

06/2023

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# EXTRUSION INTERNATIONAL



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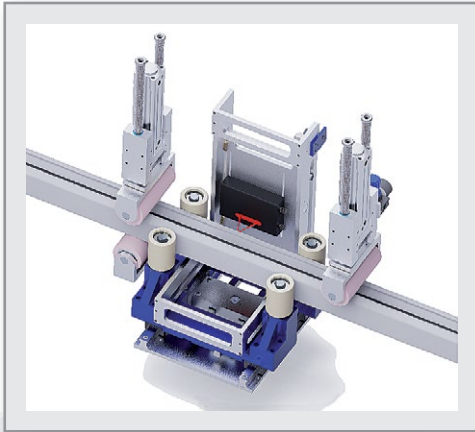


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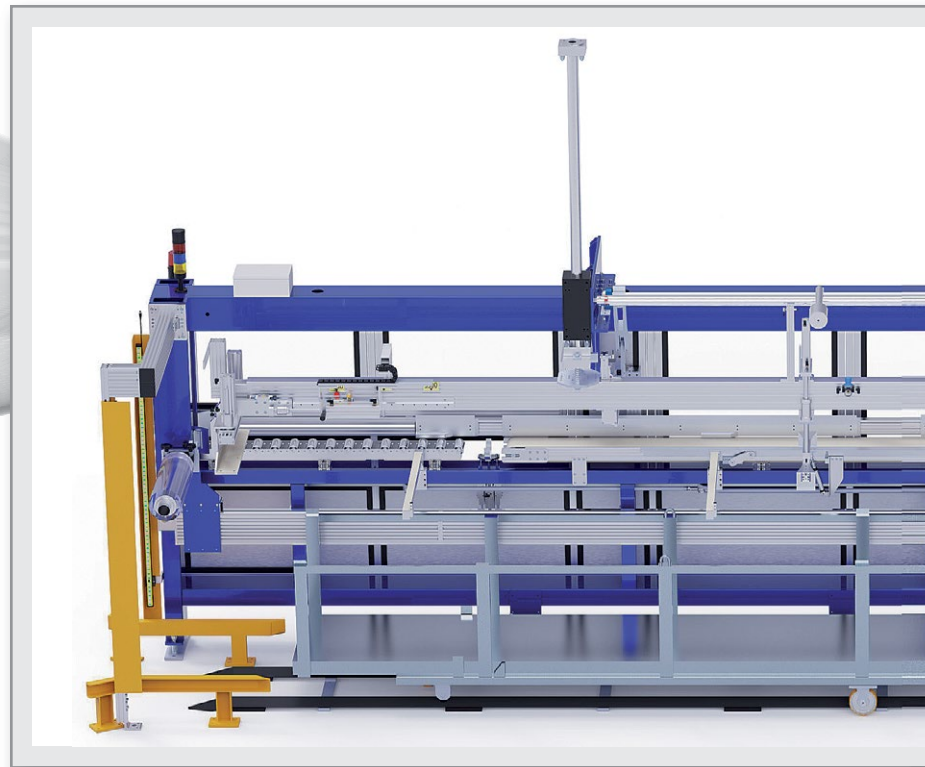
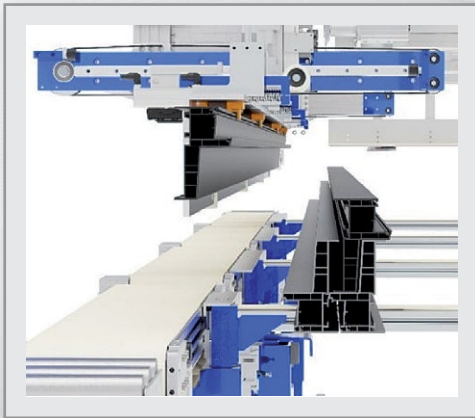
## Stein Profile Stacker



### 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.



## Stein Profile Stacker



### Weight determination during extrusion

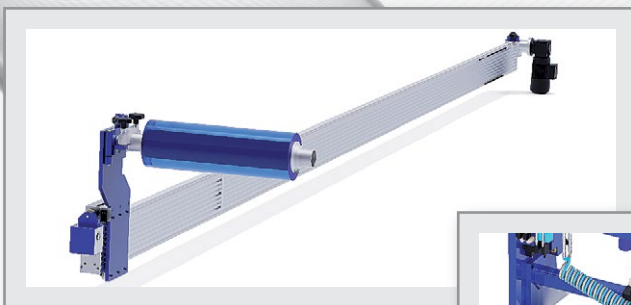
With the help of special weighing units, individual profiles can be weighed before a profile layer is formed. The determined weight can be used to optimise the extrusion.

As a specialist in the field of special machine construction, we always find a solution!



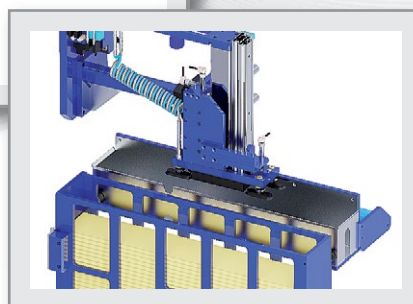
### Cassette handling

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.



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Following its impressive performance in 2023, CHINAPLAS 2024 will be held from April 23 to 26, 2024, occupying all 15 exhibition halls in Shanghai, with a total exhibition area of over 380,000 sqm. It is ready to receive more than 4,000 exhibitors from around the world



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The 28th Fakuma successfully took place in October. With 1,636 exhibitors in twelve exhibition halls and several foyer areas, the trade fair was a fully booked celebration for plastics. The exhibitors showed lots of new products and, above all, gave many confident outlooks for the future



40

Coperion has developed a process solution for particularly energy-efficient manufacturing of acrylonitrile-butadiene-styrene copolymer (ABS) blends, with the Coperion ZSK Mc18 twin screw extruder playing a key central role



48

Guill Tool has achieved a series of successes in the areas of multi-layer dies and, most recently, a reciprocal tubing die for wound draining that reconfigures the internal chambers of the tubing to accommodate drainage

Lindner Washtech and Vadias Recycling are looking back on a 10-year anniversary and, together with Erema, on a successful partnership that has lasted just as long. Back in 2013 Vadias commissioned the first-ever Lindner Washtech washing line

Strolling was yesterday – in the meantime, countries such as Germany and Great Britain are also turning to the high-speed data highways. And the cable, wire and pipe industries have long been ready to play a decisive role in shaping the glass future



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#### wire and Tube

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[www.wire.de](http://www.wire.de), [www.tube.de](http://www.tube.de)

#### Chinaplas 2024

23 - 26 April 2024  
Shanghai / PR China  
[www.ChinaplasOnline.com](http://www.ChinaplasOnline.com)

#### NPE2024

06 - 10 May 2024  
Orlando, Florida / U.S.A.  
<https://npe.org/>

#### KUTENO

14 - 16 May 2024  
Rheda-Wiedenbrück / Germany  
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#### Plastpol

21 - 23 May 2024  
Kielce / Poland  
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#### Fachpack

24 - 26 September 2024  
Nuremberg / Germany  
[www.fachpack.de](http://www.fachpack.de)

#### Solids Dortmund

09 - 10 October 2024  
Dortmund / Germany  
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#### Fakuma 2024

15 - 19 October 2024  
Friedrichshafen / Germany  
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## Long-awaited Return to Shanghai after Six Years Rising Expectations to CHINAPLAS 2024 from the Industry

China's economy is showing signs of quick recovery while Asia acts as the locomotive of the global economy. As the economy continues to rebound, the exhibition industry, which is regarded as an economic barometer, is experiencing a strong recovery. Following its impressive performance in 2023, CHINAPLAS 2024 will be held from April 23 - 26, 2024, occupying all 15 exhibition halls of the National Exhibition and Convention Center (NECC) in Hongqiao, Shanghai, PR China, with a total exhibition area of over 380,000 sqm. It is ready to receive more than 4,000 exhibitors from around the world.

The market trends of decarbonization and high-value utilization are unlocking the golden opportunities for the high-quality development of the plastics and rubber industries. As Asia's no. 1 plastics and rubber trade fair, CHINAPLAS will spare no efforts to promote the high-end, intelligent, and green development of the industry. The exhibition is making a strong comeback to Shanghai after a six-year absence, upholding the anticipation within the plastics and rubber industries for this reunion in Eastern China.

The industrial sector is the cornerstone of the macro-economy and the frontline for stable growth. Start-

ing from June 2, 2023, the Regional Comprehensive Economic Partnership (RCEP) officially took effect in the Philippines, remarking the full implementation of RCEP among all 15 signatories. This agreement allows for the sharing of economic development benefits and reinforcing the growth of global trade and investment. For most RCEP members, China is their largest trading partner. In the first half of 2023, the total import and export volume between China and other RCEP members reached RMB 6.1 trillion (USD 8,350 billion), contributing over 20% to China's international trade growth. In addition, as the "Belt and Road Initiative" celebrates its 10th anniversary, there is a pressing demand





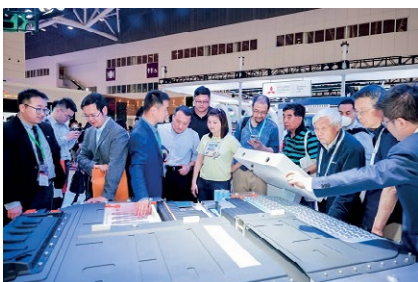
for infrastructure and manufacturing industry, and the market potential along the Belt and Road routes is poised for development.

The global buyer team of the show organizer has received positive feedback during their visits to overseas markets. A number of business associations and companies from various countries and regions have expressed their anticipation and support for CHINAPLAS 2024, and have started organizing delegations to join this annual mega event.

**Seizing New Opportunities in China's Market:** Besides the rebound of foreign trade performance, domestic demand is also seeing a strong recovery. In recent years, China's manufacturing industry has been striving for high-quality development, high value-added and smart manufacturing. Among them, the Ministry of Industry and Information Technology in China, in collaboration with relevant departments, has released robust growth plans for ten key industries, including chemicals, building materials, automobiles, light industry, and electronic information manufacturing industry etc. It imperatively promotes the application of innovative products such as new energy vehicles, smart home appliances, green building materials in rural areas, high-end medical equipment, and robotics.

Shanghai, holding for CHINAPLAS 2024, has released a three year (2023-2025) action plan to promote the high quality development of the city's manufacturing industries, and strengthen of the manufacturing industry's role in supporting the overall economic development of the city, accounting for over one-fourth of the regional GDP.

The industrial transformation is accelerating, and new impetus is becoming more prominent. "This year,



during our communications with plastics and rubber suppliers, we evidently felt that both overseas and local companies have vast confidence in the Chinese market and are very optimistic about exploring business opportunities in China," said Ada Leung, General Manager of Adsale Exhibition Services Ltd., the organizer of CHINAPLAS.

**Time to Show-off Innovative Products and Technologies to the World:** The immense demand of exhibition booths in CHINAPLAS 2024 shows that the confidence of the plastics and rubber industries has recovered just like the economy does. "Reserving booths, showcasing capabilities, capturing business opportunities, and building brand awareness" have become the must-do list of exhibitors to demonstrate their strengths in the post pandemic era. In response to the exhibiting demand from the industry, the exhibition area will increase by over 11% compared with the show in 2018 at the same venue in Shanghai.

During the expansion of the show, it is expected to have a more diverse range of exhibits in the fairground, as well as exhibitors. International exhibitors are returning to the exhibition enthusiastically and European pavilions are foreseen to regain their pre-pandemic scale. State-owned enterprises and private companies in China, including "Professionalization, Refinement, Specialization and Innovation (PRSI)" enterprises and "Little Giant" companies, shall shine together on the stage. These industrial

leaders are bringing breakthrough technologies and showcasing limitless potential for independent innovation. The technologies of plastics and rubber industries have evolved rapidly, with its applications continuously expanding and developing. With over 4,000 exhibitors, professional trade buyers in different application sectors will find a variety of advanced and environmentally friendly solutions as well as intelligent manufacturing technologies for the exploration of innovation, skill enhancement, efficiency improvement, and rapid response to market demands. Technological innovations, serving as the "golden key", will foster the high-quality development of the plastics and rubber industries.

**Online Pre-registration is Open:** "In 2023, CHINAPLAS has reached a new record high in terms of exhibition area and no. of visitors, giving us great confidence and determination. With the accumulated market demands and expectations for the show, returning to Shanghai means a fresh start and brand-new journey to us. As we enter another crucial year, we will strive to present a splendid annual event for the plastics and rubber industries. Look forward to meeting you all in CHINAPLAS 2024 in Shanghai and jointly promoting the high-quality development of the plastics and rubber industries," said Ms. Leung.

For more information or enquiries:

► [www.ChinaplasOnline.com](http://www.ChinaplasOnline.com)

## 32nd International Colloquium Plastics Technology in Aachen/Germany

In the coming year, IKV is extending an invitation to the 32nd International Colloquium Plastics Technology – a lively forum for technical exchange and an excellent opportunity to discuss the latest developments and technologies in the plastics industry. The participants can look forward to a unique event that brings together the whole plastics sector. The Colloquium will take place on 28 and 29 February 2024, in Aachen/Germany.

### Varied lecture programme for an individual agenda

At the heart of the Colloquium will be the 15 lecture sessions, during which the current research topics at IKV will be presented. These sessions are consistent with IKV's objective to carry out "Research for practical use", and are intensively dedicated to the perspectives and demands of the industry.

Each of these sessions begins with a keynote speech from experienced industry representatives. This paves the way for the subsequent scientific papers, and creates the connection to industrial practice.

### IKV 360° Research live illustrates the topics with a practical orientation

Visitors will be able to put together their own personal timetable of lectures by deciding at the Colloquium which sessions are of most interest to them. On the first day of the event, at the traditional IKV 360° Research live, IKV will open its doors to the visitors to make a tour of the Institute's testing facilities and pilot plants. This is where the active connection is made between the lecture topics and practical application. At more than 80 test stations, the contextual and structural diversity of IKV's research activities will be demonstrated live. For the first time, following the move out of the old injection moulding laboratory on Pontstraße, all test stands will be presented together on the Campus Melaten, and the Plastics Innovation Centre will be presented to the specialist public.

### Industry trade show will present pioneering innovations for the industry

The accompanying industry trade show as part of the IKV Colloquium has been serving for many years as a central meeting point for the plastics segment. Here, there are outstanding opportunities to nurture and expand professional networks, creating the ideal framework for an intensive exchange of ideas with



experts, decision-makers and business partners. The trade show combines application-related research with industrial development and innovation on an exhibition area of around 400 m<sup>2</sup>. The entire value chain of plastics technology will be represented here, from machinery and equipment manufacturers, converters and raw material suppliers to producers of analysing and testing technology and consulting companies for the plastics sector.

### Recruiting speed-dating to combat the shortage of new recruits

To counter the general trend involving the shortage of upcoming new recruits, IKV will, in 2024, embark on new ways to bring young talent to the plastics industry. At the proven recruiting speed-dating event (which so far has only been available to member companies of the IKV Association of Sponsors), all companies in the industry can now participate if they are searching for new staff and upcoming recruits. Speed-dating is an event at which students and university graduates have an opportunity to come into contact with potential employers in short and concise discussions. The aim is clear: To find the right candidates for internships, final dissertations and employment in the plastics industry. The event will take place on 29 February in the Eurogress on the fringe of the Colloquium, and promises to be an enriching experience for both students and companies.

Institute for Plastics Processing  
In Industry and Draft at RWTH Aachen University  
[www.ikv-kolloquium.de](http://www.ikv-kolloquium.de)  
[www.ikv-aachen.de](http://www.ikv-aachen.de)

## Interplas – Celebrating 75 Years of Connecting the UK Plastics Industry

The UK's No.1 plastics event, Interplas returned to the NEC in Birmingham, celebrating its 75th anniversary.

The show was packed with product launches and the latest plastics technology and innovation from over 540 exhibitors from 30 countries. Alongside this inspiring show features and engaging presentations across two stages ensured visiting professionals gained high-level manufacturing insights and actionable ideas that they could take away.

Networking was high on the agenda too with the Interplas After Show party and Interplas Social taking place on the first two evenings of the show, enabling the industry to reconnect and recharge at the end of three extremely busy days.

Duncan Wood, CEO of Rapid News Group, the organiser of Interplas, commented: "The £27 billion UK plastics industry came to Interplas to do business and our exhibitors have had an absolutely fantastic week. The

industry really came out to celebrate our birthday and we are delighted with the outcome. We are privileged to own and operate this 75-year-old institution called Interplas and it was a real pleasure to announce the Interplas 75@75 during the week reflecting on who has helped shaped the industry and the event in the last 75 years. Now we look forward to 2026 on our new date-line of June, enabling us to co-locate with our other events TCT 3Sixty and Med-Tech Innovation Expo, and alongside a plethora of additional industrial events from partner organisers Nineteen Group and Mark Allen Group which will deliver even greater return on investment for our exhibitors and create a real focal point for UK Manufacturing."

Interplas 2026 will take place at the NEC, Birmingham, June 2-4, 2026.

► [www.interplasuk.com](http://www.interplasuk.com)

## Plastpol 2024 – New Technologies, New Supply Chains, New Markets

The expo centre's halls become a factory packed with modern machines and production lines. The pavilions are also the place to discuss critical challenges, such as recycling, and establish relationships that result in business development, with a special focus on export. The organisers are already working on the 28th unveiling of the event – from 21 to 24 May 2024. Companies can already book expo stands.

The previous May expo's facts and figures provide extra motivation. Six hundred companies from 29 countries filled all the Targi Kielce expo halls to the brim. About half of the exhibitors are foreign companies representing Austria, Belgium, the Czech Republic, Denmark, Egypt, France, Spain, the Netherlands, India, Ireland, Israel, Japan, South Korea, Turkey, Italy, Germany, Portugal, Romania, Switzerland, Sweden, Slovakia, Taiwan, Ukraine, UK, Hungary, Latvia and China.

The expo's role was strengthened after the outbreak of war in Ukraine. Kielce has become the supply-chains creator. This development is possible thanks to the

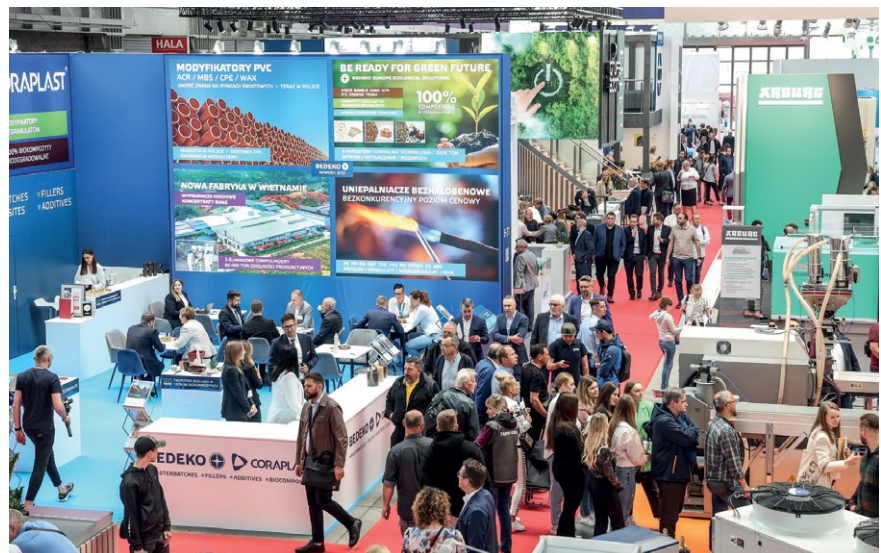
presence of exhibitors from three continents –emphasises Kamil Perz, director of the Plastpol project.

Business-insider visitors are most interested in expo stands, which feature the most cutting-edge plastics processing, treatment and recycling machines. Raw materials and feedstock for processing, such as granules and recyclates, as well as transport and logistics offers, are in great demand. The May expo

hosted nearly 15,000 people from Poland and abroad.

Meetings of entrepreneurs are conducive to discussing changes and industry challenges; the upcoming show's hot topics include zero-emission and circularity of production. Conferences which feature industry experts also put these themes in the limelight.

► [www.plastpol.com](http://www.plastpol.com)



## NPE2024 –The Plastics Show’s Education Sessions

The Plastics Industry Association (PLASTICS) officially unveils more than 90 Educational Sessions ahead of NPE2024: The Plastics Show, taking place May 6-10, 2024, at the Orange County Convention Center in Orlando, Florida. NPE2024 is redefining the education experience for attendees through a new immersive learning journey on key topics in the plastics industry, such as workforce development, circularity and artificial intelligence, among many others.

Produced by PLASTICS, the educational program was designed to help businesses tackle the ever-changing challenges of the industry, with exclusive opportunities to gain insights from plastics experts around the world. "With more than 100 sessions total and 60 industry speakers present at NPE, attendees will learn about the future of plastics, the important part they play in our evolving industry and how plastics contribute to our daily lives and our circular economy," said PLASTICS President and CEO Matt Seaholm.

Attendees with the expo pass registration will have access to more than ever before with over 75 education sessions located on the show floor in the all-new Spark Stages. Highlighting advanced artificial intelligence applications, the future of plastics, business productivity & profitability, sustainability & advancement of the circular economy and more, attendees are encouraged to tailor their education schedules to meet their personal business needs.

The three Spark Stages are:

- Bottling Stage: Attendees will discover advancements in technologies for the beverage and non-food segments.
- Innovation Stage, sponsored by the Plastics Hall of Fame: Participants will witness the latest in electrifica-

tion, Industry 4.0, thermoplastic alchemy, UV blockers, engineered thermoplastics and other exciting topics.

