with a partner company, IonKraft has developed an automation system concept for continuous coating production and in-line integration into blow-moulding production lines. Any required throughput of a blow-moulding line can be matched by using more than one coating module in the production plant.

Next Steps – Technology Transfer to Production

In 2023, IonKraft will develop and build the first industrial scale coating production plant in cooperation with a partner company from the field of mechanical engineering and automation and start a pilot production phase at a packaging manufacturer to validate the long-term stability and robustness of their coating process. The first commercial machines will be available in 2024.

IonKraft
www.ionkraft.com



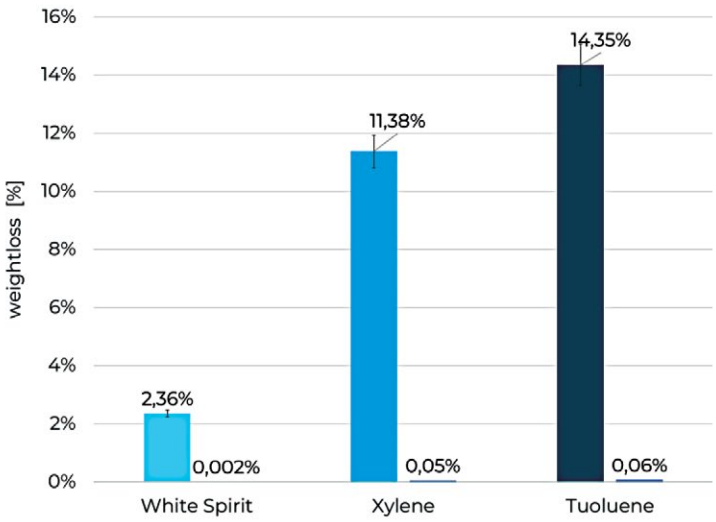


Image 3

Non-Destructive Measurement of Barrier Layers in Plastic Packaging

New measurement system helps achieve effective barrier with less material

Plastic packaging consists of different layers of material. The new MV.SENSE b1i optical system from MABRI.VISION now measures the thicknesses of these layers with substantially higher resolution. Even the thicknesses of thin barrier films can be measured with utmost precision. The outstanding measuring accuracy of the system helps users to enhance process security and cut the material costs of their production.

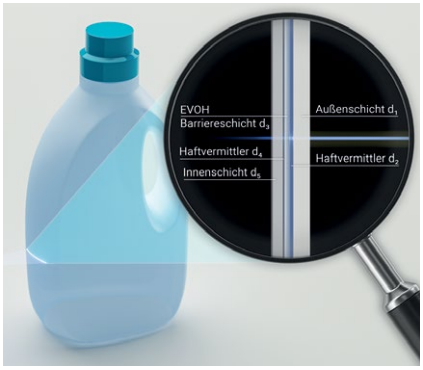
The new MV.SENSE b1i inspection system measures the shape and wall thickness of transparent plastic packaging. Performed in the process line at production speed, these non-contact measurements enable 100-percent inline inspection of multi-layered packaging material.

Non-contact thickness measurement of barrier layers, such as EVOH (ethylene vinyl-alcohol copolymer), in food packaging is a very important application for the system. In this case, it measures both the total wall thickness of the packaging and the thickness of the barrier layer.

At measuring frequencies of up to 200 kHz, the system can provide 100 percent inline inspection in production lines. MABRI.VISION supplies different systems, ranging from units for one-dimensional spot measurements to 3D units that can scan large measuring fields at high frequencies of up to 200 Hz.

Dr. Nicolai Brill, one of the Managing Directors of MABRI.VISION GmbH, explains the motivation behind the development of the new sensor: "We have been noticing a growing trend towards ever thinner barrier layers in food packaging. As a reaction to this trend, we have developed a sensor that can measure layer thicknesses down to only a few µm. The sensor's very high measuring accuracy not only makes it possible to measure the layer thicknesses with outstanding accuracy, but also to control that the layers are exactly as thick as needed. Thus, our customers can reduce the amount of material applied – and save valuable resources – while achieving the same barrier effect."