- Sustainability Stage: Explore how the entire plastics supply chain is developing solutions to improve efficiency, reduce materials loss, use less power and more.

Off the show floor, and for the first time in its history, NPE will host some of the industry's biggest and brightest speakers during:

- Industry briefings featuring thought leaders in the automotive, building and construction, consumer goods, and medical and packaging industries.
- Comprehensive plastics industry briefing that will include timely business updates from every market segment, including global insights on the economic impact of plastics, market trends, future forecasts on recycling and a review of the Global Plastics Treaty.
- Market Trends sessions with insights into the U.S. recycled plastics industry, the future of polyethylene and polypropylene and other leading topics.

To attend these new off-floor sessions, an Expo Plus registration is required to unlock Market Trends with ICIS, while Expo Premier gives attendees complete access to tailored industry insights and on-demand post-show recordings.

Every three years, NPE gathers the global plastics industry in the U.S. to highlight innovation in one of the biggest exhibit halls in the world, but NPE2024 goes further. "These new Education Sessions are an opportunity to gain insightful takeaways to help organizations and individuals solve their toughest challenges and shape the future of the plastics industry," said Arlene Davis, Director of NPE Content and Experience at PLASTICS.

## NPE2024 To Feature Technical Seminars in Spanish on Plastics Technology and Circular Economy

The Plastics Industry Association (PLASTICS), along with „Tecnología de Plástico“ and its sister publications, announced two technical seminars in Spanish during NPE2024: The Plastics Show, called Seminarios Latinoamericanos. NPE2024, which will take place May 6-10, 2024 in Orlando, Florida, is the largest and most influential global plastics industry event in the United States.

Produced by PLASTICS, NPE’s educational program has been supported by „Tecnología de Plástico“ and its sister publications since 2006 providing technical seminars in Spanish for attendees from Latin America. "Around 1,000 Latin American entrepreneurs have benefited from our technical seminars entirely in Spanish during NPE over the years. For NPE2024 we have created two integrated curriculums that dive into topics, such as the evolution of plastic technologies, strategies to improve energy efficiency, innovative methods for circularity, forecasts about recycling and much more," said Laura Florez, editor-in-chief of „Tecnología de Plástico“. "The

sessions in Spanish will take place on May 7 and 8 during the week of NPE. These sessions will give attendees the possibility of combining their visit to NPE2024 with updated and carefully selected content in their own language. The sessions will also provide attendees with the opportunity to exchange ideas and contacts with other industry leaders, yet another reason to make your trip to Orlando worthwhile!" concluded Florez.

Every three years, NPE offers the plastics industry a global platform to highlight innovation in an exhibit hall with more than 1.1 million net square feet of exhibit space at the Orange County Convention Center in Orlando, Florida. NPE2024 will offer opportunities for everyone in the industry, even those just starting their career.

The Seminarios Latinoamericanos are also sponsored by FIMIC, HUSKY, Milliken, and SUKANO.

➡ <https://npe.org>

➡ <https://npe.org/seminarios-latinoamericanos/>

# Acquisition

Davis-Standard announced that it had reached a definitive agreement to acquire the Extrusion Technology Group (ETG) from entities controlled by the Dutch Investor Nimbus. The acquisition is subject to customary closing conditions. Davis-Standard has been majority owned by funds affiliated with Gamut Capital Management, L.P. (Gamut) since December 2021 and serves the global infrastructure and packaging end-markets with a highly engineered suite of extrusion equipment and converting systems supported by world-class aftermarket spare parts, service, and support for its base of industry critical customers.

ETG is a well-established player in the global extrusion equipment and services sector with a history dating back to 1943. With a reputation for world-class engineering and innovation, ETG is a leader in the supply of extrusion equipment and downstream processing equipment, in addition to extensive tooling, dies, spare parts, and service capabilities, for the global pipe, profile, film and sheet markets. ETG’s operations span Europe, the United States, and Asia and includes long-established and storied brands, such as Battenfeld-Cincinnati, Exliq (formerly known as Greiner Extrusion), and Simplas.

Giovanni Spitale, CEO of Davis-Standard, stated: “We have long admired ETG’s capabilities and highly engineered products and are thrilled to welcome ETG into

the Davis-Standard family of brands. The acquisition of ETG will be highly complementary and diversifying to our fast-growing enterprise, and we believe it will allow Davis-Standard to provide a broader and deeper product portfolio to our customers. We intend to establish the ETG business as a standalone segment that will continue to serve its base of customers with additional support and capabilities from the broader Davis-Standard platform. We believe that the combination of our world-class engineering capabilities, our global scale, and the sharing of best practices will only enhance our ever-expanding value proposition in the extrusion value chain.”

Gerold Schley, CEO of ETG, will join the Davis-Standard senior leadership team and continue to manage the ETG business after closing of the transaction. “I am exceptionally proud of the growth and success that we have achieved across all of ETG’s businesses under the stewardship of Nimbus. This merger is a great outcome that we believe will create a best-in-class, diversified global supplier of highly engineered extrusion equipment.”

battenfeld-cincinnati  
www.battenfeld-cincinnati.com

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



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**RAS 800**

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- +++** OPTIMIZED RADIAL DISCHARGE VALVE

## Acquisition

Busch Vacuum Solutions, one of the largest vacuum pump manufacturers worldwide, has acquired centrotherm clean solutions, one of the technology leaders in industrial gas abatement systems. The strategic acquisition underlines the commitment of Busch Vacuum Solutions and Pfeiffer Vacuum to sustainability and will help to further strengthen the position as a proven solution provider in the semi-conductor industry and other related sectors.

"The acquisition of centrotherm clean solutions is a crucial step in our long-term strategy to advance sustainable technologies and solutions together with Pfeiffer Vacuum," said Sami Busch, Co-CEO and Co-Owner of the family-run company Busch Vacuum Solutions from Maulburg. "The innovative gas abatement systems from centrotherm clean solutions are a perfect addition to the Busch and Pfeiffer Vacuum product portfolio. Integrating the companies under one umbrella will enable us to

*The centrotherm clean solutions campus in Blaubeuren (photo: centrotherm clean solutions)*



*The headquarters of Busch Vacuum Solutions in Maulburg (photo: Busch Vacuum Solutions)*

serve our customers even better in the future and offer complete sustainable vacuum solutions. Additionally, the companies already collaborate successfully on individual projects in the field of service. Therefore, the customers of centrotherm clean solutions will also benefit from our worldwide service network in more than 45 countries."

Centrotherm clean solutions has its headquarters in Blaubeuren, and is also present at other locations in Europe, America and Asia. As a provider of technologically leading gas abatement systems especially for the semiconductor and high-tech industries, the company employs over 300 people worldwide, who can draw on the experience of a thirty-year company history. The company's headquarters and production site in Blaubeuren, as well as all worldwide locations and jobs, will be retained after the acquisition.

**Busch Vacuum Solutions**  
[www.buschvacuum.com](http://www.buschvacuum.com)

**centrotherm clean solutions**  
<https://centrotherm-cs.de/>

## New Austrian Production – Facility Is Fully Operational

Extreme Coatings, a leading global supplier of wear-resistant coating solutions for the plastics and rubber industries, has announced that its new manufacturing facility in Austria for the production of high-performance coatings for feedscrews in injection molding and extrusion applications is fully operational.

The company has established a European subsidiary, Extreme Coatings GmbH, and formed a strategic partnership with a leading Austrian engineering services company to operate the facility. The new plant is already meeting the application needs of a range of European customers including plastic part manufacturers for the automotive, packaging, and profile markets.

The increased capacity in Europe will shorten lead times, reduce shipping costs, and establish local supply for Extreme Coatings' growing customer base throughout Europe, according to Scott Caplan, Executive Vice President, Extreme Coatings. The 15,000-sq-ft Austria plant expands Extreme Coatings' global footprint which includes operations in India, South Korea, and Chile.

"We've expanded our global footprint so we can break the logistical logjam that exists today and ensure stable supply to all key European regions," said Caplan.

Extreme Coatings has established a licensing agreement with Austria's FS Maschinenbau, a family-owned engineering services business, to provide engineering and manufacturing services. Extreme Coatings has transferred technology and know-how to FS Maschinenbau and new equipment has been installed at the new plant.

FS Maschinenbau is a leading developer and manufacturer of machine tools and equipment for the manufacturing of rotors, stators, and screws. The company has been a leader in being a solutions provider for the oil and gas service companies, providing state-of-the-art machine tools, automation and turn-key solutions for complete manufacturing plants for rotors and stators.

Europe continues to be a growing area for plastics manufacturing with feedscrew coatings playing a pivotal role in optimizing the performance of injection molding and extrusion machinery for production of automotive, household goods, and building products.

**Extreme Coatings**  
[www.extremecoatings.net](http://www.extremecoatings.net)

## In-Line Wall Thickness, Concentricity, Outside Diameter and Ovality Measuring Solution for Single or Multilayer Tube & Pipe Applications

ZUMBACH Electronic, a leading manufacturer of non-contact measuring technologies for the wire and tube industry, is presenting the newest RAYEX S series with new mechanical design and improved measuring algorithms for achieving its best measuring results yet.

The RAYEX® S measuring gauge is now available with embedded Webserver access as well as native communication protocols such as OPC UA, Ethernet or Profinet. No additional processor or display units are required.

However, when combined with the known USYS IPC 2e processor and display solutions and other additional measuring equipment such as ODAC® laser diameter and ovality gauges, ultrasonic wall thickness and concentricity measuring systems, KW lump and neck-down detectors etc, the RAYEX® S Series are also able to control entire production lines.

### Key Features and Advantages:

*High stability and accuracy:*

- Sub-micron repeatability

*Measuring frequency up to 20 Hz (in standard mode)*

*Simple concept and easy to use:*

- 4 wall thickness points, 2 diameters, ovality
- 2 X-ray sources positioned at a 90° angle
- Integrated exhaust device for keeping measuring windows clean

*X-ray sources:*

- Extremely robust and stable
- Easy to exchange, no realignment
- Expected life time approximately 4 years

*High safety level of the X-ray sources:*

- Unique screening concept
- Minimal scatter, no lead inside the equipment
- Outside radiation levels meet national and international standards

ZUMBACH Electronic AG

www.zumbach.com

## Breathing New Life Into Plastics

Against a global backdrop of growing awareness of the need to reduce the production of high volumes of plastics and optimize their management, the Intergovernmental Negotiating Committee established by the UN has declared that a legally binding agreement on plastic pollution will be established by the end of 2024. In fact, annual production of the latter has more than doubled in the past 20 years to 460 million tons, which, without proper and timely action, could triple by 2060. The Committee's final negotiations will therefore focus on steps to be taken to make a decisive breakthrough in terms of reduction, recycling and reuse. This is the context for the efforts of Bausano which, with its new E-GO R line, promotes the regeneration of plastics and waste, industrial and in-house, for extrusion under the banner of the circular economy.

Specifically, the innovative E-GO R technology allows highly contaminated plastic materials, such as HDPE residues from containers for: milk, motor oil, shampoos and conditioners, soap, detergents, and bleach, to be fully reintegrated into production processes. Other examples include PP waste from lunch boxes, yogurt jars, syrup and medicine bottles, caps and LDPE waste from cling film, shopping bags and squeezable bottles.

In fact, E-GO R extruders are ideal for recycling both light and highly humid materials, as well as heavy films and materials with low water content. Following crushing, the flaked and ground plastic is conveyed directly into the extruder by means of a force-feed system designed specifically for this type of use. In the process, volatiles and moisture are removed by a high-performance degassing system, which prevents the development of defects in the granule such as "air bubbles," caused by gases in the starting compound or formed in the extrusion steps. The extruded mass is then filtered and directed to the granulation head. In addition, constant speed, combined with advanced screw design, ensures the highest standards of product quality. Finally, the liquid ring or immersion cutting system completes the line.

The E-GO R lines can also be fitted with the Smart Energy System, the patent-pending system based on induction heating of the barrel that meets the needs of optimizing production processes in plastics extrusion. Unlike traditional resistor-based systems, heating is done without contact by an alternating electromagnetic field, synonymous with maximum performance and superior energy savings of up to 35%.

Bausano S.p.a.

www.bausano.com

## Investment in Collaboration

LIOF, the regional development company for the Dutch province of Limburg/The Netherlands, announced its strategic investment in Healix, a clean-tech company and pioneer in the fight against the plastic soup. Healix does this by producing high-quality, circular polymers from discarded rope and nets in collaboration with supply chain partners including The Ocean Cleanup. The polymers are then used as granules in the plastics industry. This innovative production method also reduces the company's ecological footprint. This investment in Healix is fully in line with LIOF's ambition to finance frontrunners in the circular economy.

LIOF had been following Healix closely for some time, and saw an ambitious idea turn into a bricks-and-mortar recycling plant in record time. "This investment from LIOF's Participation Fund will be used to optimize the plant in Maastricht, set up by Marcel Alberts at the end of 2021," said investment manager Stefan Vocks. Annemoon Borst, another investment manager, added: "But our ambitions go beyond Maastricht. This plant serves as a blueprint for international scale-up in the near future, with a focus on key locations for waste stream collection. Plans for this are already in the pipeline."

"Everyone believes that having a circular economy is key to addressing the problems we now face in terms of climate, biodiversity, and pollution. However, Healix's ambitions in this area are being curtailed by an unfavorable economic climate, low prices for virgin plastics, and delays to legislation on plastics recycling. We're excited to join forces with LIOF. Besides being an investor from our home province, they share our social and sustainable values and enable us to continue our mission," said Marcel Alberts, CEO and founder of Healix.



"This strategic investment will enable us to scale up while innovating and optimizing our operations in Maastricht, consolidating our position, and – of course – bringing about the positive change that the plastics chain needs."


Plastics pose a major risk to the environment. According to the Plastic Soup Foundation, more than eight million metric tons of plastic end up in our oceans every year. While discarded rope and nets are the deadliest form of waste for marine life, the vast majority of plastic comes from the mainland. For example, agriculture uses twelve million metric tons of plastic each year, yet only 6.5% of this is recycled. Despite the known risks, global plastic consumption is on the rise and annual production is expected to quadruple to 1,480 million metric tons by 2050.

Healix is among the leading innovative companies producing sustainable solutions to this growing plastic problem. The company is able to convert discarded rope and nets from agriculture and fisheries into certified, circular polymers in the form of pellets. As a key play-

er in the fight against plastic pollution, Healix also wants circular materials to take precedence over virgin plastics. To achieve this, Healix works closely with partners who collect waste streams and with leading industry players, such as Tama Group and LC Packaging, who use Healix's granules as a component in new products. In a nutshell, this process extracts valuable raw materials from waste streams, which would otherwise be discarded.

The company's production process also reduces CO<sub>2</sub> emissions (a reduction of 50,000 metric tons over a 5-year period) and fossil fuel consumption. "Petroleum is used to produce the conventional material for rope and nets. Our circular polymers' carbon footprint is four times smaller than the footprint of that conventional material. That's how we achieve such a huge reduction," said Healix founder, Marcel Alberts.

LIOF  
 liof.nl

Healix  
 healix.eco



# An Innovative Partnership Enables Efficient Production Optimisation and Cost-saving

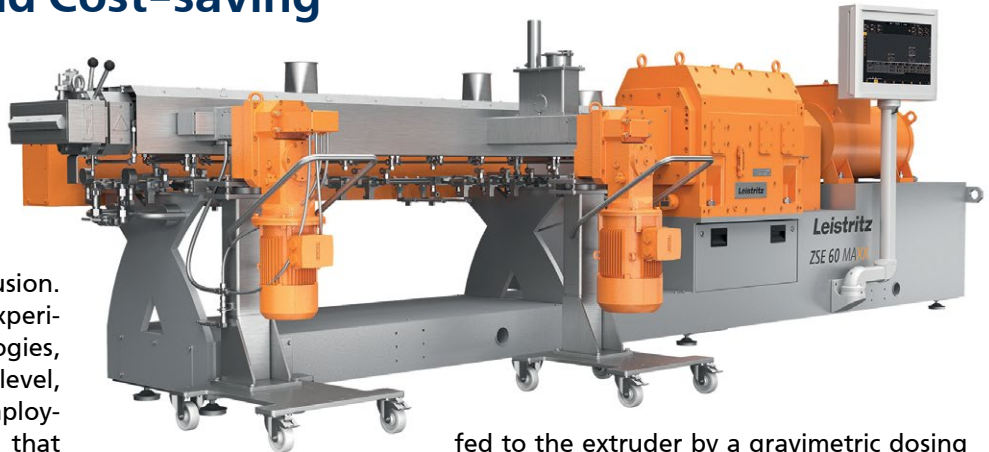
In the course of an innovative partnership, the two German machine building companies, Hans Weber Maschinenfabrik and Leistritz Extrusionstechnik, have implemented a trend-setting project in the field of pipe extrusion.

A great treasure trove of experience and the latest technologies, geared to the highest quality level, as well as highly motivated employees – these are the qualities that Leistritz Extrusionstechnik from Nuremberg and Hans Weber Maschinenfabrik from Kronach have in common.

Their customer clearly specified the requirements and tasks: the scope of project was a PP-3-layer pipe extrusion line, consisting of a main extruder (co-rotation twin-screw extruder) for the high-filled middle layer and two co-extruders for the inner and outer layer, as well as a multilayer head. The necessary production steps will be optimised, the production costs will be reduced and there will be savings in CO<sub>2</sub> and energy costs. Moreover, a further objective was to be able in future to react immediately to possible changes in recipes or market requirements regarding the feed materials.

The newly developed complete plant is equipped with a co-rotation twin-screw extruder type ZSE 60 MAXX made by Leistritz and two single-screw extruders type NE3.30, as well as a three-layer pipe head made by Hans Weber Maschinenfabrik. Combined with the respective gravimetric and dosing systems, this system offers clearly lower production costs for the customer.

Rather than two production steps (production of a compound (pellets) + pipe extrusion), Leistritz and Weber's system requires only one single step thanks to intelligent in-line compounding. In this case, it mainly saves production time and CO<sub>2</sub> and as a result, makes for an important contribution to climate protection. The high percentage of calcium carbonate CaCO<sub>3</sub> or barium sulphate BaSO<sub>4</sub> for the high-filled middle layer is directly



fed to the extruder by a gravimetric dosing system. A melt pump builds up the necessary and stable pressure of the melt.

The central line control is achieved by the control system OS5, made by WEBER. This ensures the integration of the downstream assemblies in a flexible and simple way.

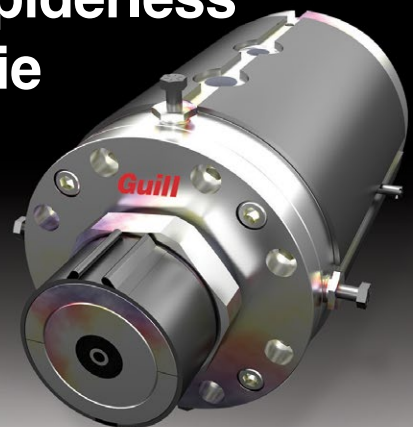
The complete planning, project management and execution of this project has been in the hands of a team of experts with employees of the two machine building specialists.

Hans Weber Maschinenfabrik GmbH  
[www.hansweber.de](http://www.hansweber.de)

Leistritz Extrusionstechnik GmbH  
[www.leistritz.com](http://www.leistritz.com)



## New Spiderless Pipe Die



Guill just launched its Spiderless Pipe Die, a new offering in extrusion. Capable of providing a finished extrusion with OD from 2"-15" and available in 4140 steel or stainless with heat treating, it's ideal for tube and pipe producers for large diameter capabilities.

With its focus on precision tooling thanks to extensive experience in medical tubing, flow analysis and Guill's ISO 9001 and AS9100 (Aerospace) quality systems, this new design offers increased material savings.

**Guill**  
**EXTRUSION TOOLING**

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For more information, visit [www.guill.com/series/900-series](http://www.guill.com/series/900-series)

## Growth of Leading Chinese BOPP Film Producer Supported

The GOEBEL IMS team celebrates the successful installation and operation of two MONOSLIT 9000 slitter rewinders on Guangdong Decro's new high-speed BOPP film production lines.

Guangdong DECRO Film New Materials Co., Ltd. is one of the top manufacturers of BOPP film in China, featuring four subsidiaries – including Guangdong DECRO Package Films Co., Ltd. – and three manufacturing facilities that total more than 187,000 square meters. Currently, DECRO runs seven international advanced BOPP lines, two functional coating lines and ten twin-screw extruders for functional Masterbatch. The company successfully listed on the Shenzhen Stock Exchange on October 30th.

GOEBEL IMS, the brand of IMS TECHNOLOGIES specialized in manufacturing machinery for the converting industry, has recently installed two cutting-edge MONOSLIT 9000 BOPP slitting rewinding machines. The two machines have a 1200 m/min speed and the newest design and technologies for processing special kinds of BOPP film.

He Wenjun, Vice President of Guangdong Decro Package Films stated: "As one of the worldwide leading BOPP manufacturers for specialty films, we always require sophisticated high-end equipment to meet our customers' demand. We



are happy to have identified GOEBEL IMS as a trustworthy partner for our primary slitting and rewinding operations. The performance of the machines is exceeding our expectations and especially the second line was installed and operating in record time. We are looking forward to continuing our positive working relationship with GOEBEL IMS."

Tobias Lankswiert, Managing Director of GOEBEL Schneid- und Wickelsysteme GmbH and Sales Director Film added: "We would like to thank Guangdong Decro for their trust in GOEBEL IMS and the good cooperation which enabled the very

successful commissioning of the two primary slitters for their two new BOPP lines with a working width of 8.7m."

The engineers from the commissioning team concluded: "Our collaboration with Decro was consistently guided by the shared objective to enhance machine productivity and handling. The Managing and Operation team constantly maintained transparency and fairness. Overall, it was a positive partnership and an extremely gratifying experience."

IMS TECHNOLOGIES Spa

www.imstechnologies.com

## Promoting Quality in Plastic Recycling

A fresh wind is blowing through the plastic recycle market. Thanks to a new collaboration between plastship, the procurement service provider and platform

*The OdorCheckerSpot (OCS) from 3S is an odour assessment tester tailored to the needs of the plastics and recycling industry (© plastship)*



operator, and 3S GmbH, a specialist in gas measurement technology. This sales cooperation makes 3S's odour assessment technology more directly accessible to a broader group of plastic recyclers and processors, marking an important step towards improved quality assurance standards in the industry.

At the heart of the collaboration is the OdorCheckerSpot (OCS) from 3S, a test device for odour assessment tailored to the needs of the plastics and recycling industry. The OCS allows for an objective and reproducible assessment of the material quality of recyclates to meet the industry's rising quality demands. The technology is already being used successfully in the automotive sector.

The flexibility of the 3S OdorCheckerSpot and the use of Artificial Intelligence (AI) allow for efficient odour assessment of various materials. For example, odour assessment of recyclates at different process steps becomes possible - either for continuous verification of process quality or for process optimization. Compared to conventional odour panels, the OCS offers higher reproducibility of measurement results. This is a significant advantage, especially in close alignment with the requirements of VDA 270. Moreover, the OCS scores with significantly lower investment and operating costs compared to sensory panels and analytical solutions. Its user-friendly design encourages easy handling, thus contributing to cost efficiency.

"The introduction of 3S technology on the plastship platform opens up new avenues for quality control in plastic recycling," says Andreas Bastian, Managing Director at plastship. "The OCS allows for a quick and reliable odour assessment, a crucial step for the development and acceptance of quality assurance standards."

Thorsten Conrad, Managing Director at 3S GmbH, adds: "This cooperation elevates quality assurance in plastic recycling to a new level, increasing efficiency and reliability in the production of recyclates."

3S GmbH  
sales@3S-ing.de

plastship GmbH  
Andreas Bastian, bastian@plastship.com

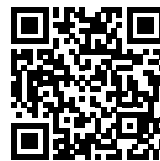
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## RAYEX® S Static X-Ray Measuring System

### Benefits:

- ✓ All in one! Complete system for precision measurement of wallthickness, ovality, eccentricity and diameter.
- ✓ Fast measurement, immediate response to product changes.
- ✓ Operator friendly due to smart measurement algorithms.
- ✓ State of the art connectivity with integrated Profinet IO, Ethernet TCP/IP, Ethernet IP, or OPC UA communication protocols.
- ✓ Minimum maintenance requirement.



min

2

Min. object diameter (mm)

max

100

Max. object diameter (mm)



up to 20

Scan rate (scans/s)

### Zumbach Electronic AG

Hauptstrasse 93 | 2552 Orpund | Schweiz  
Telefon: +41 (0)32 356 04 00 | sales@zumbach.ch  
www.zumbach.com

## Collaboration to Give Waste a Second Life

BASF and Teampas Group, a leading manufacturer of recycled pellets in Southeast Asia, have collaborated to transform post-consumer waste into new high-quality office equipment and car interior parts with the help of BASF's IrgaCycle®.

With a wide network of local waste collectors of household products, E&E equipment, and end-of-life vehicles, Teampas produces recycled pellets for use mainly in electrical appliances. To address their customers' growing demand for high-quality recycled resins, Teampas decided to use IrgaCycle to compatibilize mixtures of polyolefin plastics and mitigate the thermal and mechanical stress of the recycling process.

"Our priority is to help Teampas control the variation in the quality of recyclates and improve the performance of their final products," said Hazel Sprafke, Vice President, Global Business Management, Plastic Additives, Asia Pacific. "As IrgaCycle is a unique combination of additives, it is safe and easy to dose as needed to minimize the impact of impurities in recyclates."

In addition, with the use of IrgaCycle, Teampas can improve the surfaces of parts produced using their recyclates. Chair armrests, printer exteriors, and car stereo frames can all be produced with higher gloss and greater long-term thermal stability.

IrgaCycle can even enable these finished products to be made with 100% recycled pellets. The use of plastics in high-value applications drives a growing circular economy and helps reduce greenhouse gas emissions for a positive impact on climate change.

"The joint efforts between BASF and Teampas will continue as we aim to use IrgaCycle for applications in the packaging industry," said Pongsakorn Atichatsrisakul, Executive Director of Teampas Group. "Our part-



nership with BASF will not only help us tackle recycling quality but contribute to the goals laid out in the Thai government's National Roadmap on Plastic Waste Management (2018-2030)."

As part of BASF's VALERAS portfolio, IrgaCycle consists of a series of plastic additive formulations, which enable recycled plastics to be used for the production of high-value parts in combination with virgin materials.

**BASF plastic additives**

► [www.plasticadditives.basf.com](http://www.plasticadditives.basf.com)

► [www.performancechemicals.basf.com](http://www.performancechemicals.basf.com)

## Investment

Orion is investing €12.8 million – including €6.4 million in funding from the German government and European Union – to further develop and demonstrate a climate-neutral process for producing carbon black from alternative carbon sources.

The technology is designed to improve Orion's yield and throughput in the production of carbon black using circular feedstocks and thus potentially reduce the carbon footprint of the process by a significant amount. This could accelerate the shift to a circular economy and feed the growing demand for sustainable materials in the tire industry.

Half of the €12.8 million Orion plans to invest in this initiative, called the "Clean Carbon Black Research and Development Project," will be provided by the decarbonization program of Germany's Federal Ministry of Economic Affairs and Climate Action, supported by the EU's NextGenerationEU fund.

"We are grateful for the funding from the EU and the German government. It shows a great commitment to innovation and creating a circular economy," Orion CEO Corning Painter said.

"For years, Orion has been a leading innovator in making carbon black from circular feedstocks," Painter added. "The Clean Carbon Black Research and Development Project's aim will be to develop ways to reduce the carbon footprint and improve the yield and throughput, potentially lowering the cost of the material. Technological breakthroughs in this increasingly important field could have significant ramifications for energy integration and the molecular recycling of tires."

A research facility is being built for the project at Orion's main innovation center at its plant in Cologne.

**Orion S.A.**

► [orioncarbons.com](http://orioncarbons.com)

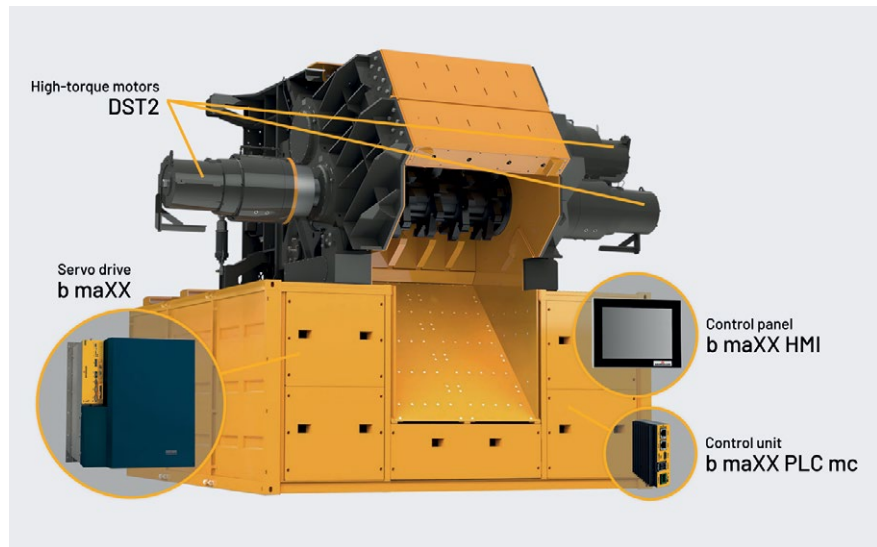
## Efficient Drive Solutions for Shredders

At Ecomondo 2023, drive and automation specialist Baumüller presented modern technology solutions for shredders. The German company participated for the first time in the trade fair for recycling, energy and sustainable development in Rimini, Italy, at the beginning of November. Among other things, visitors could learn about the advantages of high-torque motors and servo drive technology over conventional hydraulic and electric solutions, what hardware Baumüller recommends from high-torque motors to complete drive systems, and how manufacturers can save time and money with pre-programmed software templates for shredder control units.

The Baumüller system solution includes the complete main drive system with high-torque motors, servo converters, including control cabinet construction, as well as the control technology with hardware and an extensive complete software package specially for shredding plants. The drive unit is configured individually depending on the required power.

Due to the modular use of components, the Baumüller drive system kit enables us to realize a very wide range of shredders with minimum variance in the drive system. This simplifies the order process and the warehousing/spare parts management of the shredder manufacturer enormously.

In addition to hardware and software, Baumüller also provides support with engineering and implements the drive, machine control system and software completely and entirely as required. Baumüller also offers optional long-term life cycle management for shredders that is individually tailored to the requirements. On request, Baumüller will also support you with the installation and commissioning of your system anywhere in the world.



*Baumüller offers an overall system consisting of high-torque motors, servo drives, control unit and special visualization for efficient and productive shredders for different areas of application (Picture: Baumüller)*

In order to provide the high power required for shredding processes, depending on the gear ratio, motors with very high maximum torques are needed. The Baumüller DST2 series high-torque motors are therefore predestined for this application. The motors can be perfectly adapted to the shredder's requirements thanks to different shaft and flange options. Depending on the power requirements, the shredder shafts are each driven by one or two motors.

With the b maXX 5000 converter family, Baumüller offers suitable servo drives for high power classes. The servo drives impress with their compact installation dimensions and offer a broad and scalable selection of optional safety functions.

Baumüller can also supply the right drive system for large shredding systems. Thanks to the modular b maXX 5500 drive electronics, with the help of multiple-winding systems, even the large motors of the DST2 series with up to 1,150 kW power can be used and combined to form multi-motor solutions.

At the control level, Baumüller's b maXX PLC mc control platform combines the features of industry PCs and PLC control units, optimally covering the range between these two existing solutions. The system has convincingly handy dimensions of 110 x 90 x 35 mm and is therefore extremely compact. Baumüller offers suitable HMI panels with touch display for user-friendly machine operation.

Manufacturers save time and money with the complete software package that provides all of the basic functionalities of a shredder. The software 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.

**Baumüller**

► [www.baumueller.com](http://www.baumueller.com)

## Recycling Pioneer Expanding into France

Lindner continues its expansion course. By establishing Lindner France with Croupe Cimme, the company wants to get closer to its customers and strengthen its position on the French recycling market at the same time.

“Make the most of waste.” True to this motto, Lindner has been serving customers in the recycling industry all over the world for 75 years. Lindner recycling solutions and shredders efficiently process a wide range of different waste streams into reusable materials.

For the recycling pioneer, the foundation of Lindner France constitutes an important strategic step in its history. Through increased local presence, Lindner wants to foster proximity to its customers and offer tailor-made solutions and excellent, first-hand service. “France is an important market for us. Setting up Lindner France is crucial if we want to look after our French customers even more efficiently and offer them even better service”, says Michael Lackner, Managing Director at Lindner. “Thanks to our mobile shredders and our solutions for waste-to-energy and plastics recycling, we already have a strong presence on the French market. Through local contact points and service partners, we, as a brand manufacturer, also want to offer our customers the best possible service. That’s our declared goal.”



*Handshake at the Lindner booth at the Pollutec trade fair 2023 in Lyon, France. Michael Lackner (right), Managing Director of Lindner and François Defrenne (left), Managing Director of Lindner France and President of Groupe Cimme, one of Lindner’s earliest sales partners on the French market. The newly founded subsidiary aims to increase local support for French customers and to increase service excellence further (Copyright: Lindner Recyclingtech)*

Lindner and its subsidiary Lindner France are both present at the Pollutec 2023 in Lyon, the leading trade fair for environmental and energy solutions in France. Lindner France employees are also in attendance, led by François Defrenne, President of Groupe Cimme and Managing Director of Lindner France, and Vincent Roger, Sales Director Lindner France. “With the foundation of

Lindner France, we have reached an important milestone for increased customer proximity. “We are looking forward to a great cooperation and to the projects we can implement together in the future,” says François Defrenne.

Lindner-Recyclingtech GmbH  
[www.lindner.com](http://www.lindner.com)

## New Ultra-High Barrier PVDC Coating Solution for More Sustainable Pharmaceutical Blister Films Launched



*(Photo: Solvay)*

Solvay has introduced Diofan® Ultra736, a new polyvinylidene chloride (PVDC) coating solution with ultra-high water vapor barrier that allows carbon footprint reduction for pharmaceutical blister films. As an aqueous dispersion, Diofan® Ultra736 is fluorine-free, meets regulatory requirements for direct pharmaceutical contact and supports the design of sustainable films with thinner coating designs.

“Consumers and legislators are requesting increased efforts related to carbon footprint reduction from the packaging industry, and one of the most effective means to this end is to reduce the size and weight of packaging products,” says Federico Baruffi, Global Marketing Manager, Packaging, Solvay Specialty Polymers. “Our new Diofan® Ultra736 coating solution can help packaging film manu-

facturers achieve superior barrier properties with thinner structures, leading to a significant carbon footprint reduction of the blister film."

Diofan® PVDC coatings are widely used in pharmaceutical blister packaging to protect sensitive solid-dose drug preparations as well as in the packaging of delicate food and similar other consumer goods. They can be applied on both plastic and paper-based substrates and are often preferred for their unique combination of water vapor and oxygen barrier.

Diofan® Ultra736 PVDC coating was custom-engineered to maximize the water vapor barrier without sacrificing its high oxygen barrier, chemical resistance or transparency. The product also exhibits excellent thermoformability, enabling smaller pack sizes with higher pill density if compared with incumbent alternative coating solutions.

Thanks to its ultra-high barrier performance, Diofan® Ultra736 allows the reduction of the coating thickness compared to incumbent mid to high barrier PVDC coatings,

without impacting the functionality. In particular, it has been shown that, for Duplex barrier structures, Diofan® Ultra736 enables halving the number of base coat layers while delivering the same water vapor barrier. This approach can contribute to decreasing the overall carbon footprint of final blister film structures by up to 13%.

Diofan® is a registered trademark of Solvay.

Solvay  
www.solvay.com

## Maximum Connectivity for Efficient Web Guiding

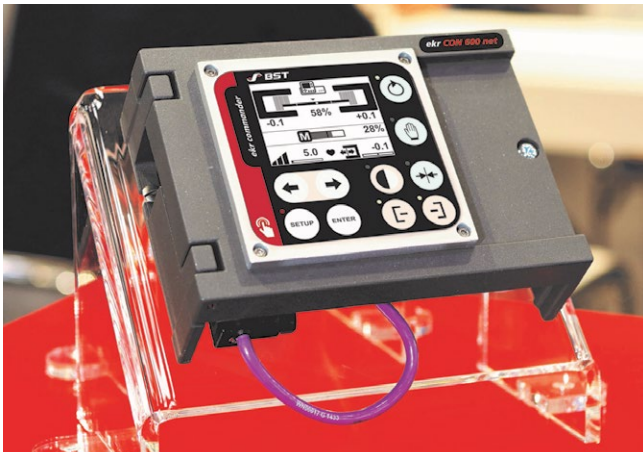
With maximum connectivity, the ekr CON 600 net controller from BST optimizes web running production processes and thus equips machines for the major challenges of the near future: "We are in the midst of a new industrial revolution – meaning the disruption in the automotive industry, the increasing use of AI, and the rapidly growing automation and digitalization of numerous manufacturing processes," says Ingo Ellerbrock, Product Manager Web Guiding at BST. The ekr CON 600 net ensures flexible data exchange between different components, can be easily integrated into the machine control and is particularly user-friendly. This allows for easy operation, which is an important competitive advantage facing the shortage of skilled workers.

The BST ekr CON 600 net is more than just a controller. It is the central control unit of every BST web guid-



The ekr CON 600 Net provides immediate help via QR code. All it takes is a two-second press on the menu item and BST help delivers the relevant instructions. Furthermore, the portal features other useful aids, such as installation videos or the callback service of the BST helpdesk

More than 10,000 customers worldwide appreciate the intuitive operation of the BST controllers to be recognized by the red bar. Through the expansion with additional control units, useful information such as the web width can be displayed in addition to a more flexible installation



ing system and the answer to increasing requirements in web production. The primary task of the device is to ensure a stable, precise and reliable running web. This is relevant to quality, actively avoids scrap and ensures a high quality of the final product. In addition, the powerful and fast-responding web guiding system enables full use of the machine speed and also a more efficient production. Like all BST guiding devices, the BST ekr CON 600 net impresses with its compact design enabling easy integration in any machine. For more flexibility and comfortable operation in narrow or hard-to-reach positions, additional touch control units can be installed. With a clear focus on user-friendliness and efficient commissioning, the device paves the way for optimized production.

BST GmbH  
www.bst.elexis.group

## Capacity, Portfolio and Service in Polycarbonate Additives Boosted

Tosaf strengthens its commitment around additives for polycarbonate (PC), which are mainly used for the extrusion of transparent sheets, profiles and films. This includes the development of new, market-driven specialties as well as the development of new markets worldwide. A recently commissioned cutting-edge compounding line at the Alon-Tavor site in Israel increases the company's flexibility in meeting customer requirements, while at the same time shortening delivery times and expanding options for producing sophisticated masterbatches.

Tosaf's new developments include light diffuser masterbatches for PC and PMMA. Thanks to a high loading level, low dosing quantities are sufficient, enabling particularly economical solutions. On top of that, they offer a good compromise between high hiding power and high light transmission. Other innovations are heat blockers for the near IR range (NIR blockers) and additives for creating matt surfaces with either a fine or rough structure. Both of the latter are intended to be applied to the surface of PC sheets by coextrusion, each in combination with a UV absorber. As a 50 µm to 100 µm thick top layer, they work much more efficiently there than when added directly to the sheet bulk. Beyond, Tosaf also offers two types of anti-block that are tailored to prevent corrugated sheets from



sticking together, again providing high efficiency even in small doses.

In addition to the aforementioned products for UV stabilisation as well as for achieving matt surfaces, near-IR blockers and anti-block additives, Tosaf's portfolio of compounds and masterbatches for PC also includes flame retardants, glass fibres and a wide range of color masterbatches.

To meet the strictest quality requirements, Tosaf produces its entire portfolio of polycarbonate compounds for global demand exclusively in its Alon-Tavor additives factory, which is state-of-the-art regarding the production and quality assurance of these sensitive products. All new and further developments are also carried out in Tosaf's development centre at the same

*Transparent roof glazing is one of the preferred applications of polycarbonate sheets, for which Tosaf produces property-enhancing additives and compounds (© Palram Ind. Ltd.)*

location, which makes the scale-up to production conditions much safer and easier. Only the production of color masterbatches for PC takes place in a dedicated color compounding site, which is also located in Israel. Local supply to PC sheet manufacturers is handled by sales offices in Europe, South America, North America, Turkey, Asia, China and India, the Persian Gulf and the Israeli market.

Tosaf Compounds Ltd.

[www.tosaf.com](http://www.tosaf.com)

## Collaboration to Create New Mono-Material Packaging

Mondi has collaborated with Skånemejerier to create a mono-material, polypropylene (PP) based packaging for, among others, ICA's Hushållsost cheese.

The new packaging comprises a mono-material base web and lidding film, all of which is produced and printed by Mondi before being converted for 1kg and 2kg blocks of cheese by Skånemejerier. It will be sold in leading Swedish supermarket ICA and now comes in packaging that is designed for recycling.



*Say cheese! Mondi and Skånemejerier partner to introduce mono-material plastic packaging (Photo: ICA Group)*



Mondi's mono-material solution provides high barriers against oxygen and water vapours, keeping the product fresh on the supermarket shelf. It offers high puncture resistance protecting the cheese, and great printability so that the brand and recycling messages can be communicated well on-pack.

This innovative packaging is being launched in the same time period as Site Zero, the world's largest sorting facility for used plastic packaging, will open its doors in Sweden. This state-of-the-art facility will pro-

cess used plastic waste from both Sweden and Finland. Thanks to the packaging's mono-material design, the facility will be able to effectively sort this solution for recycling, contributing to a circular economy.

The mono-material cheese packaging on ICA's shelves won this year's PackNorth Award in the 'Food' category and was also recognised at the Empack fair in October in Stockholm, Sweden.

Mondi

➔ [www.mondigroup.com](http://www.mondigroup.com)

## Energy Efficiency in Thermoforming

With industrial energy prices high and volatile, environmental regulations are becoming more rigorous. Optimizing the energy efficiency of ILLIG's thermoforming solutions is therefore an important part of the company's product strategy. ILLIG firmly believes it is possible to achieve energy savings of up to 30 per cent per machine.

"Illig has always recognized the importance of technology and sustainability," says Jürgen Lochner, CSO/CTO at ILLIG. "We're convinced that energy-efficient thermoforming machines not only promote the business success of our customers but also reduce the environmental impact from manufacturing. Our efforts to improve energy efficiency reflect our commitment to providing innovative solutions that meet the needs of our customers and the demands of the times."

The cost of industrial electricity has halved compared to 2022. Nevertheless, the price level is more than 60 per cent above the average for the 10-year period from 2012 to 2021. This was shown by an analysis of electricity prices issued by the German Association of Energy and Water Industries (BDEW) in July 2023.

The high cost of energy is a major challenge for companies, including those in the plastics packaging sector. Energy-efficient thermoforming machines are becoming a cornerstone of ILLIG's strategy to help customers manage the financial burden.