The new system is based on the principle of low-coherence interferometry, which MABRI.VISION also employs on its MV.SENSE inspection platform, a platform several food producers have been using since 2015. Some pilot cus-

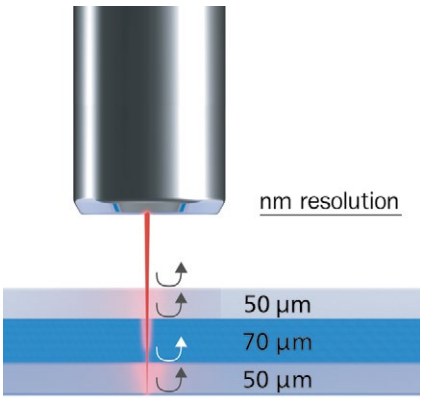


MV.SENSE b1i measures the thicknesses of thin barrier layers with high precision

The new MV.SENSE b1i inspection system measures the shape and wall thicknesses of transparent plastic packaging at production speed in a contact-less process

The new MV.SENSE b1i inspection system measures the shape and wall thicknesses of transparent plastic packaging at production speed in a contact-less process

The measuring principle of MV.SENSE



tomers are already using the new sensor that operates at a distinctly higher resolution and is therefore able to cover a much wider product range than its predecessor.

MABRI.VISION has developed the new sensor not only for plastic packaging, but also for other products whose functionality depends on the quality of thin coatings. The new system can be used, for example, to measure coating thicknesses in blown film extrusion processes and of multilayer flat foils used in food packaging as well as for medical products, such as transdermal plaster and coated medical tubing. It is also suitable for inspecting hoses produced in co-extrusion and multilayer extrusion processes and for composite materials.

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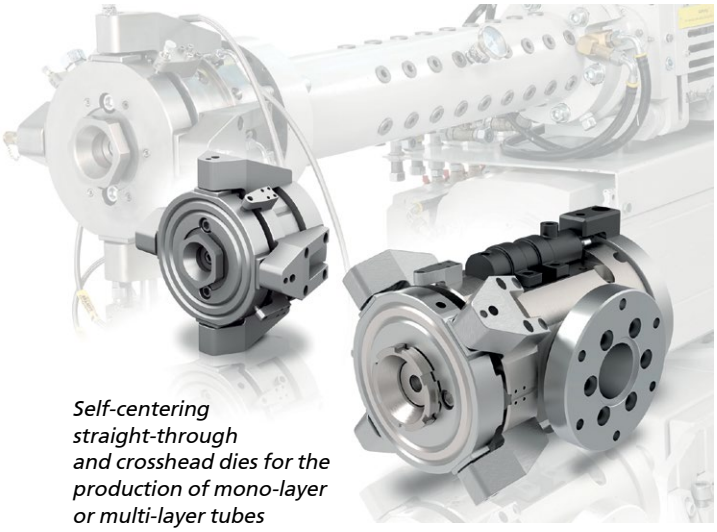
Time and Cost Savings in the Production of Rubber Tubes

Exact wall thicknesses are of particular importance in the production of rubber tubes. If the wall thickness is too thin, quality is compromised – but if the wall is too thick, more material is needed in the production process. KraussMaffei's self-centering tube dies equipped with a wall thickness gauge provide an excellent solution to tackle this problem. They precisely correct any deviations in the ongoing extrusion process. In addition, maximum repeatability is ensured when it comes to frequent batch changes.

Extruder with self-centering tube die and downstream X-ray system to detect and correct wall thickness and concentricity

As compared to conventional solutions, customers benefit from substantial material savings when using the self-centering tube dies combined with a wall thickness measuring system. Regardless of the production speed, the system automatically controls and optimizes the hose wall thickness and the concentricity during the extrusion process. The wall thickness tolerance range is thus reduced by 0.05 mm, which ensures material savings of up to 2.5 %. Due to the input material reduction, the investment pays off after just a few weeks in 24/7 production. "Further savings potential can be found in the set-up times of the hose extrusion lines. Instead of wasting time with die changes, adjustments or start-up/shut-down processes, the extruders or extrusion lines equipped with self-centering tube dies reach production mode much faster, which saves time for further operations," explains Dr. Gerard Nijman, Global Application & Product Owner Tire & Rubber at KraussMaffei.



Self-centering straight-through and crosshead dies for the production of mono-layer or multi-layer tubes

Automatic correction of setpoint variations

Self-centering tube dies are available for single or multilayer tubes with or without fabric reinforcement in the diameter range of 3 to 120 mm and suited for different extrusion pressures. Thanks to the automatic adjustment, the floating die inside the extrusion head can be displaced in any required direction. In the event of batch changes, new head parameters are set at the push of a button. Any setpoint deviations in terms of wall thickness and concentricity are immediately corrected and displayed on the control panel. The system stands out for highly professional and reliable production combined with maximum product quality.

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www.kraussmaffei.com

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