Thermoforming systems require a lot of energy. In sheet processing thermoforming machines, the heating system accounts for the largest share of the energy requirement, typically more than 70 per cent. The remaining 30 per cent is found in the use of electric motors, compressed air generation, and temperature control and cooling units. In the automatic roll-fed thermoforming presses, it is the generation of compressed air and the heating of the semi-finished product that require the most energy. In the case of inline applications, these factors can account for up to 60 per cent of the total energy requirement of a thermoformer.

"The bottom line is that the use of our current thermoforming systems with

ILLIG tools can achieve energy savings of up to 30 per cent compared to earlier models," says Jürgen Lochner.

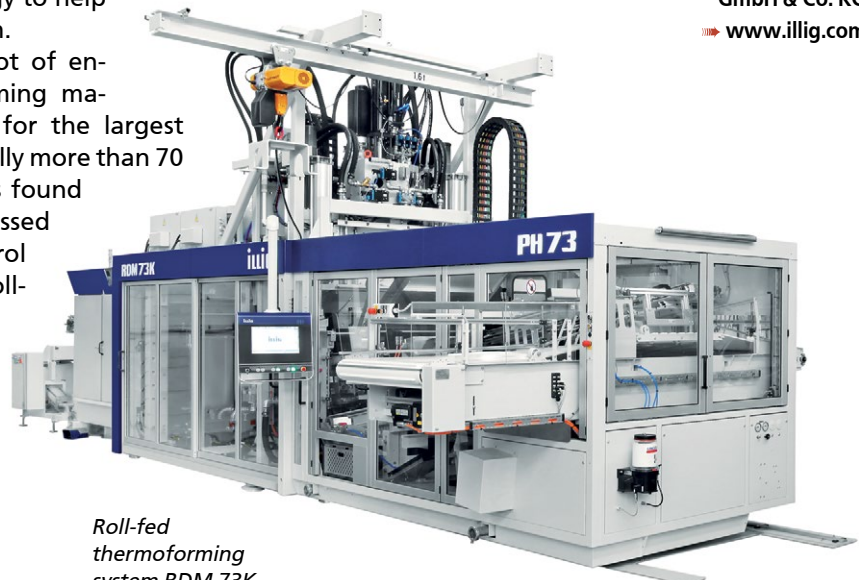
The new generations of ILLIG machines already consume up to 15 per cent less energy than previous models. By using an appropriate ILLIG thermoforming tool, it is possible to increase energy savings by a further 15 per cent – and in inline applications this figure can even be significantly higher.

With the consumption measurement function available from 2024, the power and energy requirements of the ILLIG systems can be determined and displayed on the control panel (HMI). This means that machine operators can determine the actual consumption figures and evaluate the effectiveness of optimizations applied to the production process.

In addition to power consumption, users will also receive measurements for energy consumption (kWh) per 1,000 parts and energy consumption per kilogram of moulded part weight in future. The latter figure can be used to make comparisons with the injection moulding process. Thanks to material and weight optimization, thermoforming also reduces the energy requirement per moulded part compared to injection moulding.

ILLIG Maschinenbau  
GmbH & Co. KG

➔ [www.illig.com](http://www.illig.com)



Roll-fed  
thermoforming  
system RDM 73K

## Recycling Content TPE With Various Adhesion Options

KRAIBURG TPE, a global manufacturer of custom-engineered TPEs, announces the launch of its latest product line. These solutions expand the group of THERMOLAST® R compounds and make it possible to use a high percentage of recycled materials. In comparison to the already established products, up to 70% can be achieved even in materials with low Shore A hardness. They are an important milestone in the development of innovative compounds with adhesion properties. The launch is KRAIBURG TPE's response to the increasing market demand for more environmentally friendly materials with a proportion of post-industrial and/or post-consumer recycled materials (PIR, PCR). Recycling Content TPEs are consistent with customers' sustainability vision and support customers in achieving their own sustainability targets.

The new high-performance compounds are specially tailored to meet the requirements of different industries and market segments and allow adhesion to PA, PC/ABS or PP. This combination of properties for single, two-component or multicomponent parts combined with



high proportions of recycled material of up to 79% is completely new in KRAIBURG TPE's product range.

An overview of the new thermoplastic elastomers (TPEs):

- Recycling Content TPE with adhesion to PA is the first TPE worldwide with a proportion of PCR and PIR materials of 43 to 60% depending on their hardness. It can be used for a large number of applications for two-component parts with adhesion to PA. Different hardnesses ranging from 40 to 90 Shore A are available.

- Recycling Content TPE with adhesion to PC and ABS has a proportion of post-industrial and post-consumer recycled materials between 42 and 54% depending on the hardness required. It is suitable for a wide range of multicomponent parts that require adhesion to ABS and PC or other technical thermoplastics. Dif-

*With Recycling Content TPE, KRAIBURG TPE is making a contribution to achieving demanding sustainability targets for technically high-quality products (© 2023 KRAIBURG TPE)*

ferent hardnesses ranging from 40 to 70 Shore A are available.

- Second-generation Universal PCR TPE is available with a proportion of recycled materials of up to 79%. These materials provide a wide variety of possible uses for applications that require adhesion to PP. The materials are available in a wide hardness range from 30 to 90 Shore A and, with their high proportion of sustainable materials, they are a further development of the Universal PCR compounds launched in 2022.

In addition, the compounds provide reliable quality, are immediately available and can be colored: All new TPEs are available in natural colors and can be colored in many different ways depending on customers' wishes and requirements. This excellent coloring also allows maximum flexibility in design.



*Eugen Andert, Project Manager Advance Development at KRAIBURG TPE: "With Recycling Content TPEs, we are making a contribution to achieving ambitious sustainability targets for products of high technical quality. Sustainability is a core competency of KRAIBURG TPE and with these new compounds, we are closing recycling loops and acknowledge our responsibility towards the environment and future generations."*

**KRAIBURG TPE**

➔ [www.kraiburg-tpe.com](http://www.kraiburg-tpe.com)

## Mass Extraction Detects the Smallest Defect Sizes with SpeedAir 3050

Pfeiffer Vacuum introduced the new leak tester SpeedAir 3050, an all-in-one solution for nonporous pharmaceutical containers. SpeedAir offers a CCIT solution for a wide range of products: Whether the products are flexible or rigid, liquid or solid, the SpeedAir can swiftly and accurately test them all. Typically requiring only 30 to 45 seconds, this mass extraction instrument quickly and efficiently delivers results.

With testing times as short as 30 to 45 seconds, it delivers reliable results, ensuring the integrity of pharmaceutical containers. Unlike alternative methods that focus on specific areas or access points, the SpeedAir provides a comprehensive global Non-Destructive Testing (NDT) approach for containers. It adheres to ASTM Standard F3287-17, demonstrating the capability in independent third-party labs to 1 micron using an air-based technology.

When it comes to liquid products, the SpeedAir stands out as the most sensitive air-based technology available today. Results are repeatable and reliable –

eliminating risks associated with false negatives and positives.

The SpeedAir is fully compliant with industry standards. It utilizes the USP <1207> recognized Mass Extraction technology and operates with FDA 21 CFR Part 11 compliant software, ensuring the testing processes meet the highest regulatory standards.



Pfeiffer Vacuum GmbH  
[www.pfeiffer-vacuum.com](http://www.pfeiffer-vacuum.com)

# MEDIA DATA 2024

MAGAZINE · WEBSITE · NEWSLETTER

# EXTRUSION

EXPERT MEDIA ON PLASTICS EXTRUSION

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[www.smart-extrusion.com](http://www.smart-extrusion.com)

# Fakuma 2023 – *Innovation Fireworks*

The 28th Fakuma successfully took place from 17 to 21 October 2023, according to organiser P. E. Schall. With 1,636 exhibitors – 10% more than at the previous Fakuma 2021 – in twelve exhibition halls and several foyer areas, the trade fair was a fully booked celebration for plastics – full house, satisfied exhibitors, 39,343 enthusiastic expert visitors, forward-looking topics. The figures of the pre-Corona year 2018 were not reached (47,650 trade visitors and 1,933 exhibitors), but the résumé is impressive.

1,636 exhibitors showed lots of new products on 85,000 m<sup>2</sup> and, above all, gave many confident outlooks for the future as far as the degradation possibilities and recyclability of plastics are concerned. The overall themes of the fair were based on digitalisation, automation, flexibility, energy efficiency – and sustainability. The establishment of closed material cycles, product optimisation for recycling and the processing of recyclates for high-quality applications were often at the top of the agenda. Overall, the new technologies follow the current challenges of resource conservation and net-zero emissions.

44% of the exhibitors came to Friedrichshafen from abroad – 134 companies from Italy, 120 from China, 79 from Switzerland, 70 from Austria, 58 from Turkey, 55 from France. There were enthusiastic and positive voices throughout.

"Because this is where the industry meets", is the concise and unbeatable participation argument of Daniel Römhild, General Manager at WIS Kunststoffe. "Fakuma is an ideal place for us to exchange ideas with customers and to highlight the advantages of cooperation", affirmed Rüdiger Dzuban, Head of Marketing at ONI-Wärmetrafo in Lindlar.

Bernd Schäfer, managing partner at Deifel Buntfarbenfabrik, described Fakuma as "the trade fair par excellence! It's a super platform for us to network with customers and expand our network. Here we are always close to the customer."



(Photo: VM Verlag / Bettina Jopp-Witt)

Fakuma 2023 has supported an essential development: The holistic design of products and the promotion of recycling and degradability.

Design for recycling – that's the motto from now on. Because plastic is a valuable resource that must be perceived as such much more by the public. The round table discussion "Plastics – Valuable Material instead of Problem Material" showed impressively that a lot of education is still needed here. Circular economy is neither waste management, nor is it environmental policy, nor is it industrial or just economic policy – it is everything together. That is why all those involved are needed to tackle the challenges together. Now the sector is rolling up its sleeves to tackle the tasks of the coming months with vigour. And it looks forward to seeing you again in Friedrichshafen with many further developments and future-oriented solutions at the 29th Fakuma from 15 to 19 October 2024.

➔ [www.fakuma-messe.de](http://www.fakuma-messe.de)

## Broad Competence Network and In-House Manufacturing

The Reifenhäuser Group exhibited at Fakuma 2023 and showcased its latest blown and flat film technologies as well as components for extrusion and injection molding. At Fakuma this year, the Reifenhäuser Group focused on its broad competence network combined with a high vertical range of manufacture. Reifenhäuser manufactures all important core components in-house, which means that the customer always receives a perfectly coordinated overall system. For this purpose, the group of companies has highly specialized business units, three of which have been on site at the booth: Reifenhäuser Blown Film, Reifenhäuser Cast Sheet Coating and Reifenhäuser Extrusion Systems.

Reifenhäuser Extrusion Systems (RES) is the expert for melt-guiding and forming components. As a special highlight, RES showcased its highly wear-resistant

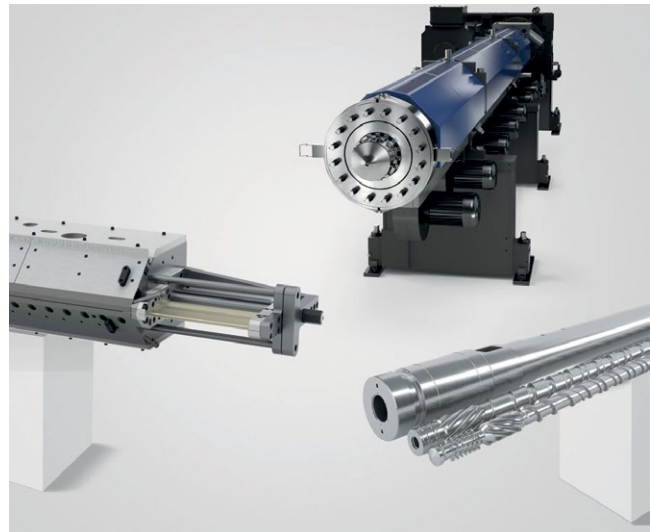
Reiloy screws and barrels at Fakuma, which regularly set benchmarks in terms of quality and performance. The components offer a demonstrably longer service life, thanks to precise matching of raw materials and additives. With the alloys developed exclusively in-house at Reifenhäuser and optimized for the process, processors of injection molding and extrusion products benefit from the best cost-benefit ratio in the industry. RES also showcased its extruder and die portfolio as well as its multi-vendor upgrade and refurbishment program.

Reifenhäuser Cast Sheet Coating (CSC), as a supplier of complete flat film lines, exhibited at Fakuma, among other things, its latest automation option PAM (precise, autonomous, mechatronic) for coextrusion adapters and dies. Using automated screwdrivers, PAM enables autonomous and mechatronic adjustment and control

of the flexible lip conveniently via the line control system. Depending on the die design, autonomous adjustment of the dust bar, width adjustment and lip opening via adjustment of the lower die lip is also possible. In combination with the Reifenhäuser Coextrusion Adaptor Pro, PAM can also control the profiling of the individual layers while the line is running. This is significantly faster than conventional control by hand or thermal expansion bolts automation and enables faster start-up of good production, higher output and improved overall equipment efficiency (OEE). Once recipes have been set, they can be stored and recalled at the push of a button – even by inexperienced line operators, which is a decisive advantage against the background of the ongoing shortage of skilled workers. In addition, energy consumption is significantly reduced compared to an automatic thermal expansion bolt system, as the screwdrivers only need to be supplied with power during the adjustment process and not permanently.

PAM is not only available for Reifenhäuser flat film lines, but also for third-party lines as an upgrade via Reifenhäuser Extrusion Systems.

Reifenhäuser Blown Film (BF) presented its latest blown film line concepts in Friedrichshafen. With the EVO Fusion technology the company offers a solution to one of the biggest problems in the use of recyclate in film production: on the one hand, ever higher proportions of recycled plastic are demanded, on the other hand, recyclate qualities fluctuate greatly and high-quality material is too expensive for many applications to produce economically. Thanks to twin-screw technology in the extruder, EVO Fusion can reliably process previously unusable, low-cost recyclates. This results in high-



*Reifenhäuser showcased its broad competence network at Fakuma. Thanks to in-house production of all important core components, the customer receives perfectly coordinated extrusion systems*

performance and, above all, profitable blown films for applications such as trash bags or mailing bags. A special feature of the EVO Fusion is direct extrusion, which eliminates the need for energy- and cost-intensive regranulation of the starting material. This means that fluff (film snippets) as well as all types of production waste and PCR material can also be processed directly.

Reifenhäuser Group  
[www.reifenhauer.com](http://www.reifenhauer.com)

## New TPVs With Up To 40% Recycled Content

Sarlink® thermoplastic vulcanizates (TPVs) are the premier choice for automotive applications requiring superior elasticity and long-term performance, as a recyclable, lightweight alternative to EPDM rubber. This latest series, Sarlink® RX 3100B, was developed to help automotive brands achieve sustainability targets, by incorporating up to 40% post-industrial recyclate, depending on the hardness. These multi-purpose TPVs are suitable for injection molding, extrusion, overmolding and co-extrusion with polypropylene or other thermoplastic elastomers (TPEs). For these high-durometer grades, applications include the backbone or carrier for extruded seals, like in glass run channels, or boots, bellows, and other under hood components.

The two grades, an 84 Shore A and 94 Shore A, are based on the existing Sarlink® 3100 Series technology, but contain 25% and 40% recycled content, respectively. The materials process and perform similarly to their virgin counterparts yet offer sustainability benefits such as reduced dependency on virgin petroleum-based plastic. Sarlink RX 3100B TPVs are pre-colored black and can still be recycled in process or at the end of the product's life cycle.

The use of PIR content versus Post-Consumer Recycled (PCR) content derived from household waste, provides for a more controlled and consistent raw material stream that can be used in extrusion-grade TPVs without issue. Teknor Apex treats recycled feedstocks like prime raw materials, and they are subject to



*TPV with 40% recycled content is a multi-purpose TPV containing high-quality Post-Industrial Recycled (PIR) content and processes and performs like its virgin counterpart*

the same quality assurance testing and must meet relevant specifications for use.

Teknor Apex  
[www.teknorapex.com](http://www.teknorapex.com)

## Energy Efficiency Becomes a Driver of Development

One of Moretto's strategic development drivers is energy efficiency guaranteed through its products. Electricity is one of the highest costs of the manufacturing industry sector and has solutions capable of significantly reducing these costs represent an indispensable competitive advantage.

The OTX hopper is the result of sophisticated mathematical simulations that allows the analysis of the geometry, fluid dynamics, thermodynamics and material flow of the plastic granule with the support of the super computer Leonardo, an exceptional computer capable of 22

trillion operations per second. OTX ensures a regular material flow, guaranteeing correct drying of each individual granule being processed. In addition, the optimisation of the process parameters has enabled the hopper size, technological air-flow and treatment time to be reduced by 40% for the same hourly throughput guaranteeing a better energy efficiency of 66%. Because OTX is not a simple hopper but a concentrate of 7 patents that ensures a full control of all working parameters. OTX can be considered a 'Hopper Machine' in its own right by virtue of its features.



*The revolutionary OTX hopper (Original Thermal eXchanger) developed by Moretto*

## The Human at the Centre

Following the signals of the market, Moretto has oriented its business model, investing in the Human-Machine relationship to be always

competitive and innovative allowing the transition towards the so-called 'Industry 5.0'. With the previous model of 'Industry 4.0', the focus was on digitalization and the interconnection of systems, while now the focus is on the development of technologies that simplify the interaction between human and machine. Humans improve their skills and the effectiveness of their actions by technology, reducing the repetitiveness of operations and improving the user experience. The human being maintains an essential role in planning, organizing and managing production activities with the support of automated machinery and state-of-the-art robots. The full integration of human talent and technology enables the company to produce inno-

vative, state-of-the-art products that meet customers' needs in terms of quality and reliability.

The central role of human is at the base of Moretto's philosophy, which for years has endowed its most technologically advanced products with the ethical OMS&P trademark, whose symbol is represented by Leonardo da Vinci's Vitruvian man, an expression of the values of creativity and genius that also characterize the activity of the Massanzago-based company. These values guided Moretto towards the development of an offer that enhances the creativity and intelligence of human capital, which has always been the driving force behind the company's innovation and success.



*The OMS&P ethical trademark, symbol of Moretto's technologically advanced solutions*

## The Digitalization that Enhances the Customer Service

In addition to the central role of human, the digitalization of processes and services is another cornerstone of Moretto's business strategy. The continuous evolutions of the modern world, combined with the need to provide customers with a quick response, have accelerated the need to have digital tools to further improve the service. The after-sales service is a real commitment to customers for Moretto and

this is why the company guarantees it worldwide, through trained technicians and specialists and thanks to automated warehouses, management software and online platforms.

Part of the process of digital evolution and service improvement is QR Code project, which aims to provide customers with some useful information by supporting them from the very first stages of their purchase. Its



*The digitalization process started by Moretto is bringing enormous benefits to the after-sales service*

functioning is simple and intuitive: using the mobile phone and framing the QR Code on the machine, the

user can access to a series of services with high added value, such as useful information on the machine, tutorial

videos, the possibility to request the list of recommended spare parts and much more.

## Sustainability: Taking Action to Protect our Planet and Ensure Product Efficiency

The adoption of a production approach based on circular economy principles has steered the activities of the Moretto group over the years. Sustainability and energy saving are an established part of the company philosophy and are developed through technologies that take into account the needs of customers, but also the environment and the community in which we live.

With the aim of reduce its environmental impact, the company

has chosen to use only energy from renewable sources in its plants, as evidenced by its participation in Dolomiti Energia's '100% clean energy' project.

The development of equipment suitable for recycling is not only a duty for plastics processors, but also a necessity for customers who demand solutions suitable for both virgin materials and those with high percentages of recycled material.



*The themes of sustainability and respect for the environment have always been two distinctive elements that characterize Moretto's modus operandi*

## Innovations at Fakuma 2023

Dehumidification is one of Moretto's strategic segments, thanks to solutions that over the years have satisfied the most demanding customers by combining high technical performance with low energy consumption.

These requirements find their maximum expression in X COMB, the latest addition to the range of dehumidifiers that immediately met the needs of processors thanks to its compact footprint, which make it suitable for treating small quantities of highly hygroscopic technical polymers. A highly energy-efficient product that is an ideal solution for production-intensive sectors such as medical, optics and electronics.

Small details can often determine the success of a dehumidification process, where even a small amount of no-dried polymer can compromise the quality of the final moulding. Moisture Meter was created with the intention to completely eliminate this problem, thanks to its ability to detect the percentage of residual moisture in the polymer without the need for off-line sampling. Moisture Meter is able to provide the operator in real time with the moisture value of the plastic granule after drying,

allowing the operator to fix the situation if the resin has not been properly treated, "saving" the transformation process. Different versions are available depending on the type of installation and the hourly throughput of the polymer to be treated.

Another process that requires great precision to obtain a technical and aesthetic quality product is dosing.

Moretto has a wide and complete range of blenders, including the DGM Gravix 20, the new gravimetric batch dosing unit developed specifically for high-precision dosing of small percentages of material. The 20 series is based on the Gravix series, but with a renewed design that improves granule flow.

Configurable through an easy touch view and equipped with Modbus RS485, USB and Ethernet connections, it maintains the technical features that have distinguished the Gravix line.

Raw material procurement is a crucial step in plastics processing. Oktobag meets the requirements of processors who want an automatic system for emptying octabins and big bags. The bag is attached by means of 4 gravity grippers

which, with a wave-like movement, bring the plastic granule to the centre where a suction probe will take it.

The storage line also includes SILCONTROL, the system designed and developed to control the loading of plastic granules into storage silos. The material, identified via a special barcode reader, is matched to the correct silo by interrogating the database. Thanks to this procedure, SILCONTROL aims to avoid errors, even human errors, in the material loading phase.

The interconnection of machines and the management of large amount of data generated within the plants prompted Moretto to develop MOWIS, the software platform developed in-house for the control and management of processes within the production plant. A modular and self-configurable tool, usable on-site or remotely, which via OPC UA protocol achieves total connectivity between machines, processes, departments and plants and allows the management of highly complex systems in an optimized and intuitive manner.

## Laboratory Extruder Relaunched

At this year's Fakuma KraussMaffei Extrusion exhibited the newly designed ZE 28 BluePower laboratory extruder. In addition to fast availability and a highly attractive price, this extruder is characterized by improved ease of operation and enhanced performance.

The new high-performance laboratory-scale extruder convinces by a perfect combination of free volume (OD/ID=1.65) and high torque density of 13.6 Nm/cm<sup>3</sup>. Depending on the specific process requirements, the processing section can be configured within a length range of 32 to 64 D and equipped with up to three side feeders.

Just like the other extruders in this series, the ZE 28 BluePower is available in three material variants, in order to offer the wear resistance and corrosion protection required for customer-specific applications.

The laboratory extruder is designed to implement bespoke process solutions thanks to a wide variety of configuration options. These include processing section elements in high-temperature design with a thermal resistance of up to 420°C. In addition, the automatic screw removal towards the drive – or "UltraGlide" feature for short – further expands the range of applications for this machine.

Since October 2022, the standard version of the ZE BluePower extruder has been equipped with the newly developed "pioneer processControl" (ppC) featuring wizards (assistants) for enhanced production reliability. These wizards provide the operator with step-by-step instructions for certain procedures such as starting the production line or shutting it down. Common up- and downstream systems can be integrated into the new control system.



*New paths for laboratory extruder customers: The design study shows the new low-cost standard version of the ZE 28 BluePower extruder*

"After intensive discussions with our customers, we have responded to current market requirements and improved our twin-screw extruder accordingly", says the Michael Tieben, Product Manager for the ZE BluePower series. "In the future, we will offer our extruder with a cost advantage as compared to our competitors and an attractive delivery time."

High energy efficiency, excellent temperature control within the processing section, improved surface cleaning, enhanced power electronics protection and an optimized strand extrusion die are the key features of the relaunched ZE 28 BluePower design. The processing sections including the screw configurations are still customized and all process-engineering results can be scaled up without any problems to the entire BluePower extruder range from size ZE 42 up to the ZE 186.

KraussMaffei Extrusion GmbH  
[www.kraussmaffei.com](http://www.kraussmaffei.com)

## Digitally Controlled Grinders for Energy-saving Plastics Recycling

At Fakuma, Hellweg Maschinenbau presented a selection of its pioneering, digitally controlled grinders for efficient, energy-saving plastics recycling at their booth. These include the MDSi 340/150 Smart Control machine-side grinder with fill level monitoring, the MDSi 600/300 Smart Control Plus central grinder and the MDSGi 1500/600 as a representative of a newly developed series of wet grinders with forced feed which have particularly low power consumption.

The MDSi 340/150 Smart Control machine-side grinder is the highest power model of the series with drive powers of 1.5 kW to 4 kW for grinding capacities of 10 kg/h to 80 kg/h. Its primary application is to save raw materials by enabling the recirculation of even the bulkiest sprue stars, spiders or ladders directly beside one or more injection molding machines. Material can be fed in by chute, feed hopper or conveyor belt, and discharged by suction. A film edge strip feeder is available as an option.

Hellweg's 300 series central grinders combine a compact design with high performance. Thanks to the sturdy machine housing and the high moment of inertia of the massive, solid rotor they enable powerful grinding of thick-walled moldings, sheets, sprue cakes, pipes and profiles and, when using the special BR rotor, even single-stage shredding of solid lumps from production start-ups. The MDSi 600/300 Smart Control Plus version on display at Fakuma features power consumption analysis to optimize economy and automated lubrication with Bluetooth monitoring to minimize maintenance effort.

Hellweg presented the new MDSGi 1500/600 wet grinder featuring a forced feed system for film recycling to visitors as a 3D printed model due to its considerable weight of around 25 metric tons. In addition to its rugged, durable design typical of this manufacturer, it offers an unprecedentedly good ratio of throughput to energy consumption, enabling very low operating costs. Its cutting geometry is also outstanding, producing flakes of



consistently optimum quality, as well as a particle size distribution and geometry which are perfect for further processing with a very low proportion of unusable “fines”.

All these systems feature Hellweg’s in-house developed digital Smart Control System which captures parameters such as power consumption, motor speed and bearing temperatures, as well as blade, screen and V belt status. Because the control system is capable of continuously optimizing the relationship between motor load and throughput, it ensures particularly economical operation while requiring little input from operators. Smart Control is generally available for all models and sizes of Hellweg’s systems, starting from the 150 series machine-side grinders for granulating small parts and sprues up to the 600 series heavy duty grinders designed for the toughest applications.

Hellweg Maschinenbau GmbH & Co. KG  
[www.hellweg-maschinenbau.de](http://www.hellweg-maschinenbau.de)



*From the smallest to the largest: SmartControl control is available for all Hellweg grinders (© Hellweg Maschinenbau)*

## Latest Developments in POM, LCP, and 3D Printing

Polyplastics Group, a global leader in the development and production of engineering thermoplastics, highlighted its expanded product portfolio and material supply capabilities at the Fakuma International Trade Fair in October in Friedrichshafen, Germany. The company discussed the latest developments in DURACON® POM, LAPEROS® LCP, and 3D printing technology which address the demanding end-use requirements in the medical, electrical/electronics, and automotive industries.

Polyplastics recently announced the commercial availability of its DURACON® POM (Polyoxymethylene/Acetal) PM Series for medical applications. The company will supply materials to all global regions including Asia such as China and India, along with Europe and the U.S.

In the medical device marketplace, manufacturers and end users demand high-quality materials from reliable suppliers. Polyplastics has served the medical and healthcare field for decades with its high-purity TOPAS® COC (cyclic olefin copolymer). As the world’s leading POM manufacturer, Polyplastics now adds the PM Series to its medical grade portfolio and plans to expand material supply to the medical and healthcare market.

Polyplastics’ two acetal grades include a standard viscosity grade, PM09S01N, which delivers the reliable mechanical properties and moldability expected from POM. In addition, a high-flow grade, PM27S01N, will enable wall-thinning, miniaturization, and lightweighting of medical devices that are becoming more complex and highly functional.



Polyplastics also discussed the latest sustainability initiatives including the availability of PLASTRON® LFT, a long cellulose fiber-reinforced polypropylene (PP) resin which is being targeted for automotive applications such as door module carriers, center consoles, and armrest cores. The eco-friendly PLASTRON® LFT, which is made of specially formulated regenerated cellulose fibers, provides weight reduction plus mechanical strength, enabling manufacturers to reduce their carbon footprint and meet today’s sustainability demands.

Eco-friendly resins that incorporate natural fibers, starch, wood powder, and other plant-based and natural mineral filling materials are being considered for use in a broader range of applications. Cellulose is a promising material to help reduce CO<sub>2</sub> emissions but its insufficient strength is a limiting factor. Polyplastics has addressed this problem by using regenerated cellulose in the development of LFT resins with an excellent balance of physical properties. PLASTRON® LFT offers lower density and reduced greenhouse gas (GHG) emissions than short glass-reinforced resins while delivering the same mechanical properties.

As a technical service-oriented company, Polyplastics has opened its Technical Solutions Center in Raunheim, Germany, which is now fully operational. With full acquisition by Daicel in 2020, Polyplastics has expanded its options for growth and geographical market coverage. The company has expanded LCP sales to EMEA and the Americas while making timely investments in capacity to better respond to market growth. The one-stop shop

in Germany serves the technical support needs of its growing customer base in Europe.

"This investment reaffirms our continued commitment to the engineering plastics market in Europe," said Yohei Iizuka, managing director of Polyplastics Europe GmbH. "The new technical service operation will support application development work and enable our customers to shape their innovations from concept to commercialization."

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Polyplastics Co., Ltd.

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## Fluoropolymers and their Alternatives

At Fakuma 2023, Dreyplas showcased a variety of options for replacing fluoropolymers caught up in the controversy around PFAS with melt-processable UHMW-PE at their booth. UHMW-PE can be used for molded parts as well as for profiles, sheet products, films and coatings in applications where very low friction and abrasion, depending on the case in conjunction with high chemical resistance, are of primary importance. Dreyplas bases its advice about this versatile resin on Mitsui Chemicals' products, which are available both as pellets and as powders and micropowders and are also suitable for 3D printing. Dreyplas will continue to offer an extensive range of fluoropolymers for those applications which simultaneously require high temperature resistance.

Highly abrasion-resistant molded parts, extruded sheets, profiles and hoses are some of the applications for LUBMER™ pellets, a self-lubricating, high-impact grade of UHMW-PE suitable for injection molding in both hot runner and tunnel gate systems. Thanks to its food safety and acoustic and electrical insulation properties, potential applications include automotive, electronic, and industrial parts, together with use as a friction-reducing additive in other polyolefins.

MIPELON™ with its spherical, particularly readily dispersible fine particles can be produced with diameters of 10 to 30 µm, whereas the usual dimensions of UHMW-PE powder are 150 to 200 µm. It can thus be an alternative to PTFE for formulating low wear, chemically resistant coatings, where it not only increases abrasion resistance but also reduces the coefficient of friction even more than does PTFE. A further typical application is use as a friction-reducing additive.

Another spherical UHMW powder grade with particle diameters in the range from 120 µm to 160 µm is HI-ZEX MILLION™, which is mainly used for electronic or industrial materials, medical devices, food manufacturing, etc. Its wide range of applications extends from screws, slide rails and gears to battery separators and prostheses. As a friction-reducing blend component, its low density of 930 to 950 kg/m<sup>3</sup> helps to reduce product weight.

As Norbert Hodrius, Technical Marketing Director at DREYPLAS explains, "Numerous collaborative projects with customers have demonstrated that, where elevated thermal stability is not essential, it is often possible to do without fluoropolymers. In such cases, our alter-



At Fakuma 2023, Dreyplas will show where UHMW-PE-based thermoplastics can replace fluorine-containing polymers (© Dreyplas)

native is UHMW-PE, which has up to twenty times the abrasion resistance of conventional PE, combined with good chemical resistance, high flexibility and low-temperature impact strength as well as further advantages such as acoustic and electrical insulation and compliance with food safety requirements. In addition, UHMW-PE has good sustainability since all grades are suitable for the PE recycling loop, while its melt processability means low levels of manufacturing waste."

Sales Manager Markus Geister adds, "If specific requirements mean there is no alternative but to use fluoropolymers, we can supply a wide range of high-performance polymers including PTFE, FEP, PFA, etc. together with comprehensive application engineering know-how to ensure successful use in our customers' applications."

DREYPLAS GmbH

► [www.dreyplas.com](http://www.dreyplas.com)

## New Compounds for Drinking Water and Hot Water Applications as well as Trendsetting TPE Solutions that Contain High Proportions of Bio-Based and Recycled Materials

At Fakuma 2023 KRAIBURG TPE has put the spot on its leading competence in the field of thermoplastic elastomers (TPEs). The product innovations presented at the booth focused on a series of new TPE compounds for sophisticated drinking water and hot water applications. As part of its expanded line of circular products, the manufacturer also showcased several materials that contain high proportions of bio-based and recycled raw materials of up to 80%.

KRAIBURG TPE showcased the following four groundbreaking TPE developments as highlights of its appearance at Fakuma 2023:

- THERMOLAST® DW H2, a series of new, plasticizer-free TPE compounds for sanitary and drinking water tubes and hoses that comply with the tightened DTW-BWGL standard (mandatory from March 2025) for organic materials in contact with drinking water. Available

*KRAIBURG TPE will be showcasing a series of innovative new thermoplastic elastomers for drinking water and hot water applications as well as an expanded range of trendsetting TPE solutions containing proportions of renewable and recycled materials*  
(Image: © 2023 KRAIBURG TPE)



*Oliver Zintner, CEO at KRAIBURG TPE: "Product reliability, sustainability and efficiency are the core requirements of our customers in the plastics industry. We are determined to meet these requirements by providing TPE solutions that set new standards with regard to high performance, cost-effective processing and exemplary environmental balance." (Image: © 2023 KRAIBURG TPE)*

in five hardness degrees from 70 Shore A to 40 Shore D, they are suitable for low-cost processing on existing extruder lines for polyolefins, provide good adhesion to PP and ensure smooth surfaces with high resistance to the growth of microorganisms in accordance with DVGW W270. The range of suitable applications includes in particular shower tubes, pressure hoses and food hoses as well as supply tubing in dishwashers and washing machines.

- New Hot Water TPEs for hot water applications compliant with the

KTW-BWGL standard, which are used in the environment of frequently changing water temperatures, such as seals and showerheads. As first non-cross-linking TPEs in this market segment, they also facilitate processing by their increased flowability and easy ejection. They also feature good adhesion to PP and PE as well as improved compression set at higher temperatures. KRAIBURG TPE expects this innovative materials technology for applications in contact with drinking water to be finally certified by the end of 2023.

- Second and third generation bio-based TPEs with a proportion of renewable raw materials of up to 71%, which are not in competition with the production of food or animal feed. The compounds expand KRAIBURG TPE's existing portfolio of sustainable materials for applications where manufacturers and processing companies are increasingly looking for materials solutions that significantly reduce their carbon footprint.

- TPEs with higher proportions of recycled materials of up to 80% from postindustrial and/or post-consumer waste streams. Recycling Content TPEs provide an attractive environmental balance. They can be used universally and excel with high adhesive strength in multicomponent compounds with plastics such as PA, PC/ABS or PP.



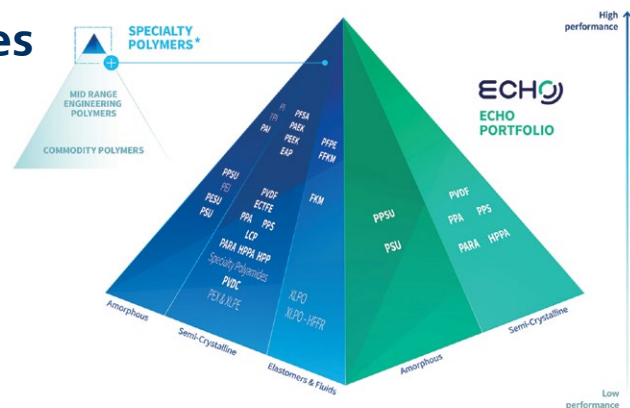
## Sustainability Integrated into Supreme Material Performances

Solvay has put the spotlight on its latest innovations of sustainable polymer solutions at Fakuma, reaffirming the company's firm commitment to the circular economy.

The new polyphenylene sulphide ECHO's portfolio is engineered with bio-based and recycled technologies in an encompassing integral approach from sourcing to manufacturing (Photo: Solvay) grades are produced with 100 per cent renewable electricity and complement Amodel® Polyphthalamide (PPA) Supreme, launched in 2021.

Solvay also introduced a new Xencor™ Xtreme PPA that addresses current thermal stability requirements for battery components (resistance to 'thermal runaway') with increased safety and reliability.

Solvay also presented a diversified range of recycled materials at Fakuma under the new brand attribute 'Echo' – responding to the call of the times to work with customers to realise the goal of carbon neutrality. The Echo portfolio includes bio-based and recycled polymers in a holistic technological approach from raw material sourcing to manufacturing.



ECHO's portfolio is engineered with bio-based and recycled technologies in an encompassing integral approach from sourcing to manufacturing (Photo: Solvay)

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## Focus on Circularity and Sustainability

As one of the largest medium-sized manufacturers of high-quality masterbatches, color pastes, pigment preparations and liquid colorants for the plastics processing industry in Europe, Finke assists customers from design to production stage with more than 70 years of experience.

At Fakuma 2023 Finke focused an emphasis on short time-to-market for its customers with UL94 all-color certified FIBAPLAST masterbatches. With new products such as FIBATEC and FIBAREC and a greenhouse gas balance according to "Greenhouse Gas Protocol" for the company as well as all products, Finke addresses circularity and sustainability.

For electrical and electronic applications Finke offers UL94-approved FIBAPLAST masterbatches, which can make it much easier for users to certify their products and spare them the need for separate certification of the component. This increases flexibility and saves time and costs.

Color and effect masterbatches as well as technical masterbatches from the FIBAPLAST range are now available from Finke with an all-color certification for the UL94 HB classification. The use of an all-color certified masterbatch in combination with a certified polymer allows the user to react flexibly to changes in color and component without having to recertify them.

Finke offers all-color certifications for the polymers PP, POM, PBT, ABS, PARA and PA6GF. The FIBAPLAST UL94 range includes masterbatches of every possible color. Besides, the use of technical masterbatches, e.g. for stabilization or to improve processing properties,



The uncolored additive batches of the new FIBATEC UVA series offer reliable UV protection for sensitive goods (Source: Finke)

is possible. In addition to the all-color certification for the UL94 HB classification, which applies to entire polymer classes, Finke offers the option of individual certification of masterbatches for more demanding appli-

cations such as high-performance technical polymers whose application requires a higher fire resistance classification.

FIBATEC is a new uncolored additive batch series focused entirely on function, Finke is currently developing based on various carriers. One example are the FIBATEC UVA batches that impart plastics products with an inherent UV-protection. Using FIBATEC UVA, clear and uncolored plastic bottles for foodstuff and cosmetic applications can be produced, that fulfill important Design-for-Recycling requirements.

Conventionally, protection of sensitive goods from light and UV exposure is achieved by opaque or dark coloring of the packaging, which can, however, be an obstacle to recycling. With the colorless FIBATEC UVA series protection of sensitive contents is ensured by special UV absorbers and the packaging does not require any additional coloring. The FIBATEC UVA additive batches are free of benzotriazoles, PAAs, PAHs and contain neither CMR substances nor SVHC. Depending on the UV absorber used, they offer reliable protection in the near UV range up to 380 nm or 395 nm.

FIBATEC UVA additive batches comply with the regulations for plastic materials that come into contact with foodstuffs in the EU, the USA and in China. They are approved for packaging and registered for REACH as well as the respective inventories in the USA and China. FIBATEC UVA additive batches are also available based on bottle-grade PET and rPET carrier. Since the PET is post-crystallized, the FIBATEC masterbatches can be processed easily on all common equipment and are particularly suitable for single- and two-stage injection stretch blow molding.

Color masterbatches from Finke's FIBAREC series exclusively rely on recyclate-based carriers, which enables the production of attractive colorful plastic products made from 100 % recyclate. All masterbatches from the FIBAREC series are based on either post-consumer recyclates (PCR) or post-industrial recyclates (PIR). FIBAREC color masterbatches are available for common packaging polymers and can be processed like masterbatches based on virgin material, also making them an ideal drop-in solution.

Sustainability and climate protection play an important role in Finke's product range as well as in its corporate actions. That is why Finke has determined its company-wide greenhouse gas balance as well as the greenhouse gas balance for its products in June 2023. Both balances are based on the "Greenhouse Gas Protocol". This takes into account direct emissions resulting from the combustion of gas or oil for on-site energy production (Scope 1), indirect emissions based on the provision of energy in the form of district heating and electricity (Scope 2), and indirect other emissions attributable, for example, to raw materials and supplies or the transport of goods (Scope 3). As Finke exclusively uses green electricity, the Scope 2 emissions are recorded at 0 % in the balance sheet. Of all the company's greenhouse gas emissions, 97.81 % are thus accounted for by Scope 3.



*The color masterbatches of the FIBAREC series are based on recycled carrier material and thus ensure sustainability in plastic coloring (Source: Finke)*

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# Highly Innovative – and a Technology Leader in the Extrusion Industry

*battenfeld-cincinnati has long been one of the most innovative medium-sized companies in the field of plastic processing and extrusion technology in Germany and Austria. This is evident in the company's unique patent performance as well as in its sustainability strategy. New, environmentally friendly processes are promoted, as well as the use of renewable energy. The goal is to achieve results that impress on all levels: with top-notch technology as well as a strong carbon footprint.*

Since its founding in 1943, battenfeld-cincinnati has been developing solutions with well thought-out standard machines and custom-made special productions tailored to specific customer needs that simultaneously advance the industry. The company's success story is built on its extensive technical expertise. With 600 employees, the group is now present at five locations in four countries – in Germany, Austria, China, and the USA. Customers from various sectors, from the construction industry to water management, consciously rely on the expertise of this specialized supplier. The range now includes individually manufactured components as well as optimally coordinated complete systems. Customers benefit from customized solutions for various applications in the areas of pipe, profile, sheet, film and pelletizing as well as a comprehensive portfolio of single and twin-screw extruders, tools, downstream equipment, calendars and laminating systems of extrusion-based lines, machines, and systems. Additionally, the new standardized pipe line design was recently awarded the IF Award\*.

According to the motto "Sustainable Solutions Worldwide," the focus on energy efficiency, digitization and sustainability is increasing. The space-saving, maintenance-friendly, flexible, and powerful machines and components are also known for their economic efficiency and user-friendliness.

"We manufacture all units from the extruder to the calibration and cooling unit, the vacuum tank to the cutting unit and tilting table ourselves," emphasizes Managing Director Gerold Schley underlining the group's high standards. "Interface problems should be avoided as much as possible. And operation is particularly easy and intuitive thanks to our self-developed BCtouch UX control."

On the path to an even smoother production, battenfeld-cincinnati continuously invests in research and development. Successfully so: the company recently achieved a new record in the complex segment of large-diameter pipes. The first lines for the production of pipes with a diameter of up to 2,700 mm have already been delivered. Particularly noteworthy in the large-diameter pipeline are the pipe head and the completely



redesigned 4-meter-long segments in the downstream process. For the first time, there are now vacuum tanks and spray baths in 4-meter-long elements. Therefore, the enormous dimensions and the associated transportation difficulties are overcome. Particularly practical: the individual units can be easily transported and only need to be assembled at the production site.

A clear focus of the group is on ideal extrusion solution for environmentally friendly and durable products. Among many other innovations, battenfeld-cincinnati's Multi-Touch polishing unit now also offers a practical solution for polypropylene floor coverings. These are more sustainable than traditional PVC coverings but, due to their semi-crystalline structure, significantly more complex to manufacture. The polishing unit enables the production of a dimensionally stable, visually attractive semi-finished product with ideal flatness and minimal thickness tolerances even with this future material. Ideal for use as flooring – and thus likely to be a noticeable growth driver in the coming years.

At the same time, battenfeld-cincinnati is driving forward the automation and digitization of all processes. This not only simplifies daily production life but also increases production efficiency and minimizes setup times. Manual adjustments are largely eliminated or completely reduced, and production changes are calculated and carried out fully automatically whenever pos-



battenfeld-cincinnati location in Bad Oeynhausen/Germany



battenfeld-cincinnati location in Vienna/Austria

sible. This allows even smaller orders to be processed efficiently and cost-effectively. At the same time, smart technology reduces the environmental impact by shortening start-up times and reducing scrap.

However, battenfeld-cincinnati not only invests a lot of energy in customer solutions but also focuses on environmental protection, sustainability, and efficiency in its own production. The headquarters are currently undergoing reconstruction, and a completely new technical center is being built while operations continue. The company is investing a total of 20 million euros. The roofs of the existing production and administration building were fitted with an efficient photovoltaic system in 2022, which the new technical center will also have. Moreover, also the roofing of the newly planned bicycle parking spaces will soon be used to generate green solar energy. In addition, both the new building and all existing buildings in opera-

tion will be connected to the district heating network of Neue Energien Bad Oeynhausen (NEO). These steps will help to save valuable emissions. In doing so, battenfeld-cincinnati is already laying the foundations today to remain a highly innovative supplier in the extrusion industry worldwide and in the future.

*\*The iF DESIGN AWARD, with nearly 11,000 entries from 56 countries last year, stands as one the most prestigious design awards in the world. Owned by the non-profit iF Design Foundation, the award emphasizes design's global impact and ensures impartiality with our professional jury upholding strict screening criteria.*

**battenfeld-cincinnati**  
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# New Energy-Efficient Process for Manufacturing ABS Blends

Coperion has developed a process solution for particularly energy-efficient manufacturing of acrylonitrile-butadiene-styrene copolymer (ABS) blends, with the Coperion ZSK Mc18 twin screw extruder playing a key central role. Thanks to short raw material residence time in the ZSK extruder and gentle product handling, Coperion's process solution achieves an extraordinarily high ABS blend product quality.

ABS is a thermoplastic engineering plastic which combines numerous positive mechanical properties and chemical stability, which make it ideal for multiple uses in the electric and automotive industries.

Technology licensing and engineering company Zhejiang Zonepic Petrochemical Technology Co., Ltd. located in Hangzhou City, Zhejiang Province, People's Republic of China, is a licensor for the emulsion grafting-bulk polymerization ABS blend method which allows for the production of ABS blends in general grade, food grade, flame retardant grade and electroplating grade. For this solution the company has permitted to design several large installations with multiple ZSK 133 Mc18 twin screw extruders. Two systems have recently started production: one plant is at Lihuayi Lijin Refining & Chemical Co. Ltd. with an output of 200 KTA, and the other at Zhejiang Petroleum & Chemical Co, Ltd. with an output of 400 KTA.

## ZSK Extruders for maximum energy-efficiency

ABS blends consist of synthetic rubber polymers HRG and SAN (styrene-acrylonitrile). Coperion has developed a particularly energy-efficient process solution for manufacturing ABS blends. The ABS emulsion emerges wet from a reactor following its manufacture. In Coperion's solution, it passes through a screw press before the HRG – still damp – is introduced downstream via a Coperion ZS-B side feeder into the process section of a ZSK extruder. The energy-intensive thermal pre-drying of the ABS is thus eliminated.

Using gravimetric Coperion K-Tron feeders, SAN and additives are likewise introduced into the ZSK extruder. SAN, additives and HRG are intensively and homoge-



*Coperion's ZSK Mc18 twin screw extruder is playing a key central role in this system for particularly energy-efficient manufacturing of acrylonitrile-butadiene-styrene copolymer (ABS) blends (Photo: Zhejiang Zonepic Petrochemical Technology Co., Ltd.)*

neously mixed in the ZSK process section, all the while handled very gently, so that the product does not yellow, nor does the polymer break down.

In comparison to conventional manufacturing processes, Coperion's solution operates with markedly lower energy consumption. Moreover, the portion of residual monomers is reduced to an absolute minimum.

Frank Lechner, General Manager of Process Technology and Research & Development at Coperion, is convinced of the importance of Coperion's development: "We're proud to see how both of these large installations from Zhejiang Zonepic Petrochemical Technology Co., Ltd. have successfully taken over production for ABS blends. These machines are already proving on a daily basis how energy-efficient their operation is. At the same time, they deliver a constant, extremely high product quality that underscores how our innovative process development precisely meets our customers' requirements. Even our newest development, providing a way to further reduce ABS production's energy consumption, has already met with great interest – as has our solution for manufacturing ABS blends for direct contact with food products."

*Coperion has developed a process, built around the ZSK Mc18 twin screw extruder, for manufacturing ABS blends that operates markedly more energy-efficiently than conventional processes while delivering constant, very high product quality (Photo: Coperion, Stuttgart Germany)*

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# Blow Molding Machine by PET Technologies to Follow the Triple Utility Strategy

The “land of lakes and volcanoes” with the “land of steel and grains”. New World with Old World. Water brought these two extremes together in the project implemented by Compañía Cervecería de Nicaragua and PET Technologies. It is about the blow molding of the 5 US gallon PET bottles for water.

Compañía Cervecería de Nicaragua S.A (CCN) was founded in 1926 in Managua, the capital of Nicaragua. Industrial Cervecería, S.A. (ICSA) was founded in 1976. After the merge of the two companies in 1996, CCN became the largest brewery in Nicaragua. In 2002, the company acquired the mineral water producer Fuente Pura and entered the market of juices, soft drinks and isotonic drinks.

Today, CCN, majority owned by Central American investors, is the market leader for beer and beverages in Nicaragua. Total beer production in this country with the population of 6.6 million is around 1.4 million hl (2020). CCN produces various types of beer lager and pilsner for the domestic market under the umbrella brands Victoria, Toña and Mytos. Some of them are additionally exported to Costa Rica, El Salvador, Honduras, USA, Canada, Panama, Australia, Cuba and Spain.

CCN's headquarters with the brewery are still located in Managua, two additional mineral water bottling plants are operated in the cities of Rivas and León. The total number of employees is 1,135 and the total annual production volume of beer, water and soft drinks in 2020 was 2.89 million hl. CCN sees itself as a company that operates sustainably. It is characterized by its commitment to quality, safety, the environment and health, which are firmly anchored in its corporate guidelines and in its comprehensive Sustainability Report.



Water is the main resource for Compañía Cervecería de Nicaragua, the renowned world-class company. To protect water, the CCN developed the first initiative of Payment for Environmental Services in southern Managua, implementing the Neutral Water Program. The objective is to offset the water footprint generated by its production.

It was the water where the paths of Compañía Cervecería de Nicaragua and PET Technologies crossed. The decision to have its own manufacturing of water containers is part of CCN's triple profit strategy. It generates value in 3 dimensions: economic, social and environmental.

The machinery used to manufacture the containers plays an important role. It is about the consumption of energy and reuse of resources, the materials that can be processed and the weight of manufactured containers, their maintenance costs and downtime.

Thus, Compañía Cervecería de Nicaragua installed the blow-molding machine of the European brand PET Technologies to produce 5US gallon PET bottles. It is APF-30 model with the output 250 bph. Now CCN manufactures water bottles within its facilities, switching from polycarbonate to PET.

## Why do 5 US gallon PET bottles look attractive?

### - Lower bottle cost

- BPA-free (the chemical bisphenol A, detected in certain plastics, is likely to affect health, according to research)
- It can be returnable or one-way, with or without inserted handle.
- PET material is more flexible and better resists external impacts



- 100% recyclable and ecological
- Perfect material distribution
- Compatible with existing washing and filling lines
- Easy manufacturing on site

Compania Cervecera de Nicaragua chose the 2-stage stretch blow molding process with the help of the APF-30 machine: the bottle is produced from preform to avoid any risk with resin.

The mold with inserts provides greater flexibility in container design without the need to stop the machine. Only certain parts of the mold surface are changed. This reduces investments and changeover time for another bottle design.

The air recovery system implemented in the APF-30 blow-molding machine by PET Technologies allows to save up to 25% of the expenses in electrical energy and

compressed air. 100% of the blown air is re-used in the low pressure line.

The deep heating system and intense air-cooling provide a uniform temperature distribution between the inside and outside of the preform wall. Finally, the 5US gallon PET bottle shines as if it were glass.



Compañía Cervecera de Nicaragua

www.ccn.com.ni

# Redefining Plasticization and Performance

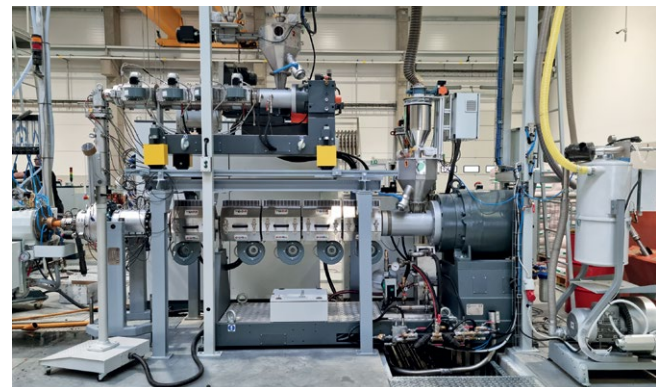
*When it comes to extrusion systems, no part is more critical to productivity and product quality than the extruder plasticizing group. Recognizing this, Tecnomatic at K-show 2022 has unveiled its latest innovation in extruder technology – the EVO version of the extruders in L/D 37 and 40.*

The EVO version represents a significant leap forward in Tecnomatic's extruder design, incorporating a completely redesigned screw geometry and a newly engineered spiral feed-bush. Building upon by a new project of research and development, this evolution aims to enhance plasticization, improve homogeneity, and maximize energy efficiency, while maintaining the exceptional performance that Tecnomatic extruders are renowned for.

The key highlight of the EVO version lies in its screw design. The geometry of the screw has been meticulously reimagined, leveraging advanced engineering techniques and cutting-edge materials to optimize plasticizing capabilities. This enhanced plasticization leads to superior melt quality, resulting in extruded products of excellent quality.

Furthermore, the newly designed spiral feed-bush significantly augments the extruder's performance. It ensures a consistent and uniform feeding process, by precisely controlling the flow of materials into the screw. This not only improves the homogeneity of the final product but also minimizes variations in output, enhancing overall efficiency and reducing waste.

One of the key objectives of the EVO version is energy savings. Tecnomatic understands the importance of sustainability in today's world and has integrated energy-efficient features into the new series. The redesigned plasticizing group minimizes energy consumption, resulting in lower operating costs and a reduced environmental footprint. With the EVO version, Tecnomatic is



A multilayer extrusion line with an energy saving gearless extruder EVO and piggyback co-extruder for external layer

actively contributing to a greener and more sustainable extrusion industry.

Massimiliano Vailati, Sales Director at Tecnomatic, said: "It is worth noting that while the EVO version represents a significant advancement, Tecnomatic has ensured that it maintains the exceptional performance levels the market has come to expect. By combining state-of-the-art design with its extensive expertise, Tecnomatic has created an extruder that outperforms its predecessors."

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# New Era in Plastics Recycling

*An Interview with Manfred Hackl, CEO Erema Group*

## How does the EREMA Group see the future?

**Manfred Hackl:** In the past business year 2022/23 alone, the extruders supplied by the companies within the EREMA Group deliver an additional 1.6 million tonnes of recycling capacity. Our vision is that by 2030 the circular economy in plastics is a reality. That is why the recycling industry needs to continue developing and evolving. This will require new technologies and innovations to set positive signs for the future, even in the current challenging times for our customers.

The whole industry is working on solutions, including a reduction in the use of raw materials, plastic packaging that is designed for recycling, traceability standards for packaging, more efficient collection and sorting processes, and innovative technical solutions for higher recyclate quality. As a result, people in the value chain are gaining an ever better overall understanding of the market. This is accelerating the developments towards more recycling and a better circular economy. With our group of companies, we would like to play a central role in this, actively shaping the future as a real driver in the new era of plastics recycling.

## What do you mean specifically when you talk about driving a new era of plastics recycling?

**Hackl:** Circular economy and plastics recycling are key topics in politics, day-to-day life and business. Only once the circular economy has been properly implemented will it be possible to fully utilise all the positive properties of plastics. And that is what the EREMA Group has been striving for since it was founded 40 years ago.

In recent years, we have become a pioneer in recycling technologies,



**Manfred Hackl, CEO EREMA Group GmbH**  
(Photo credit: EREMA/Wakolbinger)

and we have worked very hard to bring together stakeholders in the plastics industry for discussion and interaction. At the EREMA Group we have also broadened our product portfolio for our customers. We are well integrated into networks and can rely on long-term partnerships and research cooperations. This means that we are able to understand even better what it is that our customers need. At the same time, however, it is essential that we take the entire value chain into consideration. We need to include the whole picture to create better recycling technologies and optimum solutions for our customers.

## What does that involve?

**Hackl:** We will continue to expand our group of companies. Our next goal is to further increase the extent of added value with a clear focus on the polyolefin sector and to set further industry benchmarks. To get from waste material to recycled pellets, potential new raw materials need to go through several different recycling processes. The processes range from sorting, shredding,

washing and drying to extrusion including filtration and compounding as well as odour optimisation. The challenge lies precisely in the optimum fine-tuning of all the individual recycling steps – especially when high quality recyclate and consistent stability as well as energy efficiency are to be achieved. With our company KEYCYCLE GmbH, we already offer turnkey solutions for the entire recycling process including sorting, washing and extrusion. We see the next step as an important stepping stone in perfectly matching the washing process and the recycling extruder. This will enable us to offer all-in-one packages that are custom-built to meet the requirements of the market and the needs of our customers.

**Thank you for this interview.**

EREMA Group  
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# Dechlorination of PVC in Mixed Plastics on the Planetary Roller Extruder (PRE) prior to the Pyrolysis Recycling Process

*In recent years, ENTEX has developed various recycling processes in cooperation with partner companies, institutes and universities, e.g. for waste tyre rubber devulcanisation, film edge trim recycling, as well as numerous depolymerisation and other plastics recycling processes. Based on the diverse possibilities of the individually configurable, modular design of the ENTEX extruder construction kit, complex recycling processes for plastics have recently been developed and are becoming increasingly important.*

**M**ore and more sustainable plastic processes are required to recycle and deal with the enormous amount of plastic waste. ENTEX has developed a dechlorination process to remove the chlorine from mixed polymer plastics of PP, PE and PVC for example, and allow those mixed plastics to be recycled by pyrolysis.

## Pre-Screening/Straining of the Plastic Mix

Before the dechlorination process, all foreign substances must first be separated from the plastic mixture so that only the polymers remain. For this purpose, the mixture is heated to a temperature of over 200 °C, melted and filtered to remove impurities. The purified plastic melt is then injected into the PRE.

## Dechlorination Process - Temperature and Residence Time Control

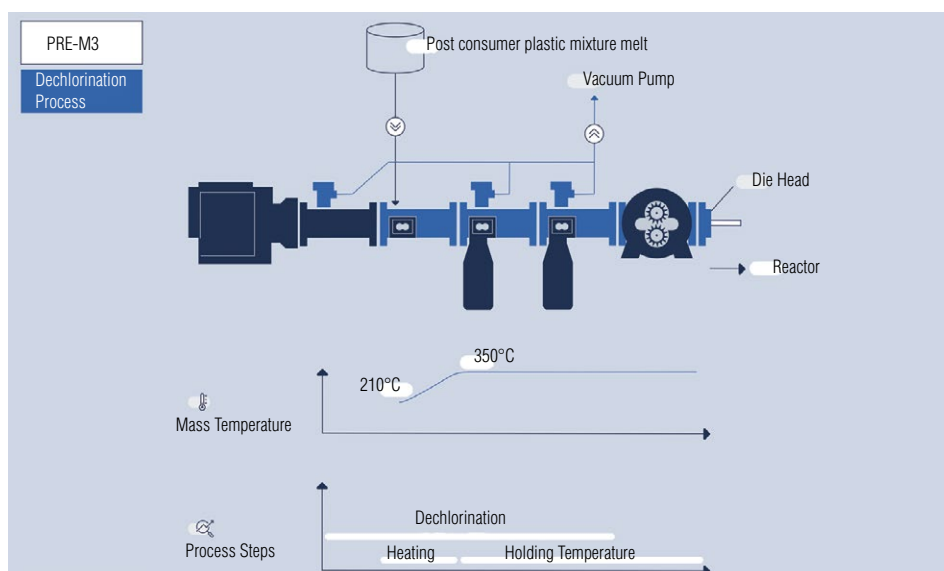
The design of the PRE allows for effective heat transfer and temperature control. In addition, the PRE offers the volume and residence time required to raise the temperature of the mixed plastic melt to >300 °C and break down the PVC. The volume, process surface area and residence time in combination with a highly efficient vacuum degassing system remove any volatiles, including chlorine gas, down to the lowest ppm level.

## Required Process Volume / Residence Time

The PRE is unique in its rotating planetary roller system, which ensures constant material mixing and movement and provides a very large surface area for the mixing and heat exchange process, which is up to ten times larger than, for example, conventional mixing units such as twin screw extruders. This makes the PRE ideally suited for reactive process conditions where residence time, mechanical energy input and temperatures need to be controlled within very tight tolerances.

## Degassing at the Highest Vacuum Level and Extraction of Gasses to the Lowest PPM

Any released volatile substances can be efficiently evacuated from the process at different points in the extruder process section. In the PRE, process zones with a vacuum of less than 1 mbar can be generated to efficiently degas the extrudate. In addition, odours and possible toxic gases are removed, thus making a valu-



*Plant scheme of a dechlorination process with the planetary roller extruder*

able contribution to quality assurance and increasing occupational safety. This is made possible by a self-contained continuous manufacturing process in the PRE.

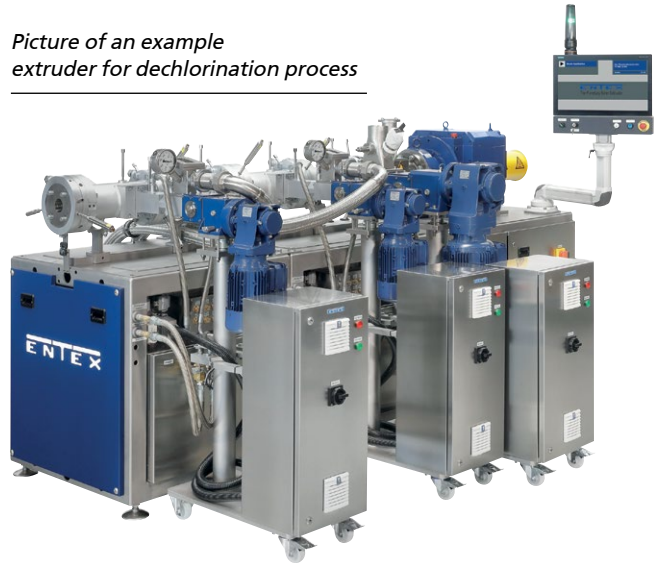
**Benefits of dechlorination on the PRE:**

- Allow mixed plastics (e.g., PP, PE and PVC) to be recycled
- Remove any volatiles including the chlorine gas down to the lowest ppm level
- Efficient heat transfer and precise temperature control
- Different degassing zones at variable points in the process
- Self-contained continuous recycling process in the PRE

**Conclusion: The Polymer Mix is Ready for Pyrolysis**

Once the chlorine gas has been removed from the polymer mix it can then be processed in the pyrolysis reactor to achieve a high-quality oil that is the basis for new polymer production.

*Picture of an example extruder for dechlorination process*



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# Technology Event 2023 – *Gneuss Presents OMNI Recycling Technologies and Celebrates 40th Anniversary of the Company*

*To mark its 40th anniversary, the family-owned company Gneuss from Bad Oeynhausen presented exciting new products and innovative recycling technologies during a two-day technology event on 7 and 8 November 2023. Visitors from five different continents took part and experienced first-hand presentations of the extrusion systems MRS, MRSpure and MDS, as well as the recycling systems OMNImax and OMNIboost and various melt filtration systems.*

The CEO brothers Dr Stephan Gneuss and Daniel Gneuss opened the event in the recently built 2,700 m<sup>2</sup> production hall, which had been specially redesigned for the event, and gave an introduction to the technological innovations of the following presentations. The department heads from the Fibre & Pellets, Film & Sheet and R&D divisions provided insights into the key characteristics and applications of the new OMNI recycling technologies. Interactive survey elements during the presentations encouraged a lively exchange of ideas and perspectives on plastics recycling among the participants.

In Gneuss Technical Centre 1 at the main site, the focus was on processing PET and PS regrind into food-grade thermoforming sheet on an OMNImax recycling



*Gala dinner for Gneuss' 40th anniversary in the historic Kaiserpalais*

line. The trials in Technical Centre 2, on the other hand, concentrated on the regranulation of PET fibres using the OMNIboost recycling system and the closed-loop recycling of HDPE bottle caps with the MRSpure extruder.

A highlight on the evening of the first day was a gala dinner in the historic Kaiserpalais, which was held to celebrate Gneuss' 40th anniversary. Here, company founder Detlef Gneuss not only looked back on the past of his family-run company, Dr Stephan Gneuss also gave an outlook on the coming years and the continuation of the Gneuss success story.

The event was a great success and once again demonstrated the innovative strength and technological expertise of the East Westphalian company. The international participation and consistently positive reactions of the visitors emphasised the strong interest in sustainable technologies. A look into the future promises further pioneering progress in the field of recycling and sustainable production processes.



Gneuss Technology Event hall at the company headquarters in Bad Oeynhausen/Germany

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www.gneuss.com

# Put in Extra Shifts for the Circular Economy?

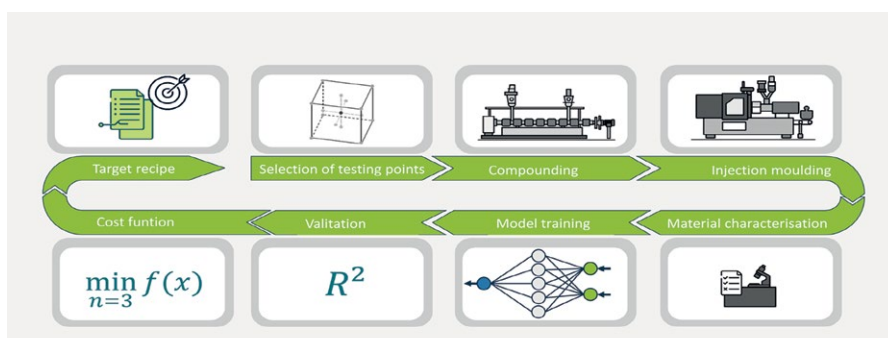
*In order to move closer to the target of a comprehensive circular economy for plastics (and save its partners extra shifts), the Institute for Plastics Processing (IKV) in Industry and Craft at RWTH Aachen University is playing a leading role in research projects, in which, together with numerous partners, the value-added chain of plastics recycle is being holistically optimised. The 32nd International Colloquium Plastics Technology will provide an insight into this.*

Through the consistent use of recyclate as a component of plastic products, it is possible to drastically reduce emissions (such as CO<sub>2</sub> or the discharge of macroplastic and microplastic into waterways) and also to cut back on crude oil requirements. However, this sustainable multiple use of valuable raw materials is not yet achieved in all areas. In the packaging

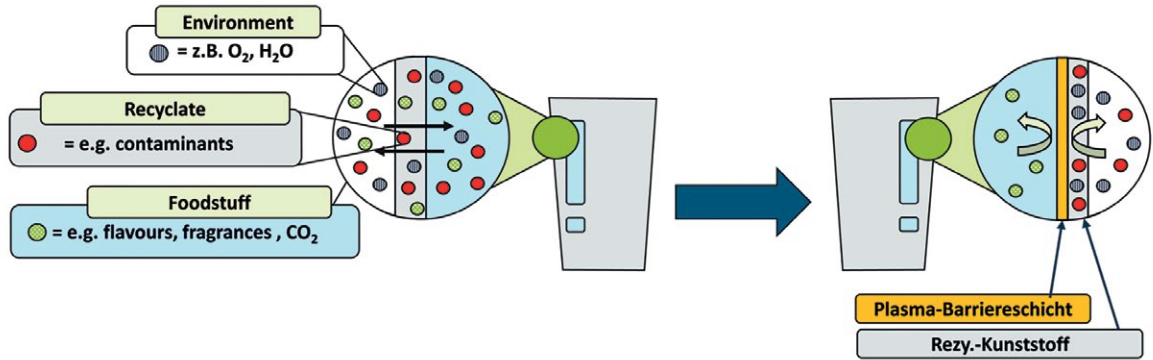
sector, for example, only around 11 % of the recyclate is currently being used for the renewed production of packaging. Various factors are making this difficult, for example:

- limited availability of material with high enough purity,
- fluctuating properties,
- limited acceptance of plastics recyclate,
- inadequate economic attractiveness of using recyclate.

Picture 1: Fundamental process of the AI-supported recipe development of compounds



Without strong partners and without innovative approaches, e.g. for material and process development, players in the plastics industry can only meet these challenges with a great deal of effort and at great cost. In various research projects, IKV is examining possibilities for holistically optimising the value chain of plastics recyclate.



**Known functions of plasma barrier coats:**

- prevent undesirable substances from the environment getting into the foodstuffs
- keep desirable substances in the foodstuff

**Addition potential of plasma barrier coats:**

- Lock contaminants in the recycled plastic / deny entry to the foodstuff

*Plasma barriers as migration barriers with the example of recycle*

**Holistic AI-based optimisation of plastic packaging containing recycle**

One such project is the "AI application hub, plastic packaging", within which IKV is pursuing several objectives in a sub-project entitled "KIOptiPack: Holistic AI-based optimisation of plastic packaging containing recycle". The primary target is the provision, validation and application transfer of practically tested, AI-supported moulding tools for successful product design and the production of plastic packaging with a high recycle content and the required quality. This is supported by an AI-application and data room and the creation of a central network platform (which integrates, for example, the consumers and their attitude) for added value engineering.

A concrete example of an AI-supported tool is compound development (Picture 1). Instead of an "iterative approach" to the desired viscosity of the compound, use is made of existing data points and – where necessary – the characterisation of extreme points, while an AI model describes the space between the data points. This produces a much better imaging quality ( $R^2 = 0.97$ ) than, for example, a regression analysis ( $R^2 = 0.60$ ).

This illustrates how AI can, from easily documented (or already existing) data, create added value and save plastics converters a great deal of time and expense in finding the ideal viscosity of the compound, so that they do not have to work extra shifts.

Nevertheless, with recycle material, not only processing properties such as the viscosity have to be taken into account, but also the performance properties. For example, suitable measures have to be taken to protect goods packed in plastic from contamination through undesirable substances potentially contained in the recycle. This is where extra shifts of a different nature are deployed:

**Plasma barriers protect packaged goods**

A highly promising platform for barriers is a surface coating with plasma-based chemical gas phase deposition. The deposited barriers also serve to prevent migration of harmful materials from the recycled plastics to the packaged contents (Picture 2). However, the development of such plasma barriers has so far advanced relatively slowly because of the analytical work involved in determining the barrier performance. Through a newly developed process at IKV, which is based on innovative model contaminants and a new approach to incorporating them into the plastics, the barrier effect can in future be evaluated much faster. Accordingly, the optimisation of the plasma barriers will also take less time so that, thanks to this, product safety can be achieved with minimum emissions – and without having to fall back on poorly recyclable multi-layer plastic composite films.

**Circular economy at the 32nd International Colloquium Plastics Technology**

At the Colloquium, Session 2 (AI-based methods to boost PCR usage in plastics packaging), Session 8 (Plasma-based barrier coatings for sustainable packaging) and Session 13 (Challenges of PCR processing), will deal with the topic of the circular economy and the use of recycle, each with a keynote paper from the industry, plus two scientific presentations from IKV.

At "IKV 360° – Research live", the research assistants will demonstrate the topic at various stations.

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# Extrusion Takes Some New Turns

*A longtime global leader in extrusion tooling for medical tubing and other products, Guill Tool has achieved a series of successes in the areas of multi-layer dies and, most recently, a reciprocal tubing die for wound draining that reconfigures the internal chambers of the tubing to accommodate drainage.*

**D**rain tubes can be inserted prophylactically to prevent or remove the accumulation of fluid in a wound. Alternatively, such tubing can also be therapeutically inserted to evacuate an existing collection of fluid in a wound. Fluid is removed in order to treat or prevent infection and promote wound healing and patient comfort. Drain tubes can also be used to diagnose post-operative complications such as an anastomotic leak or hemorrhage. The Guill design has unique features that eliminate the need to weld or otherwise join sections with different profiles together.

"Our automated extrusion process drastically changes the extruded profile in production, with no need to join separate sections of internal profiles," comments Tom Baldock, Sales Manager, Guill Tool

Guill has engineered this new reciprocal tubing die with various features, unique to the product. The traditional tip and die assembly is replaced with a linear reciprocating assembly that changes the tube's profile within a given length. This process is repeated throughout a single extrusion run without interruption. Cutting capability, in association with the extrusion speed, cuts the finished product to length.

While cost and value stream activities are reduced, quality is actually improved. Only one extrusion run is needed to produce a finished product, as opposed to multiple extrusion runs with tooling changes along with a manual assembly operation to connect different tubing shapes via sonic welds or other methods of joining. Guill's new reciprocating head eliminates this entire assembly operation. It also eliminates in-process inventory. Thus, there is no need for storage of various tubing shapes and connectors needed for assembly, fulfillment of orders and replenishment of finished goods.

Furthermore, the reciprocating head eliminates a connecting piece, allows JIT production and products made-to-order. Lastly, it reduces total run time from receiving the order to shipping product.

In the multi-layer extrusion arena, a primary focus of Guill Tool over the years, the company



has also introduced the latest generation of its Series 800, the 2-to-6 layer extrusion tooling designed to produce the highest quality, highest material-efficient 1/8" to 6" OD tubing for medical and surgical applications. The redesigned Series 800 produces flawlessly smooth extrusion and layer definition of Fluoropolymer and other materials for all multi-layer, multi-lumen medical tubing. The Guill design further allows thin layer combinations of polymers and adhesives to 0.02mm or less.

Guill offers its extensive line of crossheads and inline tubing dies in fixed and adjustable center, for single or co-extrusion applications. The tooling is designed to process all compounds and features the company's patented, precision Feather Touch Concentricity adjustment, the Seal Right System, which combines with the Feather Touch system to eliminate polymer leaking. Guill also offers its unique spiral flow distribution system.

All Guill tooling is produced with rigorous computer simulation of the flow channels using Computational Fluid Dynamics (CFD) programs, resulting in optimum uniform flow with no weld lines.

Finally, the new Series 900 of inline tubing dies from Guill Tool offers improved extrusion performance and capabilities to customize at standard, off-the-shelf prices.

The new series is applicable to extrusion of hose or pipe ranging from 0.005" (0.127mm) to 8.0" (635mm) in diameter for all types of OEM, food service, automotive, industrial, telecom and medical applications in polymer or rubber.







Guill Series 900

Internal configurations of different designs used on wound drain and surgical tubing no longer require separate sections to be extruded, then joined. The Guill reciprocating head design produces various profiles within the tubing in a constant production run

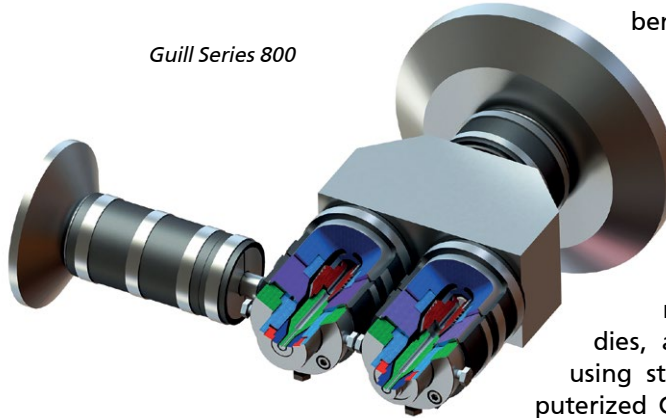


- The Series 900 technology offers these key benefits:
- Achieves concentricity or “product roundness” which greatly reduces material usage compared with other types of extrusion tooling
  - Spiderless inline-designed heads results in no spider lines and allows room for more air – thus eliminating cold legs, which can inhibit product output
  - Runs 1 to 5 layers simultaneously
  - Engineered for a multitude of applications – including special fluoropolymer applications

A key Guill Tool technical highlight of the Series 900 is a patent-pending FeatherTouch™ adjustment in the die holder and a cartridge-style ball assembly that does not require the loosening of retaining screws to make adjustments. Additional unique benefits of the Series 900 include Guill’s Seal Right Systems, a positive seal, which eliminates leakage between deflectors, along with easy self-alignment that reduces operator error during assembly and is adaptable to a variety of specific extruder layout configurations.

“This series offers a standard platform design of the head with specific characteristics that are unique to individual applications included at no additional charge in the cost of the tooling. This is a tremendous benefit to a company that requires precision tooling with custom

Guill Series 800



benefits at a standard off-the-shelf price. That certainly helps our customers’ bottom line,” says Tom Baldock, Guill Sales Manager. Guill Tool also manufactures tips, dies, and breaker plates using state-of-the-art computerized CNC machining and EDM equipment. As well, engineering services using the latest CAD systems are available for custom-designing extrusion tooling product such as crossheads, tips, clamps, flanges, forming rolls, spiderless inline dies, dies, swing gates, breaker plates, special equipment and sizing dies.

Guill Tool received ISO certification in 1995. The first major extrusion tooling company to meet international standards, Guill Tool has long been recognized as one of the leading established designers and manufacturers of custom extrusion tooling for applications including wire, cable, fiber optics, medical tubing, wood composites, automotive tube, plastic compounding, custom applications, rubber, profile, industrial pipe, hose/tube, blow molding, plus food and packaging.

Guill Tool also encourages and provides education and training for the extrusion industry with plastic and aluminum model heads, fully illustrated operating manuals for step-by-step assembly and disassembly, training videos, and classes on the care and cleaning of extrusion tooling.

Founded in Rhode Island in 1962 by A. Roger Guillemette, Guill Tool was established as a job shop supplying tips, dies, crossheads and replacement parts to the wire, cable or wire and cable, plastic and rubber industries in New England. Later, Guill Tool became a supplier for the entire United States and Canada, and today enjoys a worldwide market presence.

Technology in the Medical field is constantly evolving, and often requires an extensive array of Medical grade tubing in a variety of materials and thicknesses. Guill specializes in working with clients to design and manufacture Custom Extrusion Tooling to produce an unparalleled range of the highest quality Medical tubing in the industry. The company’s Micro Medical tooling can extrude tube thinner than a human hair, 0.008” or finer per revolution, and can be used to keep procedures as non-invasive as possible. Other models are used to produce tubing for feeding applications, including nasogastric and jejunal tubes.

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 10 Pike Street, West Warwick, RI 02893, USA  
 Tom Baldock, Extrusion Sales Manager  
 ➔ [www.Guill.com](http://www.Guill.com)

# 10-Year Anniversary – A Partnership Built on Trust

*Lindner Washtech and Bulgarian plastics recycling company Vadias Recycling are looking back on a 10-year anniversary and, together with Erema, on a successful partnership that has lasted just as long. Back in 2013, when the company had already more than 5 years of experience in the industry, Vadias commissioned the first-ever Lindner Washtech washing line, which was then put into operation in 2014, followed by a second unit just a few years later. Erema extruders have been used for granulate production ever since then. To this day, the cooperation between the three companies has always been characterised by trust, high quality and enthusiasm for innovative recycling solutions.*



*From the very start, the focus of the Bulgarian recycling company Vadias Recycling was on the recycling of LLDPE & LDPE films from the dual system – that is, plastics film with a high degree of contamination and soiling. The Lindner Washtech concept and its shredding, washing and drying components make the flakes perfectly prepared for the downstream processes. Erema extruders guarantee the required granulate quality (Copyright: Lindner Washtech)*

The increased use of plastics in a range of industries, in particular the packaging sector, led to a strong upturn in the recycling industry in the 2010s. Legal provisions, regulations and collection systems began to take shape, the concept of the circular economy and sustainable resource management gained in importance, and the international trade with plastics waste began to grow. Together with Lindner Washtech and Erema, Vadias Recycling recognised the changes on the market and the importance of recycled plastics early on.

From the very start, the focus of Vadias, a plastics recycling company headquartered in Sofia, Bulgaria, was on LLDPE & LDPE pack-

aging film, already produced in large quantities at the time. Essentially, these are plastics and/or packaging materials that today are primarily sourced from the dual system and that generally have a high degree of contamination. In addition to organic residue, most films also come with labels and residue of aluminium film. The process starts with cleaning and processing plastic flakes and continues all the way to extrusion, with the underlying concept, the washing components and the wash quality being crucial factors.

The first system for processing packaging film was designed for 1,000 kg/h – the second one, supplied in 2018, for 1,500 kg/h. “For us, the anniversary of Vadias

*Vadias, Lindner Washtech and Erema look back on a successful 10-year partnership. In addition, Vadias and Lindner Washtech both celebrate their 15th and 10th company anniversaries. On the photo: Clemens Kitzberger (Erema Group), Jochen Zweckmayr (Erema), Asparouh Asparouhov (Vadias), Vasil Asparouhov (Vadias), Harald Hoffmann and Georg Krenn (Lindner Washtech) (Copyright: Vadias Recycling)*



is a special and unique moment. After all, our very first Lindner washing plant went to Bulgaria, and continues to run with all the components we supplied in 2013, which must be due to the excellent maintenance and quality of the components," says Harald Hoffmann, Managing Director of Lindner Washtech. This is a partnership that has developed in many positive directions over the years. For instance, Vadias played an important role in many Lindner Washtech innovations, such as the Rafter or the Film Examiner. Most of the newly developed products were tested in the field at Vadias.

With the foundation of Blueone Solutions in August 2023, Lindner and Erema made it their goal to adapt their individual process steps in plastics recycling to their mutual requirements in order to use synergies more efficiently. Ten years ago, Vadias first opted for the Lindner Washtech/Erema duo. "With Lindner Washtech and Erema, we put our trust in two brand manufacturers from the word go, and we would certainly do so again from today's point of view," says Vasil Asparouhov, then Managing Director of Vadias and responsible for building up and developing the company.

In total, Vadias today processes 4,000 tonnes of raw material and produces 2,850 tonnes of granulate every month. "Our Erema extruders have been part of the recycling process from day one. Since 2019, they are also being used at the Vadias production site in Serbia, which, since 2022, is operated together with a Lindner shredder and Lindner wash components. We are always happy to see just how successful our customers are with our processes and products," says Clemens Kitzberger, Business Development Manager Post Consumer Recycling at Erema Group, who is proud of this long-standing partnership. "We are very grateful for the long, and most of all constructive, cooperation. The brothers Vasil and Asparouh Asparouhov have always had a hands-on role in the company and, over the last 10 years, have built a fantastic company with their team. I have a lot of respect for their achievement, and, as a company, we are grateful to be part of this success story," adds Harald Hoffmann.

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# Recycled Big Bags Made in Türkiye

*Gaziantep-based big bag producer Prof Sentetik manufactures big bags with recycled polypropylene. To meet the high standards for heavy-duty tape fabric, Starlinger's eqoCLEAN melt filter at the tape extrusion line ensures the purity of the melt.*

**B**ig bags, also called FIBCs, are omnipresent in logistics as a lightweight and economical type of packaging for free-flowing bulk goods. Made predominantly from polypropylene (PP), they show a CO<sub>2</sub> balance per 1,000 litres of transported goods that is far below that of rigid containers such as drums or octabins. Turkish big bag producer Prof Sentetik is making them even more sustainable by adding post-industrial and post-consumer PP waste in the production of various types of big bags. The company has recently installed Starlinger equipment for woven PP bag and big bag production, including a Starlinger PP tape production line equipped with the new eqoCLEAN filter system for processing recycled granulate. With this new tape extrusion line, Prof Sentetik produces PP tapes for FIBC fabric with recycled polypropylene (rPP) that meet all the specifications required for heavy-duty packaging applications.

"Plastic waste is a valuable resource, and instead of depositing it in landfills or incinerating it, it should be used in the best possible way", said Fahri Şengül, General Manager of Prof Sentetik. "For us, Starlinger's holistic approach to packaging production is very helpful. Being a supplier of both production machinery for woven plastic packaging and plastics recycling equipment,



*Starlinger's SPB filter ensures the high melt purity required for heavy-duty rPP tape production (Pictures ©Starlinger)*

they understand the product cycle of plastic packaging from the beginning right to the end. They know how to produce high-quality recycled plastics, and their woven packaging production equipment is designed for processing virgin as well as recycled input materials, even if they stem from post-consumer plastic waste."

“Companies like Prof Sentetik are real pioneers on the packaging market”, said Harald Neumüller, Sales Director at Starlinger. “With their technical competence and future-oriented mindset they drive the market toward a sustainable circular economy. A closed packaging loop for big bags works well if the big bags are made for recycling – meaning that they are designed and produced with recycling in mind and thus can be recycled easily at the end of their use phase. The better the recyclate quality, the higher can be the recycled content in the newly produced big bag”, explained Neumüller. To be able to use a high share of recycled content in big bags, it is important to follow the rules for Design for Recycling (DfR) which are summarized in a guideline established by EFIBCA, the European Flexible Intermediate Bulk Container Association. The guideline focuses mainly on the mono-material principle by reducing foreign materials in sewing yarns, belts, additives, inks, etc. used for big bag production.

Prof Sentetik currently processes in-house production waste and additionally buys recycled PP granulate, produced also from post-consumer plastic packaging waste. “As big bags have to meet special safety standards, the quality of the recycled material plays an important role in tape production”, confirmed Fahri Şengül. “The Starlinger tape extrusion line with the eqoCLEAN filter module ensures that the tapes we produce meet the specifications regarding tensile strength and elongation required for big bags in heavy-duty applications.”

### Melt filtration – a must when processing recycled materials

The extrusion of heavy-duty PP tapes with recycled content, especially from recycled post-consumer plastic waste (PCR waste), requires adequate melt filtration. The share of rPP materials which can be processed depends on various factors, for example from which waste stream the post-consumer waste comes from, or how the waste was handled during collection and storage. Fine filtration already before tape extrusion, i.e. during the recycling process, is crucial. Solid contaminants which can occur in PCR materials, as well as foreign polymer particles in the melt – e.g. from polyester sewing yarn – compromise tape quality and cause problems in the tape production process.

The eqoCLEAN filter module developed by Starlinger takes into account all the requirements for producing high-quality PP tapes with post-consumer recycled PP. It consists of a SPB single-piston power-backflush filter, a melt pump, and a second filter unit, called HS 2.0 filter. The SPB filter has one piston and four cavities for filter screens and can be used for processing polyolefins such as PP or PE. During the hydraulic power-backflush procedure the line operates at full production speed without interruption of the production process. The regular automatic high-pressure backflushing procedure cleans the filter screens thoroughly, increasing their lifetime and reducing machine downtime significantly. The melt pump in combination with the addi-



*Fahri Şengül, General Manager of Prof Sentetik, aims to include 50 % and more rPP in FIBCs – also in order to meet government regulations such as the UK Plastic Packaging Tax which came into force in 2022*

tional HS 2.0 filter, which is positioned directly before the extrusion die, ensure stable production and high operational reliability of the line. It also enables the processing of high shares of CaCO<sub>3</sub> and post-consumer recycled PP of 50 % and more.

Following the tape production process, the tapes are wound onto bobbins and turned into big bag fabric on Starlinger’s heavy-duty circular looms. In the last step, the woven fabric is converted to big bags. Properties such as tensile strength, weight and safety factor of Prof Sentetik’s big bags with rPP content meet all required safety standards and are continuously tested using standard testing procedures and certified equipment.

“We are very satisfied with how things are going”, said Fahri Şengül. “We even aim to increase the recycled content in our big bags to 50% and more. Also, we are considering to install our own Starlinger plastics recycling line – it can be the first step towards establishing a closed packaging loop for big bags here in Türkiye with our local big bag users. We have to think about our environment and take care of nature. We all – consumers, manufacturers and equipment suppliers – must work together to stop the destruction of the environment.”

Prof Sentetik

► <https://profsentetik.com/en/>

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# Three Partners Changing the Narrative in Plastic Recycling

*Svensk Plaståtervinning celebrated the opening of Site Zero, a state-of-the-art plastic sorting plant in Motala, Sweden. The plant features TOMRA and Sutco equipment and aims to realize a circular economy for plastics by sorting Swedish plastic packaging waste into 12 fractions.*

Sweden is taking the next leap in plastic recycling and celebrated the extension of the Svensk Plaståtervinning polymer sorting plant. Originally opened in 2019, the plant was built in collaboration with Sutco and featured TOMRA sorting technology. Mattias Philipsson, CEO of Svensk Plaståtervinning, invested in the extension of the facility with the aim of closing the loop on plastics and enabling zero waste. Thanks to the most advanced sorting equipment and expertise from global leaders in the recycling industry, the plant is expected to process 42 metric tons of materials per hour and recover 12 different types of plastics from mixed plastic packaging waste.

“Around 33% of plastic packaging in Sweden is recycled, but unfortunately there is still a lot of recyclable materials lost. This offers great potential, one that we are committed to unlocking and transforming into a valuable opportunity for the country and the environment. Since 2019, we have successfully been producing 4 different types of plastics for recycling. We always wanted

*Plant tour at Site Zero*



to do more and with the latest technology, we're able to accomplish our goals,” explains Philipsson. With Site Zero, the company's goal is to enable zero waste, zero down-cycling, and zero emissions.

Oliver Lambertz, VP and Head of Operations and Feedstock Sourcing at TOMRA Feedstock, comments: “We have accompanied Svensk Plaståtervinning right from the start and have always been excited to be part of this impactful project. Our partner, Sutco, took the lead in building the plant and we provided all the state-of-the-art sorting technology needed to maximize material recovery. The plant we are seeing here today is the result of three partners working towards a common goal: closing the loop on plastic packaging.”

## Technological drivers

Site Zero is equipped with more than 60 TOMRA AUTOSORT™ machines. The impressive 5 km sorting line features some of the world's most sophisticated sorter systems. The high-throughput technology makes it possible to process approximately 42 metric tons of recyclables



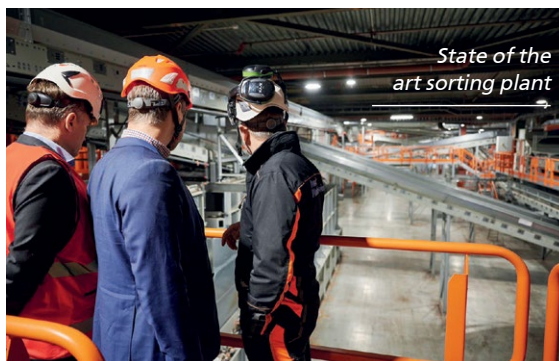
*Mattias Philipsson, CEO Site Zero*

per hour. What's more, the post-consumer waste is then separated into 12 different polymer types, including a variety of polyolefins, PET, PS, EPS, PVC, and more. Thanks to the combination of sorting technology and a well-designed sorting process, purity levels of up to 98% can be achieved. The clean material fractions are then sent to recyclers in the EU, but Site Zero is also planning to add recycling capacity to further process the main fractions locally.

“We are excited to have such strong and knowledgeable partners at our side. The collaboration in our first project has already convinced us of TOMRA and Sutco. It is the quality and flexibility their systems offer and the reliable service that made them our partners of choice. Together we aim to make Site Zero a blueprint for sorting facilities in Europe,” explains Philipsson.



Site Zero



State of the art sorting plant

Leveraging the power of connectivity and data, all AUTOSORT™ machines are connected to TOMRA Insight, a cloud-based data platform for secure, near-real-time monitoring of all sorting lines. “When we started working with our customer and understood their goals, it was clear that a digital monitoring tool would help optimize the process. This is where TOMRA Insight comes in. It collects sorting data, creates reports, and sends notifications if there are any inconsistencies that affect the overall performance of

the sorting line. If this data is used as a strategic management tool, efficiencies can be increased and costs lowered,” describes Lambertz.

#### Grand opening

More than 300 participants from the plastics value chain were invited to be part of the grand opening on November 15, where they could listen to various presentations and see live demonstrations. Mattias Philipsson, Oliver Lambertz, Michael Ludden, CEO Sutco and Yannick Rödder Project Manager Sutco,

shared their perspective and future vision of the project in a press conference. They highlighted that the plant will be the first of its kind and able to produce the highest material qualities, while decreasing its ecological footprint. Philipsson concludes: “Together with our partners, we will make Sweden a leader in recycling.”

**TOMRA Recycling Sorting**  
Otto-Hahn-Str. 2-6, 56281  
Mülheim-Kärlich, Germany  
[www.tomra.com](http://www.tomra.com)

## Two Corona Treaters Installed in the USA

*Leading US custom poly bag and film manufacturer, A-PAC, has installed two Vetaphone corona treaters at its production facility in Grand Rapids, Michigan to improve surface treatment quality – they replace American-made treaters on two of its three blown-film extrusion lines. Established in 1988 and built on a firm base of high-level customer service where no quantity is too small and custom sizes are handled with ease, A-PAC prides itself on being a single source supplier from extrusion of the film substrate to production and delivery of the finished item.*

The company manufactures an extensive range of poly bags including flat, wicketed, gusseted, side-weld, bottom-seal, staple-pack, and custom print as well as poly bags on the roll. Other products include drum, barrel, gaylord, tote and box liners as well as pallet covers. It also offers three types of plastic film and tubing.

It was the switch from solvent-based to water-based production that first saw the need for surface treatment at A-PAC. Plant Manager Tim Takken explained: “We installed our first corona treater in 2018 and the second in 2020. We’ve always had a good working relationship with Dean Grosel, who is Vetaphone’s local sales representative, so although it was an unknown brand to us, we trusted his recommendation and have been well pleased with the result.”

The Vetaphone treaters installed at A-PAC are both C Models, designed to provide a high dyne level on any extruded material thanks to their special design and use of ultra-efficient generators that deliver precise and consistent power requirements. The advanced electrode design eliminates fluctuations in dyne levels across the web width and guarantees no undesirable treatment to the reverse side. They feature a unique Quick-Change system that allows the operator to carry out segment set-up and maintenance in minutes.

Like all Vetaphone corona systems the fully computerised iCorona generator is at the heart of the process, offering a wide regulation band that combines high efficiency with minimal energy loss. Controlled power is essential in surface treatment, so the generators’ abil-



Tim Takken says his Vetaphone corona units provide consistent high-quality surface treatment

ity to proportion the output power to the line speed in a smooth and uniform manner removes the risk of pinholes in the substrate. Power regulation uses the ultra-fast Pulse Width Modulation (PWM) technique. Built with a unique resonant feedback system, iCorona generators automatically match the electrical power to the material, ensuring optimal surface treatment and efficiency.

A-PAC treats only part of the web – 8" diameter on one line and 4" on the other, and Takken says they often go down as small as 2". "We're in a niche market so flex-

ibility and control are vital, especially as we supply both the medical and food sectors where we are obliged to conform to ISO 2001:2015, FSSC 22000, USDA and FDA standards. FSSC is recognised by the Global Food Safety Initiative (GFSI) and is based on existing ISO standards, so as an FSSC 2000 certified manufacturer, our customers can feel confident using us as their supplier for food-safe poly bags and plastic products."

Currently the 33,000 sq/ft facility, which employs 50, generates annual sales of around \$12m, working triple shift Monday through Friday (24/5), but Takken is looking to restore 24/7 operation as soon as possible and boost turnover. "We service around 1000 customers, mostly in the US, but also export to amongst other countries, China!" he said adding that the company typically runs off orders for 50,000 to 500,000 bags, but "no quantity is too small or too large," he stated.

The main substrate extruded is LDPE with some medium and high-density film produced if required. Recent times has seen a market shift from 80:20 individually cut to inline bags to more of a 50:50 situation, which pleases Takken as it keeps more work in-house. "We've invested in new technology for improved efficiency and the better quality it offers and the Vetaphone corona treaters are certainly part of this," he concluded.

Vetaphone A/S  
 Fabriksvej 11, 6000 Kolding, Denmark  
[www.vetaphone.com](http://www.vetaphone.com)

# For the Speed Quantum Leap to Succeed

*Strolling was yesterday – in the meantime, countries such as Germany and Great Britain are also turning to the high-speed data highways. Because by now, everyone is aware that only the entry into the gigabit age secures the competitiveness in the long term. High growth rates in fibre optic expansion should now make this possible. And the cable, wire and pipe industries have long been ready to play a decisive role in shaping the glass future.*

Model disciples are countries such as Korea, Japan and Spain: They already have very high fibre penetration rates of 87, 84, and 81 percent, respectively, and are among the seven countries with a fibre share of 70 percent or more of the total fixed broadband subscriptions, according to the OECD (Organization for Economic Cooperation and Development). Germany, for example, is still lagging behind in the international comparison with a fibre optic expansion rate of less than 25 percent – which means 74th among 84 assessed countries.

## Pressure to act increases

A not exactly flattering ranking that should be a thing of the past. That's why the federal government launched



its gigabit strategy. According to this, fibre optic connections are to be available nationwide by 2030. In order to make this possible, digital and fast planning and approval procedures are implemented, among other things. In

addition, alternative laying techniques are to be used more frequently for fibre optic expansion. In addition, the expansion within the scope of Gigabyte funding 2.0 will be supported by around three billion euros this year.

The pressure to act is increasing, and not only in Germany. Because the challenges are immense. For example, the implementation of Industry 4.0 in companies will require very powerful data carriers. Even in households, lightning-fast surfing is expected, because here, too, data rates are rising rapidly. On average, data traffic climbs by more than 30 percent every year. A case for fibre optic cables, whose light pulses rush through the line almost at the speed of light. They are thus many times faster than conventional copper cables and transport significantly more data. Other advantages according to "fibre optic Internet" are: In comparison, fibre optic cables require little space, do not develop heat and consume far less energy.

#### Measuring heads regulate the drawing process

To be able to play out their advantages perfectly, fibre optic cables require the highest precision – and this is guaranteed by measuring and control devices that, for example, Sikora manufactures. "In the various stages of production, measuring heads and processor systems measure, monitor and control the entire drawing process to ensure fibre quality and increase production efficiency." The company offers a new technology for high-precision tensile force measurement in a stand-alone system that employs the principle of birefringence with a measurement rate of up to ten kHz. "This allows an even faster measurement of the tensile force irrespective of external production influences as well as direct control of the tensile force."

#### One-stop shop for plants

For a long time, Rosendahl Nextrom has been one of the fibre optic specialists who see themselves as a one-stop shop for production equipment. The company's core competencies include its manufacturing solutions for the production of optical glass, the drawing of glass fibres for telecommunications and special applications, the coating of fibres, the production of ribbons, proof tests and the production of glass fibre cables. For the loose and tight buffering of glass fibres, cable lines are required, in addition to hose extrusions for fibre bundles and fibre ribbons. In addition, the company offers systems for the stranding of buffered fibres up to the sheathing process for fibre optic cables. Fibre optic systems that meet high standards are indispensable for fibre optic cable producers.



#### Coat as glass fibre protection

The protection of the glass fibre is also essential. A single fibre has a core, a cladding glass and an outer cladding. "The mantle ensures the guidance of the lightwave signals. The outer sheath gives the glass fibre flexible and robust properties due to its nature of plastic," explains the glass fibre provider Telekom. This prevents the fibre from breaking during bending and losing its function as an optical waveguide. As a result, the optical signals cannot leave the core – unlike the copper cable, which transports data by means of electricity and loses large amounts of data over long distances. Cable manufacturers and suppliers of cable production systems are also required to supply precision products at this point of production.

The sometimes special installation is also important. In addition to underground laying and above-ground laying on masts, outdoor fibre optic cables are "mainly blown with compressed air into small speed pipes, which were laid in advance in the ground or in jacket pipes" at Deutsche Telekom. The speedpipes have an inner diameter of four to eight millimetres and are often designed in a pipe assembly with up to 22 pipes. The fibre optic cables (ø 2.3 millimetres to 6.5 millimetres) are then blown into these speedpipes with special compressed air compressors up to 2,000 meters at a time, explains the company. Common fibre-optic earth cables include four cables with twelve individual fibres each.

#### Investments for Fibre Optic Expansion

Worldwide, the demand for cables and pipes for fibre optic technology is growing immensely. Germany as example: According to estimates by the "Scientific Institute for Infrastructure", the nationwide fibre optic expansion would cost around 80 billion euros, an enormously large package. Orders of magnitude, which would also have to flow more or less into the glass fibre market in some other countries and in some cases would also be likely to be carried out. In order to keep up with global demand, production needs to be expanded and new production facilities set up.

For example, egeplast is building a new microduct production hall in order to ensure delivery reliability for the expansion of the fibre-optic network in view of the increasing demand for the tube bundle, which consists of several microduct mono tubes. The new 11,000-square-meter production hall doubles the production capacity for microducts. Investments like these are likely to pay off accordingly, because fibre optics is the technology of the future. In the long run, only she will succeed in the worldwide speed quantum leap.

Trends and highlights from the wire, cable and tube industry can be experienced at wire & Tube Expo from 15 to 19 April 2024 in Düsseldorf/Germany.



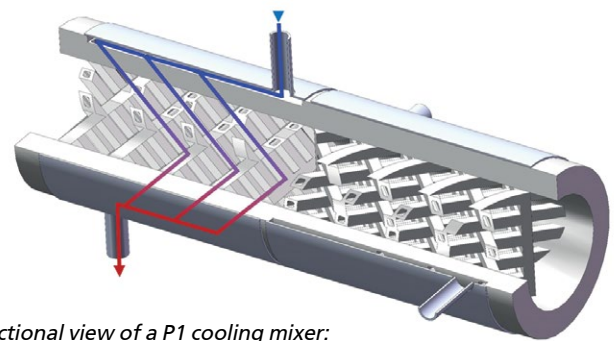
# More Productivity and Quality in the Plastics Industry

*P1 cooling mixers from Promix Solutions can significantly improve existing extrusion and pelletizing processes but also polymer production processes. In principle, most processes in the plastics industry work without additional static cooling and the benefit of an additional installation is not obvious. However, reality shows that many industrial plants cannot be operated at maximum throughput. This is because more throughput usually means more friction and therefore higher melt temperatures. Higher melt temperatures lead to more product decomposition and to low viscosities, which makes processing more difficult and has a negative impact on product quality. Additional cooling can therefore make a big difference.*

**B**ut how to implement it? After all, cooling viscous plastic melts, which are usually sensitive to decomposition, is a challenging task. Due to the increase in viscosity caused by cooling, the plastic melt to be cooled tends to adhere and form deposits on the cooled surfaces. The result is long residence times and undesirable product decomposition, exactly what one actually wants to avoid.

The Promix P1 static cooling mixer technology makes all the difference. As the name implies, it is a combination of an optimized static mixer with a high-performance melt cooler. The sectional drawing (Picture 1) illustrates the unique principle.

The optimized mixer structure installed in the interior of the cooler causes highly efficient mixing of the melt over the entire cooler cross-section. At the same time, however, the mixer structure also serves as a heat exchanger, and this without any additional internals that would disturb the mixing performance. After all, mixing is the key to success. The melt hitting the cooling surfaces is constantly and immediately removed by the unique structure and replaced by new hotter melt. The forma-



*Sectional view of a P1 cooling mixer: The mixer structure ensures highly efficient mixing of the melt over the entire cooler cross-section. At the same time, the mixer structure serves as a heat exchanger.*

tion of deposits and product decomposition is no longer possible. The continuous renewal of the boundary layers between the cooling surface and the melt results in an exceptionally high cooling capacity with minimum size. The design also makes the cooling mixer practically non-destructible and very durable.

Accordingly, Promix P1 cooling mixer technology is becoming increasingly popular in a growing number of applications. Originally developed for the lightfoam sector, the technology is now also being used successfully in classic plastics processing, in pelletizing processes, in the fiber industry, in polymer production, and in the chemical/pharmaceutical/food sector.

P1 cooling mixers are available in various sizes, from pilot applications with throughputs of 5 - 10 kg/h, up to production plants with more than 20,000 kg/h. The experience enables a safe scaling of the results from laboratory scale to the production plant. Test cooling mixers allow a quick and safe start. In addition to a wide standard program, cooling mixers can also be built from special materials and for pressures up to over 400 bar, to meet the requirements of the individual application.

*Promix P1 Fiber Cooler*



# From Converter to Full-Range Supplier

*JaeKwang is one of the best-known packaging manufacturers in South Korea. The company, which previously operated exclusively as a converter, decided last year to strike out in a new direction and take film production into its own hands. This was a big step for JaeKwang, which is now the first company in South Korea to produce CPP flat films in a 5-layer process.*

Last autumn, JaeKwang installed the first 5 layer CPP film line from Reifenhäuser – a milestone, and not only for JaeKwang. After all, it is the first line of its kind ever in the country. In order to make itself independent of suppliers, the company, founded in 1999, decided to produce as much as possible in-house in the future. "We are keen to take on as many steps as possible in the manufacturing process ourselves. In doing so, we have very high quality standards," explains Hong-Soo Kang, CEO at JaeKwang. The high quality standard and the strong production output of the line of 1300kg/hour were also what convinced the company to make this investment.

## Top output values thanks to individual line configuration

The remarkable productivity results from a technological focus on meeting the specific South Korean market and raw material requirements. In recognition of this crucial aspect, Reifenhäuser and JaeKwang have ensured that the CPP machine has been tailored to meet the optimum requirements of the end product. Thanks to Reifenhäuser's core competencies in the hot part extrusion equipment, the Reifenhäuser team was able to fully align the line with the needs of its customer and the local raw materials.

"We are pleased to have Reifenhäuser as a strong partner at our side," said Owner & CEO Mr. Kang at JaeKwang.

*Reifenhäuser Value CPP 5-layer line at JaeKwang, one of the best-known packaging manufacturers in South Korea (Pictures: Reifenhäuser)*



Kwang. "The line, which was specially designed to meet our requirements, enables us to achieve an enormously high throughput while maintaining the same high quality and functionality, thus offering us a decisive competitive advantage in the market," Mr. Kang continues.

Technologically convincing for JaeKwang was in particular the feedback system from Reifenhäuser. JaeKwang opted for a Coextrusion Adapter Pro. This enables multilayer production in extremely low tolerances and adjustment of the layer distribution during ongoing production. "The feedback enables us to test and implement new recipes as flexibly as possible without having to accept high raw material losses," praises Mr. Kang at JaeKwang. The Korean all-rounder has therefore now commissioned Reifenhäuser to install a second line.

## Line with stretching unit is the first of its kind in South Korea

In South Korea, packaging materials are designed creatively and elaborately in terms of haptics and appearance. In addition, there are growing consumer demands for functionality. Currently, for example, the so-called Easy Tear function is particularly in demand for pouches.

With the Easy Tear function, any type of pouch can be opened quickly, safely, and cleanly thanks to an integrated tear strip. This user-friendly solution can be realized by a line with a stretching unit (MDO), which JaeKwang will now install in the next step. This plant technology will also be the first of its kind in South Korea.

"We are very pleased to have found a partner in JaeKwang that we can actively support in its innovative product developments," explains Benjamin Pott, Area Sales Manager at Reifenhäuser. JaeKwang is also pleased about the renewed cooperation. "Reifenhäuser's know-how and technologies help us to grow steadily in the market and to create clear added value for consumers with our products," adds Mr. Kwang.

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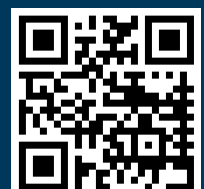
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